Program Final Environmental Impact Report
SCH# 2011012042

Exception to the California Ocean Plan for Areas of Special Biological Significance Waste Discharge Prohibition for Storm Water and Nonpoint Source Discharges, with Special Protections

California 40 years of WATER LEADERSHIP
WATER BOARDS

February 21, 2012

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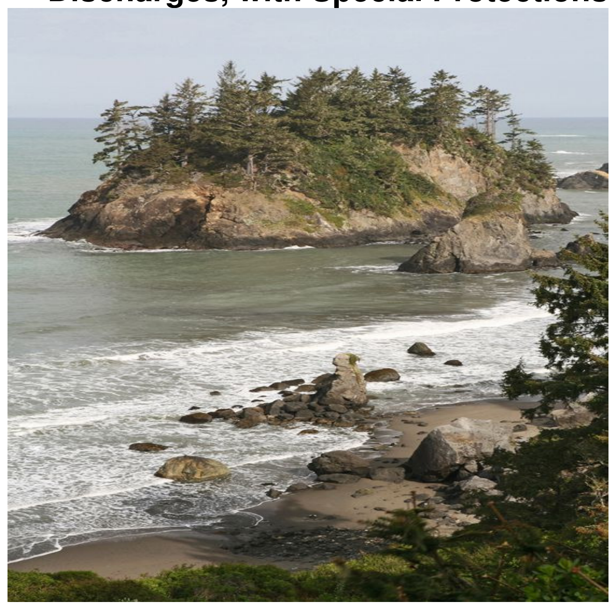

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S.0 SUMMARY

S.1 INTRODUCTION

This program final environmental impact report (FEIR) has been prepared to evaluate the potential environmental effects of the adoption and implementation of the proposed statewide General Exception to the Ocean Plan waste discharge prohibition and Special Protections pursuant to Public Resources Code (PRC) 36602(d)(6) and PRC 36700(f) and the related California Water Code (CWC) sections, included in Appendix 10 of this FEIR. The Regional Water Boards would implement special protections when issuing required permits for discharges into Areas of Special Biological Significance (ASBS).

This FEIR has been prepared in accordance with the requirements of the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000 *et seq*.) and the State CEQA Guidelines (Title 14, Section 15000 *et seq*. of the California Code of Regulations). As specified in Section 15367 of the State CEQA Guidelines, the public agency that has principal responsibility for carrying out or approving a project is the lead agency for CEQA compliance. For purposes of the proposed project, the California State Water Board is lead agency under CEQA. As stated in Section 15123(a) of the State CEQA Guidelines "[a]n EIR shall contain a brief summary of the proposed action and its consequences. The language of the summary should be as clear and simple as reasonably practical." As required by the State CEQA Guidelines, this summary must include:

(1) a summary description of the proposed project;
(2) a synopsis of environmental impacts and recommended mitigation measures (see the table at the end of this chapter);
(3) identification of the alternatives evaluated; and
(4) a discussion of the areas of controversy associated with the proposed project.

The Public Resources Code defines six categories of Marine Managed Areas, one of which are State Water Quality Protection Areas. A State Water Quality Protection Area is a "marine or estuarine area designated to protect marine species or biological communities from an undesirable alteration in natural water quality…." The Public Resources Code further states that in State Water Quality Protection Areas "waste discharges shall be prohibited or limited by the imposition of special conditions" in accordance with the California Water Code and implementing regulations, including, but not limited to, the California Ocean Plan (Ocean Plan). Areas of special biological significance (ASBS) "are a subset of state water quality protection areas, and require **special protection** as determined by the State Water Board pursuant to the California Ocean Plan...." (emphasis added).

The Ocean Plan states that: "Waste shall not be discharged to areas designated as being of special biological significance. Discharges shall be located a sufficient distance from such designated areas to assure maintenance of natural water quality conditions in these areas." This absolute discharge prohibition in the Ocean Plan applies unless an "exception" is granted.

A survey of ASBS in 2003 recorded 1,658 outfalls, primarily storm water and nonpoint sources, into ASBS. On October 18, 2004, the State Water Board notified applicants that they must cease storm water and nonpoint source waste discharges into ASBS or request an exception under the Ocean Plan. The State Water Board has received 27 applications from nonpoint source dischargers and National Pollutant Discharge Elimination System (NPDES) permitted storm water dischargers for an exception to the Ocean Plan prohibition against waste discharges into ASBS.

Stringent terms, prohibitions, and special conditions have been proposed by State Water Board staff that, if adopted, will comprise the limitations on point source storm water and nonpoint source discharges, providing Special Protections for marine aquatic life and natural water quality in ASBS. These Special Protections are proposed for adoption by the State Water Board as conditions for an Ocean Plan Exception. The requirements in the proposed Special Protections may be summarized generally to eliminate dry weather runoff, ensure that wet weather runoff does not alter natural water quality in the ASBS, and require that adequate monitoring be conducted to determine if natural water quality and the marine life beneficial use is protected.

Baseline biological information indicates that functioning marine communities persist in ASBS, but there is some inconclusive evidence that shows biota near discharges has a different species composition than areas away from discharges. Baseline water quality data indicates that wastes are present in storm water runoff into ASBS, but that waste concentrations vary considerably. Many, but not all, storm water runoff samples met various Ocean Plan Table B instantaneous maximum objectives. Receiving water samples showed lower in concentrations of Table B metals than discharges. Additional monitoring is required to fully evaluate compliance with the prohibitions and conditions in the Special Protections.

S.2 TYPE OF EIR

This FEIR is a program EIR intended to provide information at a more general level of detail on the potential impacts of implementing the proposed project. As described in detail in Chapter 2, "Project Description," the project involves the adoption and implementation of special protections and a series of specific exceptions to the waste discharge prohibition that may be characterized as one large project and are related as individual activities carried out under the same authority and having similar environmental effects which can be mitigated in similar ways. Subsequent project-level CEQA compliance and environmental analysis at a regional or local level may be required.

S.3 PROJECT OBJECTIVES

Based on the requirements of PRC § 36602(d)(6) and PRC § 36700(f), the California Ocean Plan, CWC § 13170.2, and in the context of other state laws relating to the ASBS waste discharge prohibition and water quality, the State Water Board has identified the following objectives for the proposed project:

► In accordance with the requirements of the California Ocean Plan, adopt a statewide general exception, with conditions for a specified group of dischargers who have applied for an exception, that is consistent with other provisions of the Porter-Cologne Water Quality Control Act (Porter-Cologne) and related state water quality control plans and policies adopted by the State Water Board.

► Adopt statewide conditional Special Protections to comply with Section 13160 of the California Water Code[1].

► Help to ensure that marine life and beneficial uses of the state's Areas of Special Biological Significance waters are protected from waste discharges.

► Ensure that General Exception project and conditional Special Protections consider economic costs, practical considerations for implementation, and technological capabilities existing at the time of implementation.

The conditions in the Special Protections will assure protection of beneficial uses while allowing the continuation of essential public services, including flood control, slope stability, erosion prevention, maintenance of the natural hydrologic cycle between terrestrial and marine ecosystems, public health and safety, public recreation and coastal access, commercial and recreational fishing, navigation, and essential military operations (national security).

The costs associated with compliance with the Special Protections are less than compliance with the Ocean Plan's standing ASBS absolute waste discharge prohibition. The environmental impacts associated with compliance with the Special Protections are less than significant and the Special Protections will have a long term positive impact on protecting water quality and marine life.

S.4 PROJECT CHARACTERISTICS

The State Water Board proposes to adopt a General Exception and special protections that establish minimum requirements for the permitting, monitoring, and continued operation of selected point and non-point discharges, as required by the California Ocean Plan. The Special Protections allow responsible for these discharges to avoid

[1] State Water Board's duty under 13160 to implement the Federal Clean Water Act

having to cease discharge flows and to comply with the applicable requirements of the Ocean Plan. Both the proposed General Exception and Special Protections are elements of the proposed project analyzed in this EIR. The proposed conditional exception would impose new requirements on existing discharges. See Chapter 3.0, “Regulatory Setting,” for more information on the existing regulatory setting at the regional and local levels.

The proposed Special Protections have been drafted to address the requirements identified in the Ocean Plan and are proposed to be adopted by the State Water Board in accordance with regulations for implementation of the Environmental Quality Act of 1970[2]. The text that follows describes the major elements of the proposed general exception as they relate to the potential for the project to have an impact on the ocean environment. Section references are references to specific sections in the proposed project and special protections, which are included in Appendix 10 of this EIR.

S.4.1 Proposed Project New Statewide Exception to the Ocean Plan for ASBS Waste Discharges, with Special Protections

The State Water Board proposes to adopt a General Exception to the California Ocean Plan for ASBS Waste Discharge Prohibition for Storm Water and Nonpoint Source Discharges for the Responsible Parties identified herein and a statewide conditional Special Protections that establish minimum requirements for the permitting, monitoring, and operation of these select discharges. The Special Protections allow responsible parties to discharge waste into ASBS without having to cease discharging natural flows. The Responsible Parties must comply with the applicable minimum requirements set forth in the terms and conditions of the Special Protections. Both elements are proposed for adoption as the project analyzed in this EIR.

In some cases, such as monitoring and inspections, the proposed project would impose new requirements on existing discharges. In other cases, elements of the special protections may already be in use but may vary around the state (i.e. regional monitoring programs). See Chapter 3.0, “Regulatory Setting,” for more information on the existing regulatory setting at the regional and local levels, including examples of regulations from representative municipalities in the state, presented for comparative purposes.

The proposed Special Protections have been drafted to comply with state law and address the requirements identified in the Ocean Plan related to the waste discharge prohibition.

[2] Cal Public Resources Code §§ 21000 et.seq.; Cal. Code Regs. tit. 14, §§ 15000 et. Seq; Cal, Code Req. tit. 23, §§ 3720 et. Seq.

S. 4.2 IMPLEMENTATION OF PROPOSED STATEWIDE EXCEPTION AND SPECIAL PROTECTIONS

As required by the Ocean Plan, the implementation of new statewide Special Protections would commence 6 months after the General Exception is adopted by the State Water Board. The State Water Board would implement these requirements as conditions for applicability of the General Exception. The special protections would require actions to be completed by the Responsible Party. Compliance would be overseen by the State Water Board and the Regional Water Boards as part of the permitting process for discharges of waste into waters of the state. Local agencies (e.g., county and city departments and independent districts) would continue to be required to comply with local basin plans and local ordinances, consistent with existing law. It is also important to note that the proposed General Exception and Special Conditions would not prevent Regional Water Boards or local agencies from maintaining and adopting additional monitoring requirements that are more protective of the environment and public health than those set forth in the proposed Special Protections would constitute the minimum requirements for existing discharges identified in the General Exception located throughout the state. Failure to comply with the minimum statewide requirements could result in enforcement pursuant to Chapters 4 or 5 of Division 7 of the California Water Code. As a result, the responsible party could be required to cease the discharge, submit additional monitoring results, or could be subject to mandatory minimal penalties for each violation per day as determined by the Regional Water Board[3].

S.5 ALTERNATIVES

The State CEQA Guidelines (Section 15126.6) require that an EIR describe a range of reasonable alternatives to the project that could feasibly attain the basic objectives of the project and avoid and/or lessen the significant environmental effects of the project. The State Water Board has identified four alternatives for analysis in this EIR:

► No Action (No-Project Alternative i.e., No Exception)
► Amend Ocean Plan (Prescriptive Alternative)
►Implement Individual Exceptions for each of the 27 Applicants
► Implement a General Exception for the 27 Applicants (preferred alternative)

Section 4.0 of this FEIR provides a comparative analysis of the proposed project and the four identified alternatives. Other alternatives were considered but, for various reasons, have been rejected from further consideration in this EIR. These alternatives are described in Section 4.0, "Alternatives."

[3] Cal. Water Code § 13385

S.5.1 NO-PROJECT ALTERNATIVE: NO ACTION (i.e., No Exception)

The Ocean Plan discharge prohibition is intended to prevent undesireable alterations of natural water quality. Water Code section 13301 authorizes issuance of a Cease and Desist Order (CDO) for violation or threatened violation of a discharge prohibition in a water quality control plan. The Regional Boards enforce the water quality standards and prohibitionsand may issue a CDO. There is no requirement that a permit must also be violated. An NPDES permit does not authorize violation of any federal, state, or local law or regulation, water quality standard, or prohibition.

A State Water Board funded study completed in 2003, (SCCWRP 2003) found 1658 discharges into ASBS. Only four of these were subject to Ocean Plan exceptions issued by the State Water Board. A large number of these prohibited discharges were permitted storm water outfalls. Some of the other point source discharges identified included marine laboratories and aquariums. Other sources were not regulated under any permit, including marina and boating activities, pipes draining private property, and bluff seepage most likely contaminated with anthropogenic waste from septic systems.

In January 2006, the California Ocean Protection Council identified addressing ASBS waste discharges as a state priority. The State Water Board has included this as a priority in the 2006 Consolidated Grants Program, specifically in the Ocean Protection portion of the coastal nonpoint source grants.

CEQA requires that the Water Boards consider the “No-Project” alternative. Under this No-Project alternative, the Ocean Plan prohibition against waste discharges into ASBS would continue to apply to all discharges into ASBS. The discharger could comply by terminating the discharge or by relocating the discharge so that the receiving water quality is unaffected. These actions could potentially have far greater impacts on the biological integrity of the ASBS than the discharge itself through demolition, excavation, and construction required to remove the existing discharge and redirect it away from the ASBS. In addition, the impacts on air quality and increased green house gas emissions would also be significant. For those dischargers faced with few practical options, enforcement actions could lead to protracted litigation.

Currently, the 27 applicants applying for this exception provide essential public services, including flood control, slope stability, erosion prevention, and maintenance of the natural hydrologic cycle between terrestrial and marine ecosystems, public health and safety, public recreation and coastal access, commercial and recreational fishing, navigation, and essential military operations (national security).

This alternative would not result in better water quality protection, nor does it benefit the environment, public health and welfare, or the Water Boards’ ability to protect and restore beneficial uses. As a result, staff does not recommend adopting the "No-Project" alternative.

S.5.2 NON-PREFERRED ALTERNATIVE: AMEND OCEAN PLAN

This prescriptive alternative would amend the Ocean Plan, so that discharges authorized by an NPDES storm water permit would be allowed. This would modify the discharge prohibition for point source storm water discharges into ASBS, and would allow discharges authorized by an NPDES storm water permit. Permitted storm water discharges, regardless of the effective date of inclusion under or issuance of the permit, would be allowed as long as their outlets were constructed prior to the effective date of these amendments.

No discharges from new outlets would be allowed. However, this should not be interpreted as a ban on new development adjacent to ASBS. Permitted discharges from new development would be allowed if such development connected to existing outlets (*i.e.*, those installed prior to the effective date); even if those outlets were modified. In other words, storm water conveyances with existing points of discharge could be modified, within the limits of good engineering practices and environmental considerations, and using appropriate control measures (*e.g.,* standard urban storm water mitigation plans) to accommodate the additional flow from new development. Alternatively, if permitted discharges from new outlets are deemed to meet the criteria in Chapter III (I) of the California Ocean Plan (*i.e.*that the discharge will not compromise the protection of ocean waters for beneficial uses, and that the public interest will be served), then the discharger may petition the State Water Board for an individual exception. Therefore, while the prohibition on permitted storm water discharges from new outlets may in some cases result in some limits on growth, such limits would not constitute an absolute ban.

Non-storm water discharges (dry weather flows) through storm water conveyances can contribute significant flows and pollutants and may include landscape irrigation overflow, groundwater pumping, illicit dumping, illicit connections, individual car wash water and other discharges. Non-storm water discharges, except those associated with emergency fire fighting, would be prohibited into ASBS under this alternative. Implementation of this prohibition would be within three years of the effective date of the California Ocean Plan amendment. Dischargers would be required to specifically address the prohibition of non-storm water discharges into ASBS in their Storm Water Management Plan/Program (SWMP) for MS4 dischargers or Storm Water Pollution Prevention Plan (SWPPP) for industrial storm water dischargers. The SWMP or SWPPP would describe the measures by which non-storm water discharges would be ultimately prevented from entering an ASBS, and interim measures that would be employed to reduce non-storm water flows until the ultimate measures are implemented.

Storm water (wet weather) runoff would not be permitted to cause or contribute to an exceedance of the California Ocean Plan's water quality objectives. To accomplish this State Water Board staff would propose an iterative process with an accelerated schedule (as compared to non-ASBS permit areas). All dischargers would be required to submit their revised SWMP or SWPPP to the Regional Water Board within six months of the effective date of the approved amendments. The SWMP or SWPPP would be required to address discharges into ASBS, and how pollutants would be reduced in runoff entering these ASBS through the implementation of BMPs. The BMPs will be described in the SWMP or SWPPP with a schedule for implementation. The SWMP or SWPPP would be subject to the approval of the Regional Water Board. The schedule must be developed to ensure BMPs are implemented as soon as practicably possible.

If the results of water quality monitoring indicate discharges are causing or contributing to exceedance(s) of applicable water quality objectives, this alternative would require the discharger to submit a report to the Regional Water Board within 30 days. That report must describe BMPs that are currently being implemented, BMPs that are planned for in the SWMP or SWPPP, and additional BMPs that may be added to the SWMP or SWPPP. The report shall include an implementation schedule. The Regional Water Board may require modifications to the report. Within 30 days following approval of the report by the Regional Water Board, a discharger would then revise its SWMP or SWPPP to incorporate any new or modified BMPs that have been and will be implemented, the implementation schedule, and any additional monitoring required. So long as the dischargers were complying with the procedures described above and were implementing the revised SWMP or SWPPP, the dischargers would not have to repeat the same procedure for continuing or recurring exceedances of the same water quality objective unless directed by the Regional Water Board to develop additional BMPs.

Effluent and receiving water monitoring results are valuable in evaluating source reduction of toxic pollutants. Monitoring results can also be used to develop and adjust management plans where necessary, implement additional source controls and other best management practices to reduce the discharge of the pollutants, and determine compliance with water quality objectives. Effluent and receiving water monitoring would be recommended as part of amendments to the California Ocean Plan. Minimum monitoring would include effluent flow measurements, visual observations for trash, and receiving water monitoring of chronic toxicity, indicator bacteria analysis, measurements of bioaccumulative impacts through chemical analysis of mussel (*e.g.*, mussel watch) or sand crab tissue analysis, and an intertidal and/or subtidal benthic community analysis. These minimum monitoring requirements would not preclude the State Water Board or

Regional Water Boards from imposing additional monitoring requirements as well. For example, for those dischargers operating under the general industrial storm water NPDES permit, they would also be required to conduct the effluent monitoring required under that permit in addition to the monitoring requirements being proposed herein.

Chronic toxicity tests on critical life stages of three kinds of marine organisms (fish, invertebrate, and plant species) on receiving water samples would be required during a minimum of two storm events. Except for the minimum sampling from two storms for chronic toxicity testing, the Regional Water Board would determine all other sample number, frequency, locations, and monitoring details. In making determinations regarding sample number, sampling frequency, sample locations, and other monitoring details the Regional Water Board would consider the size and characteristics of the watershed contributing to the discharges. The Regional Water Board would also have the option to relieve the permittee of receiving water self-monitoring requirements (with the exception of chronic toxicity) if the permittee provides support to a regional monitoring program that includes the applicable receiving waters and indicator bacteria, tissue chemistry, and benthic community components.

Staff previously attempted to pursue this approach in 2003, and the State Water Board~~,~~ at that time directed otherwise. Environmental groups and the discharger community were not in favor of this approach. In addition, USEPA did not support this approach. An attempt to amend the Ocean Plan may, again, engender major resistance from stakeholders.

S.5.3 NON-PREFERRED ALTERNATIVE: Implement Individual Exceptions for Each Storm Water and Nonpoint Source Discharger

The State Water Board has adopted seven individual exceptions to date for sewage treatment, desalination brine, public aquarium, and marine lab discharges. State Water Board staff intends to continue the approach of implementing and reviewing individual exceptions for these types of point source discharges, because each facility is sufficiently different to warrant individual exceptions with individual special conditions. Only three marine laboratories/public aquariums remain to be issued exceptions.

There are 27 applicants for an Ocean Plan exception being addressed by this proposed exception. These applicants have a variety of activities but all primarily have in common permitted storm water or nonpoint source discharges. As such, the same special conditions and prohibitions are generally applicable to all of these entities. Granting individual exceptions for each entity would entail developing, noticing, and adopting an individual CEQA document and exception for each entity. With current staff resources, it is estimated that such an approach would take at least an additional three years (from the date of this document) to complete. That approach would delay protecting natural water quality in the ASBS during the time it would take to adopt individual exceptions for each of the 27 applicants. Furthermore, adopting individual exceptions for storm water and nonpoint source dischargers would be inefficient, taking up significant staff and Board Member time and resources.

Because this alternative would delay the protection of water quality in ASBS, would be inefficient, and would not provide any advantages, staff does not support this alternative.

S.5.4 PREFERRED ALTERNATIVE: IMPLEMENT A GENERAL EXCEPTION FOR SELECTED DISCHARGERS (PREFERRED ALTERNATIVE)

Under this alternative, the State Water Board would adopt a general exception to the Ocean Plan discharge prohibition that would impose special conditions on the group of 27 storm water and nonpoint source dischargers who have applied for an exception. The proposed conditions could include: cessation of non-essential, non-storm water runoff; maintenance of natural water quality within ASBS, including during precipitation (design storm) events, by limiting wastes in storm water runoff and other activities that would otherwise cause a degradation of ocean water quality in the ASBS; and monitoring water quality and marine aquatic life within ASBS to ensure the protection of beneficial uses over time. Under this alternative, discharges must comply with all other applicable provisions of the Ocean Plan, including those provisions that maintain and protect natural ocean water quality and marine communities from pollution.

For dischargers subject to NPDES permits, prohibitions and special conditions collectively referred to as “Special Protections” for the ASBS, would be implemented through storm water management plans. For nonpoint source dischargers, the Special Protections would be implemented through a WDR, waiver, or conditional prohibition and a pollution prevention plan. All ASBS dischargers would continue to have three major requirements: (1) a continued prohibition of non-storm water discharges and runoff, with only certain exclusions; (2) wet weather runoff controlled so as not to violate “natural ocean water quality” in the ASBS receiving water; and (3) monitoring to ensure protection of beneficial uses. These three requirements of the Special Protections would be incorporated into each applicant’s permit or WDR.

The Special Protections are intended to maintain the natural hydrologic cycle and coastal ecology by allowing the flow of clean precipitation runoff into the ocean, while preserving coastal slope stability and preventing anthropogenic erosion. The 27 applicants for this exception provide essential public services, including flood control, slope stability, erosion prevention, maintenance of the natural hydrologic cycle between terrestrial and marine ecosystems, public health and safety, public recreation and coastal access, commercial and recreational fishing, navigation, and essential military operations (national security). Therefore, the exception and the terms, prohibitions, and special conditions embodied in the Special Protections for ASBS are not only protective of beneficial uses, but are in the public interest as well.

The State Water Board's effort to address storm water and nonpoint source waste discharges into ASBS using the Ocean Plan exception process is nearly complete. Applicants have now applied for exceptions, providing the necessary information for staff to proceed. In addition, the State Water Board has held three public scoping meetings, and several stakeholder meetings, for the exception and has initiated a stakeholder effort to collaborate on ASBS regional monitoring. Continuing with the general exception process for storm water and nonpoint sources would meet statutory and Ocean Plan regulatory requirements; because the process is ongoing, it would be practical and efficient to continue. Discharges authorized by an NPDES permit (and WDRs or waivers for nonpoint sources) would be allowed, but under strict limiting conditions aimed at ensuring protection of receiving water quality and marine life.

This alternative, that proposes to adopt a general exception with the Special Protections for the group of 27 storm water and nonpoint source dischargers who have applied for an exception is the alternative recommended by Staff. The remaining issues and alternatives address conditions associated with this general exception.

Continuing with the General Exception process would meet statutory and regulatory requirements for maintaining compliance with the Ocean Plan. This approach is practical and efficient, and will address all storm water and nonpoint source issues simultaneously. Terms and conditions, or "Special Protections", would be implemented through permits/storm water management plans. The General Exception approach would afford protection to the dischargers from protection from citizen suits, if the dischargers are in compliance with their permits. These permits/SWMPs/SWPPPs must conform to the Special Protections in the exception.

S.6 ENVIRONMENTAL IMPACTS AND MITIGATION

Chapter 6.0 of this FEIR evaluates in detail the environmental impacts that would result from implementation of the proposed project and sets forth mitigation measures required to avoid or reduce environmental impacts. Section 8.0 describes the potential for the proposed project to have growth-inducing impacts and potential cumulative impacts.

S.7 AREAS OF CONTROVERSY AND ISSUES TO BE RESOLVED

Section 15123 of the State CEQA Guidelines requires that a summary of an EIR identify areas of controversy known to the lead agency, including issues raised by agencies and the public. During the public comment period for the notice of preparation/initial study (NOP/IS), and in previous stakeholder meetings, various comments were received regarding the proposed project and Special Protections. In general, areas of potential controversy known to the State Water Board include:

- ASBS comprise 1/3 of the State's coastline. The concept of "special biological significance" recognized that certain biological communities, because of their value or fragility, deserve very special protection that consists of preservation and maintenance of natural water quality conditions. Preliminary findings from the recent submittal of ocean plan exception applications show ocean water quality conditions in many of the 34 ASBS not meeting the Ocean Plan levels necessary for the protection of marine life.

- State law (the Public Resources Code and the California Water Code) recognizes ASBS and the prohibition of waste discharges, and the need to provide special protections for water quality. Many of the ASBS are co-located with Marine Protected Areas (MPAs). The MPA Initiative is a major program of the current administration, being spearheaded by a Blue Ribbon Task Force and the Department of Fish and Game. Protecting water quality in ASBS and MPAs fits as an integral part of that process.

- Preliminary findings from the recent submittal of ocean plan exception applications show runoff to contain toxic levels of constituents, and receiving ocean water in some ASBS at times does not meet water quality objectives for the protection of marine life. Most of the significant discharges into ASBS are permitted storm water runoff (approximately 350). Hence certain developed ASBS are a more manageable microcosm of our greater ocean storm water issues. By focusing on ASBS storm water and certain nonpoint discharges, with comprehensive monitoring and control efforts, we will make measurable progress in solving the last great pollution problem in the coastal ocean.

- The costs associated with compliance with the Special Protections. There will be costs for controls, but there is a set-aside in Prop 84 ($35 million) to address ASBS discharges.

- Regulatory effects – additional workload for Regional Water Board and/or local agency staff that cannot be accommodated within existing budgets, concerns about impairing the ability of local agencies to protect water quality and implement Special Protections.

- ► Property development – concerns about whether siting requirements and Special Protections absolute restrictions on “no new outfalls” and discharge points to ASBS will limit property development.

  These issues were considered in the preparation of this FEIR and, where appropriate, are addressed in the environmental impact analysis presented in Chapter 6.

Granting the general exception will not violate federal antidegradation requirements because water quality will not be lowered, but rather, will be improved within the ASBS affected. Further, adoption of the General Exception will not violate the State Water Board’s antidegradation policy (SWRCB 1968) since water quality conditions are anticipated to improve; the discharges will not unreasonably affect present and anticipated beneficial uses; the discharge will not result in water quality lower than that prescribed in the Ocean Plan; and beneficial uses will be protected and potential impacts will be less than significant with mitigation incorporated.

It is anticipated that the applicants identified in this General Exception project will implement various individual or collaborative projects to comply with the terms and conditions or “Special Protections.” As part of the scoping and environmental analysis conducted for the General Exception project, project types identified include: Low Impact Development (LID); dry-weather flow diversions; and Best Management Practices (BMPs), such as Pollution Prevention BMPs and Treatment BMPs, such as infiltration basins and Gross Solids Removal Devices (GSRDs).

S.8 PUBLIC PARTICIPATION AND ADDITIONAL STEPS IN THE CEQA REVIEW PROCESS

This FEIR is being circulated to local, state, and federal agencies involved with the project and is being made available to interested organizations and individuals who may wish to review and comment on the report. The public review period for the DEIR began on January 18, 2011, and ended on May 20, 2011. During that period, written comments on the environmental document were sent to the State Water Board at the following address:

Ms. Jeanine Townsend, Clerk to the Board
State Water Resources Control Board
Division of Water
1001 I Street, 24th Floor
Sacramento, CA 95814

Copies of the FEIR can be reviewed at the following locations:

State Water Resources Control Board
1001 I Street
Sacramento, CA 95814
(916) 341-5280

The FEIR is available on the State Water Board's Web site at:
http://www.waterboards.ca.gov/water_issues/programs/ocean/asbs.shtml.

Following the close of the public comment period, the State Water Board prepared this final EIR (FEIR) that provides responses to comments on environmental issues addressed in the FEIR. Proposed responses to comments will be circulated to public agencies for review. A public hearing on the FEIR will be held by the State Water Board in the hearing room at the California Environmental Protection Agency building, 1001 I Street, Sacramento, California. Public comments on the FEIR will be accepted at this hearing before the State Water Board decides whether to certify the EIR and approve the proposed project.

1.0 INTRODUCTION

The State Water Resources Control Board (State Water Board), under its Resolutions No. 74-28, No. 74-32, and No.75-61, designated certain Areas of Special Biological Significance (ASBS) in the adoption of water quality control plans for the control of wastes discharged to ocean waters. To date, thirty-four coastal and offshore island sites have been designated ASBS. The names of these ASBS were changed by the State Water Board in April 2005 (Resolution No. 2005-0035).

Since 1983, the California Ocean Plan (Ocean Plan) has prohibited the discharge of both point and nonpoint source waste to ASBS, unless the State Water Board grants an exception. The Ocean Plan allows the State Water Board to grant exceptions to plan requirements where the State Water Board determines that the exception "will not compromise protection of ocean waters for beneficial uses, and, [t]he public interest will be served." Prior to granting an exception, the State Water Board must hold a public hearing and comply with the California Environmental Quality Act, Public Resources Code §21000 et seq. (CEQA). In addition, the United States Environmental Protection Agency must concur.

ASBS are also accorded special protection under the Marine Managed Areas Improvement Act (Act), Public Resources Code §36600 et seq. Under the Act, ASBS are a subset of state water quality protection areas and, as such, "require special protection as determined by the [State Water Board]" pursuant to the Ocean Plan (Pub. Resources Code §36700(f)). In all state water quality protection areas, waste discharges must be prohibited or limited by special conditions, in accordance with state water quality law, including the Ocean Plan (*Id.* §36710(f)).

The Public Resources Code (PRC) defines six categories of Marine Managed Areas (MMAs). These six categories are Marine Reserves, Marine Parks, Marine Conservation Areas, Marine Recreation Management Areas, Marine Cultural Preservation Areas, and State Water Quality Protection Areas (SWQPAs). Under state law the Reserves, Parks and Conservation Areas are further categorized as Marine Protected Areas (MPAs).

The PRC states that ASBS are a subset of SWQPAs and require special protection as determined by the State Water Board pursuant to the Ocean Plan and the California Thermal Plan. Specifically, PRC section 36700 (f): "Areas of special biological significance are a subset of state water quality protection areas, and require special protection as determined by the State Water Resources Control Board pursuant to the Ocean Plan adopted and reviewed pursuant to Article 4 (commencing with Section 13160) of Chapter 3 of Division 7 of the Water Code and pursuant to the Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (California Thermal Plan) adopted by the state board."

Section 36710(f) of the PRC states as follows: "In a state water quality protection area, waste discharges shall be prohibited or limited by the imposition of special conditions in accordance with the Porter-Cologne Water Quality Control Act (Division 7 (commencing with Section 13000) of the Water Code) and implementing regulations, including, but not limited to, the Ocean Plan adopted and reviewed pursuant to Article 4 (commencing with Section 13160) of Chapter 3 of Division 7 of the Water Code and the Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (California Thermal Plan) adopted by the state board. No other use is restricted." This language replaced the prior language that required point sources into ASBS to be prohibited or limited by special conditions, but allowed nonpoint sources to be controlled to the extent practicable. In other words, the absolute discharge prohibition in the Ocean Plan is maintained, unless an exception is granted.

It is important to note that many ASBS/SWQPAs occupy the same geographic areas as other State MMAs, including many MPAs. Furthermore, there are many ASBS that overlap Federal MPAs (e.g., National Marine Sanctuaries) and as of March 6, 2009, are now part of the National System of Marine Protected Areas.

The discovery of ASBS discharge prohibition violations began with the Irvine Coast ASBS, co-located with Crystal Cove State Park. On November 16, 2000, the Santa Ana Regional Water Quality Control Board (Regional Water Board) issued a cease and desist order (CDO) to the Irvine Company, the California Department of Transportation (Caltrans), and the California Department of Parks and Recreation. The CDO contains findings that the dischargers were violating or threatening to violate the discharge prohibition contained in the California Ocean Plan against discharges to the Irvine Coast ASBS. Caltrans petitioned the State Water Board to review the CDO. On April 26, 2001, the State Water Board decided Caltrans was in violation of the Ocean Plan ASBS discharge prohibition in that:

- there are waste discharges from Pacific Coast Highway,
- discharges on the beach above the high tide line do constitute discharges to the ASBS,
- the Ocean Plan does in fact regulate the discharge of wastes through storm water conveyances, and
- coverage under Caltrans' statewide NPDES permit for storm water discharges does not relieve the discharger from complying with the Ocean Plan prohibitions on discharges into the ASBS.

This finding prompted the Board to fund the Southern California Coastal Water Research Project (SCCWRP) to perform a statewide survey to assess the extent of these storm water and nonpoint source discharges. In SCCWRP, working with the

State Water Board's Ocean Unit, found 1,654 discharges to potentially be in violation (SCCWRP 2003).

To address these issues, on October 18, 2004, the State Water Board notified responsible parties to cease storm water and nonpoint source waste discharges into ASBS or to request an exception under the Ocean Plan. Several responsible parties submitted requests, or conditional requests, for exceptions. Subsequently, the State Water Board provided general instructions for exception application packages via its website. The State Water Board sent letters (in a few cases later in 2005) to responsible parties, providing specific instructions and a deadline for submission of the application package by May 31, 2006.

The State Water Board has received 27 applications for the general exception to the Ocean Plan prohibition against waste discharges to ASBS. The applications were filed by permitted storm water dischargers and nonpoint source dischargers, who are identified in Table 1.

The Ocean Plan also states that "The State Board may, in compliance with the California Environmental Quality Act, subsequent to a public hearings, and with the concurrence of the U. S. Environmental Protection Agency, grant exceptions where the Board determines: a) the exception will not compromise protection of ocean waters from beneficial uses, and b) the public interest will be served." In order not to compromise beneficial uses, natural water quality must be maintained in an ASBS. Examples of public interests are marine research, education, and flood control. The exception process, in compliance with the Ocean Plan, is the mechanism by which the Special Protections for the ASBS may be instituted.

The Project title is "Exception to the California Ocean Plan (Ocean Plan) for the City of Carmel-by-the-Sea, Connolly-Pacific Company, Department of Parks and Recreation, California Department of Transportation (Caltrans), U.S. Department of Defense (Air Force), Humboldt County, Humboldt Bay Harbor District, Irvine Company, City of Laguna Beach, Los Angeles County, City of Malibu, Marin County, City of Monterey, Monterey County, City of Pacific Grove, Pebble Beach Company, City of Newport Beach (and on behalf of the Pelican Point Homeowners), U.S. Department of Interior (Point Reyes National Seashore), City of San Diego, San Mateo County, Santa Catalina Island Company (and on behalf of the Santa Catalina Island Conservancy), The Sea Ranch Association, City of Trinidad, Trinidad Rancheria, U.S. Department of Interior (Redwoods National and State Park), and U.S. Department of Defense (Navy) storm water and nonpoint source discharges into ASBS. The following ASBS are included in this exception: Redwoods National Park, Trinidad Head, King Range, Saunders Reef, Del Mar Landing, Jughandle Cove, Gerstle Cove, Point Reyes Headlands, Duxbury Reef, James V. Fitzgerald, Año Nuevo, Pacific Grove, Carmel Bay, Point Lobos, Julia Pfeiffer Burns, Salmon Creek Coast, Laguna Point to Latigo Point, San Nicolas Island

and Begg Rock, Northwest Santa Catalina Island, Western Santa Catalina Island, Southeast Santa Catalina Island, Heisler Park, Robert E. Badham, Irvine Coast, La Jolla, and San Clemente Island. See Table 1. below.

Table 1. Applicants and Contact Persons

Applicant	Applicant Contact Person(s)
Carmel-by-the-Sea, City of	Ms. Heidi Burch, Assistant City Administrator Carmel-by-the-Sea City Hall P.O. Box CC Carmel-by-the-Sea, CA 93921
Connolly-Pacific Company	Mr. Ralph Larison Connolly-Pacific Company 1925 Pier D Street Long Beach, CA 90802
Department of Parks and Recreation	Mr. Theodore Jackson, Deputy Director Park Operations California Department of Parks and Recreation P.O. Box 942896 Sacramento, CA 94296-0001
Department of Transportation (Caltrans)	Mr. Scott McGowen Chief Environmental Engineer Division of Environmental Analysis Department of Transportation 1120 N Street, MS-27 Sacramento, CA 95814
Humboldt County	Ms. Ann Glubczynski, Environmental Analyst Department of Public Works County of Humboldt 1106 Second Street Eureka, CA 95501-0579
Humboldt Bay Harbor District	Mr. David Hull, Chief Executive Officer Humboldt Bay Harbor Recreation and Conservation District P.O. Box 1030 Eureka, CA 95502-1030
Irvine Company	Mr. Sat Tamaribuchi, Vice President Environmental Affairs The Irvine Company 550 Newport Center Drive P.O. Box 6370 Newport Beach, CA 92658-6370
Laguna Beach, City of	Mr. Will Holoman, Senior Water Quality Analyst City of Laguna Beach

Applicant	Applicant Contact Person(s)
	505 Forest Avenue Laguna Beach, CA 92651
Los Angeles County	Mr. Donald L. Wolfe, Director Department of Public Works County of Los Angeles 900 South Fremont Avenue Alhambra, CA 91803-1331
Malibu, City of	Mr. Jim Thorsen, City Manager City of Malibu 23815 Stuart Ranch Road Malibu, CA 90265-4861
Marin County	Ms. Elizabeth Lewis, Storm Water Manager Department of Public Works County of Marin P.O. Box 4186 San Rafael, CA 94913-4186
Monterey, City of	Mr. Fred Meurer, City Manager City of Monterey, City Hall Monterey, CA 93920
Monterey County	Ms. Elizabeth Krafft, Program Manager Monterey County Water Resources Agency P.O. Box 930 Salinas, CA 93902
Newport Beach, City of	The Honorable Steven Rosansky, Mayor City of Newport Beach, City Hall 3300 Newport Blvd. Newport Beach, CA 92658-8915
Newport Beach, City of, and on behalf of the Pelican Point Homeowners	Ms. Terri L. Vaccher, CCAM The Merit Companies Pelican Point Community Association 1 Polaris Way, 100 Aliso Viejo, CA 92656-5356
Pacific Grove, City of	Ms. Celia Perez Martinez, Public Works Superintendent City of Pacific Grove 2100 Sunset Drive Pacific Grove, CA 93950
Pebble Beach Company and on behalf of the Pebble Beach Stillwater Yacht Club	Mr. Mark Stilwell Executive Vice President and General Council Pebble Beach Company P.O. Box 1767 Pebble Beach, CA 93953
San Diego, City of	Mr. Jay Goldstone, Chief Operating Officer City of San Diego

Applicant	Applicant Contact Person(s)
	2392 Kincaid Road San Diego, CA 92101
San Mateo County	Mr. Thomas F. Casey, III County Counsel Hall of Justice and Records County of San Mateo 400 County Center, 6th Floor Redwood City, CA 94063-1661
Santa Catalina Island Company, and on behalf of the Santa Catalina Island Conservancy	Mr. Michael B. Whitby Director Real Estate Planning Santa Catalina Island Company P.O. Box 737 Avalon, CA 90704
The Sea Ranch Association	Mr. Bill Weimeyer, Director of Compliance and Environmental Management The Sea Ranch Association 975 Annapolis Road The Sea Ranch, CA 95497-0016
Trinidad, City of	The Honorable Stan Binnie, Mayor City of Trinidad 409 Trinity Street, P.O. Box 390 Trinidad, CA 95570
Trinidad Rancheria	Mr. Garth Sundberg Tribal Chair Trinidad Rancheria P.O. Box 630 Trinidad, CA 95570
U.S. Dept. of Interior, Point Reyes National Seashore	Mr. Don L. Neubacher, Superintendent United States Department of the Interior National Park Service Point Reyes National Seashore Point Reyes, CA 94956
U.S. Dept. of Interior, Redwoods National and State Park	Mr. Steve W. Chaney, Superintendent Redwood National and State Parks 1111 Second Street Crescent City, CA 95531
U.S. Dept. of Defense, Air Force, Pillar Point	Ms. Beatrice L. Kephart, Chief Environmental Flight Department of the Air Force 30 CES/CEV 1028 Iceland Avenue Vandenberg AFB, CA 93437-6010
U.S. Dept. of Defense, Navy, San Nicolas Island	Captain James J. McHugh Environmental Division Department of the Navy

Applicant	Applicant Contact Person(s)
	Naval Base Ventura County Complex 311 Main Road, Building 1 Point Mugu, CA 93042
U.S. Dept. of Defense, Navy, San Clemente Island	Mr. Brian Gordon, Water Program Director Department of the Navy 33000 Nixie Way, Building 50, Suite 336 San Diego, CA 92147

1.1 DEFINITION OF THE PROJECT UNDER CEQA

The proposed project under CEQA is the adoption and implementation of the proposed General Exception and a statewide Special Protections that establish minimum requirements for the permitting, monitoring, and continued operation of selected point and non-point discharges, as required by the California Ocean Plan (the related California Water Code section, included in Appendix 10).

The proposed General Exception would be adopted into the Ocean Plan (Water Quality Control Plan for Ocean Waters of California), in furtherance of legislative policy set forth in Section 1300 of Division 7 of the California Water Code (CWC)(Stats. 1969, Chap. 482). The Regional Water Boards would implement the Special Protections along with those authorized local agencies that would be given authority by the Regional Water Boards to implement and enforce the policy. See Section 2.0 "Project Description," for a more detailed description of the proposed special conditions and the project objectives. The proposed special protection is presented in Appendix 1.

1.2 LEAD AGENGY

Under CEQA, the lead agency is the public agency with primary responsibility over the proposed project. The State Water Board is the lead agency under CEQA for this project because of its regulatory authority over water quality in California and, as specified in the legislation, its lead role in adopting the new General Exception and Special Protections.

1.3 PURPOSE AND FOCUS OF THIS EIR

The purpose of an EIR is to disclose and mitigate impacts of a proposed project and determine feasible alternatives that could reduce those impacts. An EIR does not recommend either approval or denial of a project. An EIR is an informational document used in the planning and decision-making process by the lead agency and responsible and trustee agencies. It assists decision makers in fulfilling CEQA's requirement that they balance the benefits of a proposed project against its environmental effects in deciding whether to carry out a project.

If the lead agency decides to carry out a project addressed in an EIR, it prepares findings of facts that discuss the disposition of each of the significant environmental effects addressed in the EIR. If adverse environmental effects are identified as significant and unavoidable, the proposed project still may be approved by the lead agency if it finds that the social, economic, or other benefits of the project outweigh its unavoidable risks. The lead agency would then prepare a statement of overriding considerations, in addition to the findings, that discuss the specific reasons for approving the project, based on information in the EIR and other information in the record.

The overall purpose of this EIR is to fulfill the following CEQA objectives:

► identify the project's significant environmental effects on the environment,
► indicate the manner in which these significant effects can be mitigated or avoided,
► identify alternatives to the project,
► facilitate public involvement, and
► foster coordination among various governmental agencies.

This EIR is a program EIR intended to provide information at a general (or programmatic) level of detail on the potential impacts of implementing the proposed project. As described by Section 15168(a) of the State CEQA Guidelines, a program EIR is one that may be prepared on a series of actions that can be characterized as one large project and that are related (1) geographically; (2) as logical parts in a chain of contemplated actions; (3) in connection with the issuance of rules, regulations, plans, or other general criteria to govern the conduct of a continuing program; or (4) as individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar effects that can be mitigated in similar ways.

Because the proposed project involves the adoption and implementation of special protections and a series of specific exceptions to the waste discharge prohibition that may be characterized as one large project and are related as individual activities carried out under the same authority and having similar environmental effects which can be mitigated in similar ways, a General Exception with special conditions associated with a statewide (coastal and waters surround islands) program, a program-level EIR is the appropriate framework in which to address the project's environmental impacts. Subsequent, project-level CEQA compliance and environmental analysis at a regional or local level may be required if subsequent actions implementing the Special Protections are proposed that do not fall within the scope of this EIR.

The focus of this FEIR is determining, on a broad scale, the potential environmental impacts of the proposed project and identifying mitigation measures for those impacts that may be significant. Additionally, although not required by CEQA, an analysis of fiscal and economic impacts is included in this EIR to assist in the process that is followed in the adoption of new exceptions to the Ocean Plan regulations.

1.4 EIR SCOPING PROCESS

The State Water Board held numerous meetings and discussions regarding the development of the Special Protections. Participating agencies and stakeholders and Responsible Parties included Natural Resources Defense Council (NRDC) California Coastkeeper, The California Stormwater Quality Association (CASQA), the California Coastal Commission (CCC) and the National Oceanic and Atmospheric Administration (NOAA). During 2005 through 2009, the stakeholders and Responsible Parties reviewed and provided input on the Draft Staff Proposal, Draft Special Protections and, Draft Data Report.

A Notice of Preparation of a Statewide Program Environmental Impact Report and Initial Study were prepared for the project and posted to solicit public input and comment on February 9, 2010. A 30-day public review period on the NOP began February 9, 2010, and ended on March 15, 2010. During that period, the public could submit written comments to the State Water Board on the NOP and issues to be evaluated in the EIR. Comments were received and are posted on the State Water Boards ASBS webpage - http://www.waterboards.ca.gov/water_issues/programs/ocean/asbs_comments031510.shtml.

1.5 ORGANIZATION OF THIE DOCUMENT

This FEIR is organized into the following chapters:

► The Executive Summary summarizes the public review process, provides a brief overview of the project description, and describes the project alternatives.

► Chapter 1.0, “Introduction,” provides an overview of the proposed project and the intent of the Project, identifies the lead agency, describes the purpose and focus of this FEIR, describes the EIR scoping process, outlines the chapters of this FEIR.

► Chapter 2.0, “Project Description,” identifies existing Responsible Parties in violation of the ASBS waste discharge prohibition.

► Chapter 3.0, “Regulatory Setting,” presents an overview of existing government requirements affecting ASBS, representative requirements of Regional Water Boards that are already in effect and environmental protection requirements.

► Chapter 4.0, “Alternatives Analysis,” describes alternatives to the proposed project, including a no-project alternative; identifies the environmentally superior preferred alternative. Alternatives that have been proposed and rejected from further consideration are also identified in the chapter, along with the reasons for their rejection.

- Chapter 5.0, “Environmental Baseline,” includes sections on each of the ASBS environmental issue areas that may be significantly affected as a result of the General Exception Project and Special Protections are analyzed in detail in this EIR. For each issue area (e.g., water quality and marine life), the section describes the existing environmental setting, describes a range of representative conditions, presents thresholds for determining the significance of impacts, evaluates the environmental impacts associated with implementing the project~~,~~.

- Chapter 6.0, “Environmental Analysis,” includes sections on each of the environmental issue areas that may be significantly affected as a result of the Project and Special Protections and are analyzed in detail in this EIR. For each issue area (e.g., water quality and biological resources), the section describes the existing environmental setting and regulatory framework, describes a range of representative conditions, presents thresholds for determining the significance of impacts, and evaluates the environmental impacts associated with implementing the project.

- Chapter 7.0, “Economic Analysis,” discusses potential costs related to the implementation of the Special Protections and potential waste discharge prohibition management practices.

- Chapter 8.0, “Other Statutory Requirements,” presents a discussion of cumulative impacts that could result from implementation of the proposed project in combination with other past, present, and reasonably foreseeable future projects in the area; discusses the potential for growth-inducing impacts; discloses the significant and unavoidable impacts identified in the environmental impact analysis; and describes the significant and irreversible environmental changes associated with implementing the project.

1.7 AGENICIES THAT MAY USE THIS DOCUMENT

Regional Water Boards and local agencies, including counties and cities, may use the information provided in this EIR to assist them in assessing the environmental impacts of their point and non-point source discharges into ASBS, or in modifying local ordinances and land use plans to conform to the proposed special protections.

2.0 PROJECT DESCRIPTION

This chapter describes the proposed statewide general exception and Special Protections for storm water and nonpoint source discharges to ASBS. Prior to that, it provides an overview of information about the existing discharges into ASBS, provides background on the number and locations of these discharges throughout the State, information about the environmental concerns related to ASBS, and an overview of the existing Ocean Plan regulations in the State.

2.1 OVERVIEW OF THE DISCHARGES

PROJECT DESCRIPTION

(General Exception for ASBS Storm Water and Nonpoint Source Discharges, with Special Protections for ASBS)

The parties identified herein seek an exception from the Ocean Plan's prohibition of waste discharges into ASBS. The exception with conditions, if approved, would allow their continued storm water and nonpoint source discharge into the Redwoods National Park, Trinidad Head, King Range, Saunders Reef, Del Mar Landing, Jughandle Cove, Gerstle Cove, Point Reyes Headlands, Duxbury Reef, James V. Fitzgerald, Año Nuevo, Pacific Grove, Carmel Bay, Point Lobos, Julia Pfeiffer Burns, Salmon Creek Coast, Laguna Point to Latigo Point, San Nicolas Island and Begg Rock, Northwest Santa Catalina Island, Western Santa Catalina Island, Southeast Santa Catalina Island, Heisler Park, Robert E. Badham, Irvine Coast, La Jolla, and San Clemente Island ASBS. This would provide additional protections for beneficial uses that are not currently provided.

On October 18, 2004, the State Water Board notified applicants to cease storm water and nonpoint source waste discharges into ASBS or to request an exception under the Ocean Plan. Several applicants submitted requests, or conditional requests, for exceptions. Subsequently, the State Water Board provided general instructions for exception application packages via its web site.[4] The State Water Board sent letters to applicants, providing specific instructions and deadlines for submission of the application packages.

The State Water Board has received 27 applications for the general exception to the Ocean Plan prohibition against waste discharges to ASBS. The applications were filed by permitted and non-permitted storm water dischargers and nonpoint source dischargers, who are identified in Table 2. A map showing locations of the ASBS that are subject to the general exception is provided in Figure 2.1.

[4] http://www.waterboards.ca.gov/water_issues/programs/ocean/asbs.shtml

Table 2. Applicants and ASBS Where Discharges Occur

Applicant	ASBS
Carmel-by-the-Sea, City of	Carmel Bay
Connolly-Pacific Company	Southeast Santa Catalina Island
Department of Parks and Recreation	Redwoods National Park, Trinidad Head, King Range, Jughandle Cove, Gerstle Cove, James V. Fitzgerald, Año Nuevo, Carmel Bay, Point Lobos, Julia Pfeiffer Burns, Laguna Point to Latigo Point, Irvine Coast
Department of Transportation (Caltrans)	Redwoods National Park, Saunders Reef, James V. Fitzgerald, Año Nuevo, Carmel Bay, Point Lobos, Julia Pfeiffer Burns, Salmon Creek Coast, Laguna Point to Latigo Point, Irvine Coast
Humboldt County	King Range
Humboldt Bay Harbor District	King Range
Irvine Company	Irvine Coast
Laguna Beach, City of	Heisler Park
Los Angeles County	Laguna Point to Latigo Point
Malibu, City of	Laguna Point to Latigo Point
Marin County	Duxbury Reef
Monterey, City of	Pacific Grove
Monterey County	Carmel Bay
Newport Beach, City of, and on behalf of the Pelican Point Homeowners	Robert E. Badham and Irvine Coast
Pacific Grove, City of	Pacific Grove
Pebble Beach Company and on behalf of the Pebble Beach Stillwater Yacht Club	Carmel Bay
San Diego, City of	La Jolla
San Mateo County	James V. Fitzgerald
Santa Catalina Island Company, and on behalf of the Santa Catalina Island Conservancy	Northwest and Western Santa Catalina Island
The Sea Ranch Association	Del Mar Landing
Trinidad, City of	Trinidad Head
Trinidad Rancheria	Trinidad Head
U.S. Dept. of Interior, Point Reyes National Seashore	Point Reyes Headlands, Duxbury Reef
U.S. Dept. of Interior, Redwoods National and State Park	Redwoods National Park
U.S. Dept. of Defense, Air Force	James V. Fitzgerald

Applicant	ASBS
U.S. Dept. of Defense, Navy	San Nicolas Island & Begg Rock
U.S. Dept. of Defense, Navy	San Clemente Island

Figure 2.1 Map of ASBS Sites and General Exception Applicants

The mitigating terms and conditions for the general exception are the Special Protections (Appendix 1) that will limit the storm water and nonpoint source waste discharges by the applicants to the affected ASBS. The intent is to ensure that such discharges will be controlled to protect beneficial uses within ASBS and to protect and maintain the natural hydrologic cycle and coastal ecology (e.g., the flow of clean precipitation runoff into the ocean, while preserving coastal slope stability, and preventing anthropogenic erosion). The fundamental requirements include: (1) Cessation of non-storm water runoff, (2) Maintenance of natural water quality within ASBS, including during precipitation (design storm) events, by limiting wastes in storm water runoff and other activities that would otherwise cause a degradation of ocean water quality in the ASBS, and (3) Adequate Monitoring to assure that beneficial uses are protected.

3.0 REGULATORY SETTING

3.1 OVERVIEW OF EXISTING FEDERAL AND STATE REGULATIONS AFFECTING ASBS

This section describes current federal and state laws, the regulations and practices that govern California's coastal water quality in consideration of the Special Protections. These laws, programs, and practices represent the regulatory setting for measuring incremental impacts of the Special Protections.

3.1.1 Porter-Cologne Water Quality Control Act and Federal Clean Water Act

3.1.1.1 <u>Porter-Cologne Water Quality Control Act</u>

The Porter-Cologne Water Quality Control Act (Porter-Cologne) is the State of California's primary water quality control law and addresses two key functions – planning and waste discharge regulation. Porter-Cologne provides the State Water Board and the nine Regional Water Boards the responsibility and authority necessary to protect and enhance water quality in California. Of these nine Regional Water Boards, six have jurisdictions that include the coastal waters of the State.

A. Water Quality Objectives and Water Quality Control Plans

Porter-Cologne requires the State Water Board to adopt state policies for water quality control and statewide water quality control plans, including a plan for ocean waters (Water Code §§13170, 13170.2, 13391). Water quality control plans designate beneficial uses of water, establish water quality objectives to protect those uses, and contain a program to implement the objectives. Statewide water quality control plans and policies are binding on the Regional Water Boards. The plan adopted by the State Water Board to protect ocean waters is designated the Water Quality Control Plan for Ocean Waters of California, referred to as the California Ocean Plan (Ocean Plan). Each Regional Water Board is also required under Porter-Cologne to adopt and implement water quality control plans (basin plans) which recognize the unique characteristics of each region with regard to natural water quality, actual and potential beneficial uses, and water quality problems.

B. Authority to Regulate Point and Nonpoint Sources

Porter-Cologne establishes a program to regulate waste that could affect water quality through waste discharge requirements (WDRs), conditional waivers of WDRs, or prohibitions (see Water Code §§13243, 13263, 13269). The term "Waste" is broadly defined in Porter-Cologne and includes toxic pollutants, as well as other waste substances [Id. §13050(d)]. "Waters of the state" is similarly broadly defined to include all surface waters, including bays and estuaries, and California's coastal ocean waters up to the State's three nautical-mile boundary.

Porter-Cologne also authorizes the Water Boards to investigate water quality and to require waste dischargers to submit monitoring and technical reports (Id. §§ 13267, 13383). In addition, Porter-Cologne gives the Water Boards extensive enforcement authority to respond to unauthorized discharges, discharges in violation of applicable requirements, discharges that cause pollution or nuisance, and other matters. The enforcement options include, among others, cleanup and abatement orders, cease and desist orders (CDOs), and administrative civil liability orders (Id. §§13301, 13304, 13323).

Under Porter-Cologne, all waste discharges, that could affect water quality, including nonpoint source discharges of waste, must be regulated. Nonpoint source (NPS) pollution, unlike point source pollution from industrial and sewage treatment plants, comes from many diffuse sources. Some types of NPS pollution are caused by rainfall or snowmelt moving over and through the ground. As the runoff moves, it picks up and carries away natural and human-made pollutants, depositing them into lakes, rivers, wetlands, coastal waters, and groundwater. NPS pollution may originate from several sources, including agricultural runoff, forestry operations, urban runoff, boating and marinas, active and historical mining operations, atmospheric deposition, and wetlands.

Nonpoint sources in California must be regulated under WDRs, conditional waivers of WDRs, or basin plan prohibitions. However, WDRs need not necessarily contain numeric effluent limits. The state's Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program (NPS Policy) provides guidance regarding the prevention and control of nonpoint source pollutant discharges and enforcement of nonpoint source regulations (e.g., WDRs). In practice, the Regional Water Boards do not usually impose numeric effluent limits on nonpoint pollution sources; rather, they primarily rely on implementation of Best Management Practices (BMPs) to reduce pollution.

3.1.1.2 Federal Clean Water Act

The Water Boards are also required to implement the federal Clean Water Act (CWA). Under section 303(c) of the CWA, the Water Boards adopt water quality standards for waters of the United States. The beneficial use designations and water quality objectives (together with an antidegradation policy) constitute water quality standards for purposes of the CWA (See Clean Water Act § 303(c) (2) (A); 40 C.F.R. §§131.3(i), 131.6). All water quality control plans, which include the water quality standards, must be approved by the U.S. Environmental Protection Agency (U.S. EPA).

Pursuant to Section 402 of the CWA, the Water Boards issue National Pollutant Discharge Elimination System (NPDES) permits. Section 402 of the CWA requires that all point source discharges of pollutants to waters of the United States be regulated under a NPDES permit. Typical discharges that are regulated under NPDES permits include discharges from publicly owned treatment works (POTWs) and industrial facilities. In addition, certain storm water discharges are regulated under the NPDES permit program.

In accordance with Section 401 of the CWA, the Water Boards also assess the potential effects of federally permitted or licensed projects that could harm beneficial uses. Under section 401, the State can issue water quality certifications to ensure that water quality is not degraded due to the action. The Water Boards also implement the total maximum daily load (TMDL) program, which is required under section 303(d) of the CWA.

3.2 CALIFORNIA OCEAN PLAN AND ASBS

The Ocean Plan establishes water quality objectives for California's ocean waters and provides the basis for regulation of wastes discharged into the State's coastal waters through control of point and nonpoint source discharges. The State Water Board adopts the Ocean Plan, and both the State and the six coastal Regional Water Boards implement and interpret the Ocean Plan. The Ocean Plan consists of an Introduction, Sections I thru III, and supporting tables and appendices.

The introduction describes the purpose of the plan, the State Water Board's authority to develop, adopt, and implement the plan, applicable waters, wastes, and discharges, and the principles guiding the development and interpretation of the plan.

Section I identifies the applicable beneficial uses of marine waters including: protection and enhancement of marine life, ASBS, fish migration, fish spawning, shellfish harvesting, rare and endangered species, recreation, industrial water supply, commercial and sport fishing, mariculture, aesthetic enjoyment, and navigation.

Section II presents narrative and numerical water quality objectives adopted by the State Water Board to protect these beneficial uses. Chapter III describes the controls and prohibitions applicable to ocean discharges and the process for preparing waste discharge requirements for permittees discharging into ocean waters.

Section III includes:

- The criteria that each discharger must meet before a new discharge can be permitted,
- Technology based effluent limitations as well as a method for translating water quality objectives into discharge specific water quality based effluent limits,
- The process for nominating and designating ASBS for consideration and approval,
- Discharge prohibitions (e.g., municipal or industrial sludges, bypassing, discharge into ASBS, and others) and general provisions,
- A mandate that requires dischargers to monitor their discharges, and
- Provisions for allowing exceptions to the Ocean Plan under special circumstances, as discussed below.

3.2.1 <u>Areas of Special Biological Significance</u>

Appendix I of the Ocean Plan defines ASBS as those *areas requiring protection of species or biological communities to the extent that alteration of natural water quality is undesirable*. Section II of the Ocean Plan designates the preservation and enhancement of ASBS as a beneficial use of ocean waters.

The State Water Board first established the concept of "areas of special biological significance" in the 1972 Ocean Plan and the Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (Thermal Plan). The coastal Regional Water Boards identified candidate areas and recommended the areas to be designated as ASBS to the State Water Board. Following those recommendations, on March 21, 1974, the State Water Board, in Resolution No. 74-28, Designation of Areas of Special Biological Significance, decided that: *"The list of Areas of Special Biological Significance will be used to identify for planning purposes, those areas where the regional water quality control boards will prohibit waste discharges...."* Thirty-one ASBS were designated at that time. Two more ASBS were designated later in 1974, in Resolution No. 74-32, and in 1975 another ASBS was designated in Resolution No.75-61. As of 2010, there are 34 ASBS.

The most recent amendment to the Ocean Plan that addresses ASBS occurred in 2005 when the State Water Board adopted Resolution No. 2005-0035 to conform to the nomenclature adopted by the Legislature within the Marine Managed Areas Improvement Act, as described in Section 1.3.

3.2.2 <u>Discharge Prohibition into ASBS</u>

Since 1983, the Ocean Plan has prohibited waste discharges to ASBS (SWRCB 1983); however, earlier versions of the Ocean Plan did not. The 1972 Ocean Plan required that waste be discharged *"a sufficient distance from areas designated as being of* *special biological significance to assure maintenance of natural water quality conditions in these areas."* State Water Board guidance issued in the early 1970's advised the Regional Water Boards that sewage or industrial point source discharges that would alter water quality in an ASBS should be prohibited. Nonpoint source waste discharges, including storm water runoff, would be controlled to the extent practicable. At that time, the Water Boards focused primarily on discharges from traditional point sources, such as sewage treatment plants, into ASBS.

The 2005 Ocean Plan, in Section III. E., Implementation Provisions for Areas of Special Biological Significance, states that "*Waste* shall not be discharged to areas designated as being of special biological significance. Discharges shall be located a sufficient distance from such designated areas to assure maintenance of natural water quality conditions in these areas".*

The 2005 Ocean Plan does allow the Regional Water Boards to approve *"limited term"* (i.e., weeks or months) activities as described in Section III. E. Limited-term activities include, but are not limited to, activities such as maintenance/repair of existing boat facilities, restoration of sea walls, repair of existing storm water pipes, and replacement/repair of existing bridges. Limited-term activities may result in temporary and short-term changes in existing water quality. Water quality degradation shall be limited to the shortest possible time. The activities must not permanently degrade water quality or result in water quality lower than that necessary to protect existing uses, and all practical means of minimizing such degradation shall be implemented.

Despite the prohibition against waste discharges into ASBS, a survey identified approximately 1,658 outfalls (SCCWRP 2003). Storm water and nonpoint source discharges make up the majority of the discharges identified. In response, the State Water Board initiated a concerted effort to address the discharges and to bring them into compliance with the Ocean Plan. This effort includes addressing storm water and nonpoint source discharges and developing an exception for these discharges that achieves and maintains the natural water quality of the receiving water in the ASBS. A General Exception for 27 applicants is the subject of this document which focuses on permitted storm water and nonpoint source discharges into ASBS.

Historically, the State Water Board has applied the prohibition to "direct discharges" regardless of whether the discharge represents point or nonpoint source. The prohibition does not apply to upstream discharges to rivers that flow into ASBS. These indirect discharges into naturally occurring streams are regulated under the Basin Plans by the Regional Water Boards to protect downstream beneficial uses.

3.2.3 <u>ASBS and Exceptions to the California Ocean Plan</u>

Section III (I) (1) of the 2005 Ocean Plan states:

> *"The State Board may, in compliance with the California Environmental Quality Act, subsequent to a public hearing, and with the concurrence of the U.S. Environmental Protection Agency, grant exceptions where the Board determines:*
>
> *a. The exception will not compromise protection of ocean waters for beneficial uses, and,*
>
> *b. The public interest will be served."*

In order to initiate the exception process, an applicant must prepare and submit an application requesting an exception to the appropriate Regional Water Board and the State Water Board. The application should include information and data to enable the State Water Board to make the appropriate determination in regard to the request for the exemption and compliance with CEQA.

In order to be granted an exception, the application and supporting documentation must support a finding that the discharge has not resulted in the alteration of natural water quality in the receiving waters. The application must also support a finding that the public interest will be better served by granting the exception. An example of relevant factors might include the degree of environmental damage that would occur if the discharge were moved (e.g., if the discharge were in a particularly fragile area and moving it would cause greater damage than leaving it). When considering an exception, the State Water Board must comply with CEQA in the consideration of environmental impacts, preparation of environmental documents, and comply with Porter-Cologne, the Federal Clean Water Act, and the State Water Board's policies and procedures relating to Water Quality Planning.

If the State Water Board acts to approve an exception, the submittal package and State Water Board documents are submitted to U.S. EPA for concurrence. Although an exception grants permission to discharge into an ASBS, the exceptions are generally subject to review every 3 years during Ocean Plan Triennial Reviews. Exceptions do not function as permits (WDRs or waivers). In order to legally discharge into an ASBS, the discharger must obtain both a permit and an approved exception.

Four ASBS exceptions were issued between 1975 and 1990. These were for the following single point source discharges: (1) the Navy's waste water treatment plant outfall at San Clemente Island, (2) the Humboldt County Resort Improvement District waste water treatment plant outfall at Shelter Cove, (3) the Carmel Sanitary District (currently Carmel Area Wastewater Treatment District) outfall, and (4) the Navy desalination plant discharge at San Nicolas Island. Since 2004, three additional exceptions were issued by the State Water Board (see section 3.4.1 below) for a current total of seven exceptions to allow discharge into an ASBS.

3.3 MARINE MANAGED AREAS IMPROVEMENT ACT

Assembly Bill 2800 (Chapter 385, Statutes of 2000), the Marine Managed Areas Improvement Act, was approved by the Governor on September 8, 2000. This law added sections to the Public Resources Code (PRC) that are relevant to ASBS (36602(d)(6). The act defines six categories of marine managed areas (MMAs). These six categories are marine reserves, marine parks, marine conservation areas, marine recreation management areas, marine cultural preservation areas, and state water quality protected areas (SWQPAs). Section 36700(f) of the PRC defines a SWQPA as "a non-terrestrial marine or estuarine area designated to protect marine species or biological communities from an undesirable alteration in natural water quality, including, but not limited to, areas of special biological significance that have been designated by the State Water Resources Control Board through its water quality control planning process." Section 36710(f) of the PRC stated: "In a state water quality protection area, point source waste and thermal discharges shall be prohibited or limited by special conditions. Nonpoint source pollution shall be controlled to the extent practicable. No other use is restricted." The classification of ASBS as SWQPAs went into effect on January 1, 2003 (without State Water Board action) pursuant to section 36750 of the PRC (SWRCB 1979).

Senate Bill (SB) 512 (Chapter 854, Statutes of 2004) amended the MMAs portion of the PRC, effective January 1, 2005, to clarify that ASBS are a subset of SWQPAs and require special protection as determined by the State Water Board pursuant to the Ocean Plan and the California Thermal Plan. Specifically, SB 512 amended the PRC section 36700 (f) definition of SWQPA to add the following: "Areas of special biological significance are a subset of state water quality protection areas, and require special protection as determined by the State Water Resources Control Board pursuant to the California Ocean Plan adopted and reviewed pursuant to Article 4 (commencing with Section 13160) of Chapter 3 of Division 7 of the Water Code and pursuant to the Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (California Thermal Plan) adopted by the state board."

Section 36710(f) of the PRC was also amended as follows: "In a state water quality protection area, waste discharges shall be prohibited or limited by the imposition of special conditions in accordance with the Porter-Cologne Water Quality Control Act [Division 7 (commencing with Section 13000) of the Water Code] and implementing regulations, including, but not limited to, the California Ocean Plan adopted and reviewed pursuant to Article 4 (commencing with Section 13160) of Chapter 3 of

Division 7 of the Water Code and the Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (California Thermal Plan) adopted by the state board. No other use is restricted."

This language replaced the prior wording stating that point sources into ASBS must be prohibited or limited by special conditions, and that nonpoint sources must be controlled to the extent practicable. In other words, the absolute discharge prohibition in the Ocean Plan stands, unless an exception is granted.

3.4 REGULATORY ACTIONS AND RELATED TECHNICAL EFFORTS

3.4.1 <u>State Water Board Evaluation of Discharges into ASBS</u>

In 2000, the State Water Board received a petition from California Department of Transportation (Caltrans) that questioned the applicability of the ASBS discharge prohibition to storm water discharges. The petition sought review of a CDO issued by the Santa Ana Regional Water Board to the Irvine Company, Caltrans, and the California Department of Parks and Recreation. The CDO found that the dischargers were violating or threatening to violate the prohibition against discharges to the Irvine Coast ASBS. In 2001, the State Water Board adopted Order WQ 2001-08 in which the State Water Board held that the ASBS discharge prohibition in the Ocean Plan applies to storm water discharges. The State Water Board also held that Caltrans coverage under a storm water permit did not relieve the discharger from complying with the Ocean Plan prohibition. These findings prompted the State Water Board to fund a statewide survey by the Southern California Coastal Water Research Project (SCCWRP) to assess the extent of storm water and nonpoint source discharges into ASBS as described in Section 3.2. In 2003, SCCWRP, working with the State Water Board's Ocean Unit, found 1,654 discharges without Ocean Plan exceptions. Waste discharges identified as draining (or having drained) into ASBS include point sources of waste water (fish cleaning stations, marine labs and aquaria, wastewater treatment plants), sanitary sewer system overflows, permitted storm water discharges and associated dry weather flows, and nonpoint sources including marina and boating operations, military operations, septic seepage, and runoff from golf courses and other sources. A majority of the discharges into ASBS were identified as nonpoint source and permitted storm water discharges.

Staff then began the effort to address ASBS waste discharges, where appropriate, under the Ocean Plan exception process. The proposed exceptions generally fell into two categories. The first category consists of individual exceptions for marine laboratory discharges. The second category constitutes a group exception for storm water and nonpoint source runoff discharges into ASBS by identified responsible parties. For the first category, the State Water Board has adopted three individual exceptions for marine lab waste seawater and storm water runoff. The exceptions were for the Scripps Institute of Oceanography (SIO) in La Jolla, USC's Wrigley Institute on Santa Catalina Island, and the UC Davis Bodega Marine Laboratory.

The second category covers entities with storm water and nonpoint source runoff discharges into ASBS. To address these discharges, State Water Board staff sent letters in late 2004 notifying ASBS dischargers that they must cease discharging or apply for an Ocean Plan exception. Another round of letters was sent in August 2005 to those respondents who requested exceptions, further describing the data that must be submitted to proceed with the exception process. For storm water and nonpoint source applicants, the original deadline for submitting that data was May 31, 2006, but the State Water Board staff has allowed late applications to be accepted.

All of these discharges are currently in violation of the Ocean Plan ASBS waste discharge prohibition because they lack an exception. Twenty-seven parties with either nonpoint source or permitted storm water discharges have applied for an exception from the Ocean Plan ASBS waste discharge prohibition. Due to the large number of discharges and responsible parties, staff developed several alternative approaches for addressing these discharges as described in Section 4.0. Alternatives under consideration include no action, relocation of all discharges, and proposing a General Exception which serves as the basis of this document. As described in Section 4.0, staff believes that a general exception is the most effective means to regulate discharges into ASBS.

3.4.2 Natural Water Quality

SIO operates and maintains the outfalls into the La Jolla ASBS. The State Water Board issued the first Ocean Plan exception (after the SCCWRP survey) to SIO (Resolution No. 2004-52). The San Diego Regional Water Board subsequently issued an NPDES Permit to SIO. As part of the SIO exception, State Water Board directed staff to create an ASBS Natural Water Quality Committee (NWQC) to define natural water quality in the San Diego-Scripps ASBS in La Jolla. The NWQC had a three-year mission to advise State Water Board staff regarding impacts of SIO's discharges into an adjoining ASBS. While the committee focused on SIO and other relevant data in the vicinity of SIO, they also recognized the importance of their work in the greater context of the ASBS, Ocean Plan, and storm water issues.

In September 2010 a final report from the NWQC was presented to the State Water Board, which included a definition of Natural Water Quality. The definition states that natural water quality is "That water quality (based on selected physical chemical and biological characteristics) that is required to sustain marine ecosystems, and which is without apparent human influence, *i.e.*, an absence of significant amounts of:

a) man-made constituents (*e.g.,* DDT);

b) other chemical (*e.g.,* trace metals), physical (temperature/thermal pollution, sediment burial) and biological (*e.g.*, bacteria) constituents at levels that have been elevated due to man's activities above those resulting from the naturally occurring processes that affect the area in question; and

c) non-indigenous biota (*e.g.,* invasive algal bloom species) that have been introduced either deliberately or accidentally by man."

The definition also states that: "it is not practical to identify a unique seawater composition as exhibiting *natural water quality*. Nevertheless, the committee believes that it is practical to define an *operational natural water quality for an ASBS*, and that such a definition must satisfy the following criteria:

- it should be possible to define a *reference* area or areas for each ASBS that currently approximate *natural water quality* and that are expected to exhibit the likely natural variability that would be found in that ASBS,

- any detectable human influence on the water quality must not hinder the ability of marine life to respond to natural cycles and processes."

The NWQC's complete definition of Natural Water Quality and their other findings may be found in the Summation of Findings, Natural Water Quality Committee 2006-2009, in Appendix 8.

3.4.3 Storm Water and NPS Discharges

Most of the discharges currently discharging into ASBS are either storm water or nonpoint source discharges. The means by which these discharges are regulated is described below.

A. Storm Water

The NPDES Storm Water Program implemented by the Water Boards has three distinct components – municipal, industrial, and construction.

1) Municipal Discharges

The State Water Board regulates storm water discharges from municipal separate storm sewer systems (MS4s). The MS4 program issued permits in two phases, Phase I and Phase II. Under Phase I, which started in 1990, the Regional Water Boards have adopted NPDES permits for medium (serving between 100,000 and 250,000 people) and large (serving more than 250,000 people) municipalities. Most of these permits are issued to a group of co-permittees encompassing an entire metropolitan area. These permits are reissued as the permits expire. As part of Phase II, the State Water Board adopted a General Permit for the Discharge of Storm Water from Small MS4s (WQ Order No. 2003-0005-DWQ) to provide permit coverage for smaller municipalities, including non-traditional Small MS4s, which are governmental facilities such as military bases, public school campuses, and prison and hospital complexes. The State Water

Board has also adopted a statewide permit which addresses the storm water discharges from the California Department of Transportation (Caltrans) right-of-way.

The MS4 permits require the discharger to develop and implement a Storm Water Management Plan/Program (SWMP) with the goal of reducing the discharge of pollutants to the maximum extent practicable (MEP). MEP is the performance standard specified in Section 402(p) of the CWA. The management programs specify what BMPs will be used to address certain program areas. The program areas include public education and outreach; illicit discharge detection and elimination, construction and post-construction and good housekeeping for municipal operations. MS4 permits also require permittees to reduce the discharge of pollutants so that water quality standards are met. In general, medium and large municipalities are required to conduct chemical monitoring, though small municipalities are not. Also, the Small MS4 General Permit provides that the SWMP must be available for public review and comment, and must be approved by the appropriate Regional Water Board, or its Executive Officer, prior to permit coverage commencing.

2) Industrial Discharges

Under the industrial program, the State Water Board issues a General NPDES Permit that regulates discharges associated with ten broad categories of industrial activities. This Industrial General Permit requires the implementation of management measures that will achieve the performance standard of best available technology economically achievable (BAT) and best conventional pollutant control technology (BCT), and achieve compliance with water quality standards. The permit also requires that dischargers develop a Storm Water Pollution Prevention Plan (SWPPP) and a monitoring plan. Through the SWPPP, dischargers are required to identify sources of pollutants, and describe the means to manage the sources to reduce storm water pollution. For the monitoring plan, facility operators may participate in group monitoring programs to reduce costs and resources.

3) Construction Discharges

The construction program requires dischargers whose projects disturb one or more acres of soil (or whose projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres) to obtain coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit). The Construction General Permit requires the development and implementation of a SWPPP that lists the BMPs the discharger will use to control storm water runoff and the placement of those BMPs. Additionally, the SWPPP must contain a visual monitoring program, a chemical monitoring program for non-visible pollutants to be implemented if there is a failure of BMPs, and a sediment monitoring plan if the site discharges directly to a water body impaired for sediment.

Consistent with federal law (See, 33 U.S.C. §§ 1311(b) (1) (C), 1342(p) (3) (A); *Defenders of Wildlife v. Browner* (9th Cir. 1999) 191 F. 3d 1159, 1165-1166), the Construction General Permit and Industrial General Permit contain provisions requiring compliance with applicable water quality standards.

4) Caltrans

In 1996, Caltrans requested that the State Water Board consider adopting a single NPDES permit for storm water discharges from all Caltrans properties, facilities, and activities, which would encompass both the MS4 requirements and the statewide construction general permit requirements. The State Water Board issued the Caltrans general permit in 1999, requiring Caltrans to control pollutant discharges to the MEP for the MS4s and to the standard of BAT/BCT for construction activities through BMPs. The State Water Board also required Caltrans to implement more stringent controls, if necessary, to meet water quality standards.

B. Nonpoint Sources

Under Porter-Cologne, all waste discharges that could affect water quality must be regulated, including nonpoint source discharges of pollution. Nonpoint source (NPS) pollution, unlike point source pollution from industrial and sewage treatment plants, comes from many diffuse sources. Some types of NPS pollution are caused by rainfall or snowmelt moving over and through the ground. As the runoff moves, it picks up and carries away natural and man-made pollutants, depositing them into lakes, rivers, wetlands, coastal waters, and groundwater. NPS pollution may originate from several sources, including agricultural runoff, forestry operations, urban runoff, boating and marinas, active and historical mining operations, atmospheric deposition, and wetlands.

Nonpoint sources in California must be regulated under WDRs, conditional waivers of WDRs, or basin plan prohibitions. However, WDRs need not necessarily contain numeric effluent limits. The state's NPS Policy provides guidance regarding the prevention and control of NPS pollutant discharges and enforcement of nonpoint source regulations (e.g., WDRs). In practice, the Regional Water Boards do not usually impose numeric effluent limits on nonpoint pollution sources; rather they primarily rely on implementation of management practices to reduce pollution.

In 1998, California began implementing its Fifteen-Year Program Strategy for the Nonpoint Source Pollution Control Program, as delineated in the Plan for California's Nonpoint Source Pollution Control Program (NPS Program Plan). The legal foundation for the NPS Program Plan is the CWA and the Coastal Zone Act Reauthorization Amendments of 1990 (CZARA), and state law. The agencies primarily responsible for the development and implementation of the NPS Program Plan are the State Water Board, the nine Regional Water Boards, and the California Coastal Commission (CCC). Various other federal, state, and local agencies have significant roles in the implementation of the NPS Program Plan.

The NPS Program Plan addresses six categories of nonpoint sources including agriculture, forestry, urban areas, marinas and recreational boating, hydromodification, and wetlands/riparian areas/vegetated treatment systems. For each category, the NPS Program Plan specifies management measures (MMs) and the corresponding management practices. The NPS Program Plan provides five general goals:

- Track, monitor, assess, and report NPS Program activities.
- Target NPS Program activities.
- Coordinate with public and private partners in all aspects of the NPS Program.
- Provide financial and technical assistance and education.
- Implement MMs and associated management practices.

3.5 REGULATORY SETTING BIOLOGICAL RESOURCES

This section addresses biological resources that could be affected with implementation of the proposed project. The information presented is based on literature reviews and a review of existing documentation and research prepared expressly for the project. As explained in the IS, impacts on marine biological resources range from “no impact” to “potentially significant. These issues are addressed in the impact analysis.

Biological resources in California are protected and/or regulated by a variety of federal and state laws and policies. In addition, in many parts of California, planning efforts are underway to conserve local or regional habitat and species. Many regulations applicable to biological resources do not include water quality issues; however, a number do, particularly those relating to fisheries and other aquatic resources. Key regulatory and conservation planning issues applicable to the proposed project are discussed below.

3.5.1 Federal Regulatory Setting

3.5.1.1_Federal Endangered Species Act

Pursuant to the federal Endangered Species Act (ESA, 16 U.S.C. §§ 1531 et. seq.) the U. S. Fish and Wildlife Service (USFWS) and National Oceanic and Atmospheric Administration Fisheries Service (NOAA Fisheries Service), formerly National Marine Fisheries Service (NMFS), have regulatory authority over federally listed species. Under ESA, a permit is required for any federal action that may result in “take” of a listed species. Section 1532 (19) of ESA defines take as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” Under federal regulations, take is further defined to include the modification or degradation of habitat where such activity results in death or injury to wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering.

3.5.1.2 Clean Water Act Section 404

Section 404 of the Clean Water Act (CWA) requires project proponents to obtain a permit from the U.S. Army Corps of Engineers (USACE) before performing any activity that involves the discharge of dredged or fill material into "waters of the United States," including wetlands. Dredge and fill activities range, but involve any activity, such as construction, that results in direct modification (e.g., alteration of the banks, deposition of soils) of an eligible waterway. Waters of the United States include navigable waters, interstate waters, and other waters where the use or degradation or destruction of the waters could affect interstate or foreign commerce, tributaries to any of these waters, and wetlands that meet any of these criteria or that are adjacent to any of these waters or their tributaries. Many surface waters and wetlands in California meet the criteria for waters of the United States. In accordance with Section 401 of the CWA, projects that apply for a USACE permit for discharge of dredged or fill material must obtain water quality certification from the State Water Board or the appropriate Regional Water Board indicating that the project will uphold state water quality standards.

3.5.1.3 National Marine Sanctuaries Act

The National Marine Sanctuaries Act (NMSA) authorizes the Secretary of Commerce to designate and protect areas of the marine environment with special national significance due to their conservation, recreational, ecological, historical, scientific, cultural, archeological, educational, or esthetic qualities as national marine sanctuaries. Day to-day management of national marine sanctuaries has been delegated by the Secretary of Commerce to NOAA's Office of National Marine Sanctuaries. The Channel Islands, Monterey Bay, and Gulf of the Farallones National Marine Sancturaries regulate the discharge of material or matter, including the discharging or depositing from beyond the boundary of the sanctuary any material or other matter that subsequently enters the sanctuary and injures a sanctuary resource or quality (See 15 CFR § 922.72, 922.82, 922.132 for specific regulatory language including exceptions).

3.5.2 State Regulatory Setting

3.5.2.1 California Endangered Species Act

Pursuant to the California Endangered Species Act (CESA), a permit from the California Department of Fish and Game (DFG) is required for projects that could result in take of a plant or animal species that is state listed as threatened or endangered. Under CESA, "take" is defined as an activity that would directly or indirectly kill an individual of a species. Authorization for take of state-listed species can be obtained through a California Fish and Game Code Section 2080.1 consistency determination or a Section 2081 incidental take permit.

3.5.2.2 Section 1600 of the California Fish and Game Code

All diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream or lake in California that supports wildlife resources is subject to regulation by DFG, under Sections 1600–1603 of the California Fish and Game Code. Section 1602 states that it is unlawful for any agency to substantially divert or obstruct the natural flow or substantially change the bed, channel or bank of any river, stream or lake designated by DFG, or use any material from the streambeds, without first notifying DFG of such activity. The regulatory definition of a stream is a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation. DFG's jurisdiction within altered or artificial waterways is based on the value of those waterways to fish and wildlife. Accordingly, a DFG Streambed Alteration Agreement must be obtained for any project that would result in diversions of surface flow or other alterations to the bed or bank of a river, stream, or lake.

3.5.2.3 California Ocean Plan for Areas of Special Biological Significance

Section 13170.2 of the California Water Code directs the State Water Board to formulate and adopt a water quality control plan for ocean waters of California. The State Water Board first adopted this plan, known as the California Ocean Plan, in 1972. Over the years, the plan and Public Resources Code have been amended to bolster the protection of important coastal and marine areas. The California Ocean Plan establishes water quality objectives for California's ocean waters and provides the basis for regulation of wastes discharged into the state's coastal waters. The plan applies to point and nonpoint source discharges and the plan provides numeric and narrative water quality objectives for discharges to marine environments, including bacterial, physical, chemical, biological, and radioactivity standards for offshore water quality. For the most part, these standards, which are intended to protect aquatic resources, are more stringent than those for contact recreation, but are less stringent than those applied to drinking water to protect public health.

Other water quality objectives that provide some protection of biological resources include thresholds established from baseline conditions, such as that dissolved oxygen content shall not be less than 10% of what occurs naturally, as well as the pH shall not be more than 0.2 units from what occurs naturally. Nutrients shall not cause objectionable aquatic growths or degrade indigenous biota. Numeric standards are set for a wide variety of constituents. For biological characteristics, the plan states that marine communities shall not be degraded and that shellfish and fish must be fit for human consumption. Both the State Water Board and the six coastal Regional Water Boards implement and interpret the Ocean Plan. The California Ocean Plan identifies the applicable beneficial uses of marine waters. These beneficial uses include preservation and enhancement of designated ASBS, rare and endangered species, marine habitat, fish migration, fish spawning, shellfish harvesting, recreation, commercial and sport fishing, mariculture, industrial water supply, aesthetic enjoyment, and navigation. To date, 34 ASBS are classified within the state. Thirteen occur north of the San Francisco Bay, seven along the Central Coast, and the remaining 14 occur in southern California, 10 of which are islands.

3.5.2.4 Porter-Cologne Water Quality Control Act

Under the Porter-Cologne Water Quality Control Act, “waters of the state” fall under the jurisdiction of the appropriate Regional Water Board. The Regional Water Board must prepare and periodically update water quality control plans (basin plans). Each basin plan establishes numerical or narrative water quality objectives to protect established beneficial uses, which include wildlife, fisheries and their habitats. Projects that affect wetlands or waters of the state must meet discharge requirements of the Regional Water Board, which may be issued in addition to a water quality certification or waiver under Section 401 of the CWA.

4.0 ISSUES AND ALTERNATIVES TO THE PROPOSED PROJECT

4.1 INTRODUCTION

This section describes the major policy related issues identified and alternatives that have been considered by staff during the development of the Special Protections for Selected Storm Water and Nonpoint Source Discharges into Areas of Special Biological Significance. Each issue analysis contains the following sections:

Issue: The section describes the major policy related issues identified and alternatives that have been considered by staff during the development of the Special Protections.

Issue Description: A description of the issue or topic and (if appropriate) any additional background information, list of limitations and assumptions, description of related programs, or other information.

Alternatives: For each issue of topic, at least two alternatives are provided for consideration. Each alternative is evaluated with respect to the program needs under state law including the California Water Code and the Public Resources Code.

Staff Recommendation: In this section, a recommended alternative (or combination of alternatives) is identified and proposed for adoption by the State Water Board.

4.2 PROJECT ALTERNATIVES TO ADDRESS EXISTING DISCHARGES INTO ASBS

How should the State Water Board address existing discharges into ASBS in light of the Ocean Plan's prohibition on discharges into ASBS?

Issue Description: The Ocean Plan establishes water quality objectives for California's ocean waters and provides the basis for controlling point and nonpoint source discharges into ocean waters of the State. As described in detail in Section 3.0, the Ocean Plan has contained a prohibition of waste discharged to ASBS. In response to a 2000 petition submitted by Caltrans questioning the intent of the prohibition to include storm water, the State Water Board adopted Order WQ 2001-08 in which the State Water Board held that the ASBS discharge prohibition in the Ocean Plan applies to storm water discharges. The State Water Board also held that Caltrans coverage under a storm water permit did not relieve the discharger from complying with the Ocean Plan prohibition. These findings prompted the State Water Board to fund a statewide survey to assess the extent of storm water and nonpoint source discharges into ASBS. The survey identified 1,658 discharges (SCCWRP 2003). A majority of the discharges into ASBS were categorized as nonpoint source and permitted storm water discharges. None of the identified nonpoint source and permitted storm water discharges had been granted exceptions to the Ocean Plan.

Since the initial survey, the State Water Board adopted three individual exceptions for marine lab waste seawater and storm water runoff. These exceptions were granted to Scripps Institute of Oceanography in La Jolla, the University of Southern California's Wrigley Institute on Santa Catalina Island, and the University of California at Davis Bodega Marine Laboratory.

The remaining dischargers were notified by a letter in 2004 that stated they must cease discharging or apply for an Ocean Plan exception. Follow-up letters were sent in August 2005 to those respondents who requested exceptions, describing the exception process in greater detail. Currently, 27 parties have applied for an exception from the Ocean Plan ASBS waste discharge prohibition. While the State Water Board has the authority to grant exceptions that meet the criteria described in Section 3.2.1, there are alternative approaches that could be considered to address these discharges. Several alternatives, including the staff recommended alternative to pursue a general exception for select storm water and nonpoint source discharges into ASBS, are presented below.

Alternative A: No-Project Alternative (i.e., No Exception)

CEQA requires that the Water Boards consider the "No-Project" alternative. Under this No-Project alternative, the Ocean Plan prohibition against waste discharges into ASBS would continue to apply to all discharges into ASBS. The discharger could comply by terminating the discharge or by relocating the discharge so that the receiving water quality is unaffected. These actions could potentially have far greater impacts on the biological integrity of the ASBS then the discharge itself through demolition, excavation, and construction required to remove the existing discharge and redirect it away from the ASBS. In addition, the impacts on air quality and increased green house gas emissions would also be significant. For those dischargers faced with few practical options, enforcement actions could lead to protracted litigation.

Currently, the 27 applicants applying for this exception provide essential public services, including flood control, slope stability, erosion prevention, and maintenance of the natural hydrologic cycle between terrestrial and marine ecosystems, public health and safety, public recreation and coastal access, commercial and recreational fishing, navigation, and essential military operations (national security).

This alternative would not result in better water quality protection, nor does it benefit the environment, public health and welfare, or the Water Boards' ability to protect and restore beneficial uses. As a result, staff does not recommend adopting the "No-Project" alternative.

Alternative B: Amend the Ocean Plan's Prohibition to Allow Existing Discharges into ASBS under Special Conditions

The State Water Board could consider amending the Ocean Plan prohibition to allow existing storm water and nonpoint source discharges that meet specific criteria to discharge into ASBS. Under this alternative, special conditions would be proposed as new provisions in the Ocean Plan. These provisions could include:

- A prohibition on new discharge points
- A prohibition on non-storm water discharges inclusive of those discharged into storm water conveyance systems that are not otherwise authorized
- Wet weather runoff controlled to be as similar to naturally occurring streams as possible, and not to alter natural water quality in the ASBS
- An accelerated iterative process specifically implementing management practices that fully address discharges into ASBS
- Specific monitoring requirements to ensure protection of beneficial uses

In 2003 and early 2004, staff proposed similar amendments to the Ocean Plan; however, the proposed amendments were met with severe criticism from the regulated community, environmental advocacy groups, and U.S. EPA. The concept of amending the discharge prohibition to allow select discharges to continue under specific conditions challenged the concept of designating ASBS as areas deserving of special protection. Others felt the regulatory requirements would be overly burdensome and too difficult to meet. State Water Board staff believes that this alternative would continue to face stiff opposition and, if proposed, would require a significant commitment of resources to prepare planning documents based upon the issues raised and the written comments previously received. As a result, staff does not support this alternative at this time. However, this approach may be considered in the future after the special conditions in the exception are fully implemented and evaluated.

Alternative C: Implement Individual Exceptions for Each Storm Water and Nonpoint Source Discharger

As mentioned above, the State Water Board has adopted seven individual exceptions to date for sewage treatment, desalination brine, public aquarium, and marine lab discharges. State Water Board staff intends to continue the approach of implementing and reviewing individual exceptions for these types of point source discharges, because each facility is sufficiently different to warrant individual exceptions with individual special conditions. Only three marine laboratories/public aquariums remain to be issued exceptions.

There are 27 applicants for an Ocean Plan exception being addressed by this proposed exception. These applicants have a variety of activities but all primarily have in common permitted storm water or nonpoint source discharges. As such, the same special conditions and prohibitions are generally applicable to all of these entities. Granting individual exceptions for each entity would entail developing, noticing, and adopting an individual CEQA document and exception for each entity. With current staff resources, it is estimated that such an approach would take at least an additional three years (from the date of this document) to complete. That approach would delay protecting natural water quality in the ASBS during the time it would take to adopt individual exceptions for each of the 27 applicants. Furthermore, adopting individual exceptions for storm water and nonpoint source dischargers would be inefficient, taking up significant staff and Board Member time and resources.

Because this alternative would delay the protection of water quality in ASBS, would be inefficient, and would not provide any advantages, staff does not support this alternative.

Alternative D: Implement a General Exception for Selected Dischargers (Preferred Alternative)

Under this alternative, the State Water Board would adopt a general exception to the Ocean Plan discharge prohibition that would impose special conditions on the group of 27 storm water and nonpoint source dischargers who have applied for an exception. The proposed conditions could include: cessation of non-essential, non-storm water runoff; maintenance of natural water quality within ASBS, including during precipitation (design storm) events, by limiting wastes in storm water runoff and other activities that would otherwise cause a degradation of ocean water quality in the ASBS; and monitoring water quality and marine aquatic life within ASBS to ensure the protection of beneficial uses over time. Under this alternative, discharges must comply with all other applicable provisions of the Ocean Plan, including those provisions that maintain and protect natural ocean water quality and marine communities from pollution.

For dischargers subject to NPDES permits, prohibitions and special conditions collectively referred to as “Special Protections” for the ASBS, would be implemented through storm water management plans. For nonpoint source dischargers, the Special Protections would be implemented through a WDR, waiver, or conditional prohibition and a pollution prevention plan. All ASBS dischargers would continue to have three major requirements: (1) a continued prohibition of non-storm water discharges and runoff, with only certain exclusions; (2) wet weather runoff controlled so as not to violate “natural ocean water quality” in the ASBS receiving water; and (3) monitoring to ensure protection of beneficial uses. These three requirements of the Special Protections would be incorporated into each applicant's permit or WDR.

The Special Protections are intended to maintain the natural hydrologic cycle and coastal ecology by allowing the flow of clean precipitation runoff into the ocean, while preserving coastal slope stability and preventing anthropogenic erosion. The 27 applicants for this exception provide essential public services, including flood control, slope stability, erosion prevention, maintenance of the natural hydrologic cycle between terrestrial and marine ecosystems, public health and safety, public recreation and coastal access, commercial and recreational fishing, navigation, and essential military operations (national security). Therefore, the exception and the terms, prohibitions, and special conditions embodied in the Special Protections for ASBS are not only protective of beneficial uses, but are in the public interest as well.

The State Water Board's effort to address storm water and nonpoint source waste discharges into ASBS using the Ocean Plan exception process is nearly complete. Applicants have now applied for exceptions, providing the necessary information for staff to proceed. In addition, the State Water Board has held three public scoping meetings, and several stakeholder meetings, for the exception and has initiated a stakeholder effort to collaborate on ASBS regional monitoring. Continuing with the general exception process for storm water and nonpoint sources would meet statutory and Ocean Plan regulatory requirements; because the process is ongoing, it would be practical and efficient to continue. Discharges authorized by an NPDES permit (and WDRs or waivers for nonpoint sources) would be allowed, but under strict limiting conditions aimed at ensuring protection of receiving water quality and marine life.

This alternative, that proposes to adopt a general exception with the Special Protections for the group of 27 storm water and nonpoint source dischargers who have applied for an exception is the alternative recommended by Staff. The remaining issues and alternatives address conditions associated with this general exception.

Staff Recommendation: Adopt Alternative D, the general exception for 27 specific parties, with Special Protections for ASBS. Eliminate the other alternatives, (Alternatives A, B, and C) from further consideration.

4.3 ALTERNATIVES TO THE CONDITIONS IMPOSED UNDER THE GENERAL EXCEPTION

This section describes the major policy issues associated with the conditions imposed through the general exception identified in Alternative 4.2.D described above. The proposed Special Protections define the terms and conditions that will limit the storm water and nonpoint source waste discharges by the applicants to the affected ASBS.

The intent is to ensure that such discharges will be controlled to protect beneficial uses within ASBS and to protect and maintain the natural hydrologic cycle and coastal ecology. The conditions include: cessation of non-essential, non-storm water discharges and runoff; maintenance of natural water quality within ASBS, including during precipitation (design storm) events, by limiting wastes in storm water runoff and other activities that would otherwise cause a degradation of ocean water quality in the ASBS; and monitoring water quality and marine aquatic life within ASBS to ensure the protection of beneficial uses over time.

Discharges must comply with all other applicable provisions of the Ocean Plan. Natural ocean water quality must not be altered as a result of the discharge(s), and marine communities must be protected from pollution.

These terms and conditions are designed to address the applicants' waste discharges in a practical framework, acknowledging that the first priority controls are for higher threat discharges to the beneficial uses of ASBS. The compliance schedule in the Special Protections (provision of these mitigating terms and conditions) provides an action strategy for the applicants to achieve compliance with these terms and conditions.

The proposed Special Protections cover only those applicants discharging waste into an ASBS, who submitted an approved or conditionally approved exception application; the proposed Special Protections cover only the applicants' permitted storm water discharges and nonpoint source discharges.

4.3.1 Conditions imposed on Storm Water and Nonpoint Source Discharges

Issue: What conditions should be imposed upon discharges under the general exception?

Issue Description: Completely ceasing all discharges would interrupt the hydrologic cycle by removing storm water runoff and therefore fresh water flows into large sections of coastline, a situation that would be inconsistent with the natural ecology of these areas. In addition, the immediate cessation of discharges without a reasonable alternative would not be in the public interest because it may result in flooding, endangering health, safety, and property. However, allowing these waste discharges under current conditions is also not protective of natural ocean water quality, due to the potential and sometimes actual presence of pollutants in the runoff.

Alternative A: Allow Permitted Storm Water and Nonpoint Source Discharges with No Additional Conditions Beyond those in Existing Permits

As discussed in Section 3.0 and Section 4.2 above, allowing discharges into the ASBS would conflict with the Ocean Plan ASBS waste discharge prohibition and increase the risk of degradation to natural water quality and marine communities. The storm water NPDES permits require the discharger to develop and implement a SWMP or SWPPP with the goal of reducing the discharge of pollutants to the maximum extent practicable (MEP). However, reduction of pollutants to MEP is not adequately protective of natural water quality in ASBS.

NPDES storm water permits do not cover nonpoint source discharges. Except for the agricultural discharges at the Año Nuevo ASBS in the Central Coast Region (covered under the conditions of an Agricultural Waiver of Waste Discharge Requirements), no other nonpoint source discharges into ASBS are currently covered under a WDR or Waiver. Even in the case of the Año Nuevo ASBS agricultural runoff via State Park property, the conditions in the waiver are not adequately protective of natural water quality in ASBS.

Staff does not support this alternative, which would allow all discharges into ASBS under existing conditions that are not adequately protective of natural water quality in ASBS.

Alternative B: Allow discharges if limited by prohibitions and other special conditions beyond those in existing permits.

As mentioned above, it is ecologically important to maintain the hydrologic cycle, specifically the flow of fresh water from the terrestrial environment into the ocean. Therefore, some amount of storm water runoff should be allowed to continue. However, that storm water runoff should be clean, i.e., controlled to prevent pollution and alteration of natural water quality in the ASBS.

As discussed in Section 5.8.1, many of the current storm water runoff discharges tend to meet Ocean Plan objectives in the receiving water at least some of the time. However, some measured sites did not meet objectives when sampled; for example, approximately 25% of ASBS waters had measured concentrations of copper above the six-month median objective. Therefore, focused efforts will be required to control certain discharges to meet natural water quality in ASBS receiving waters within the proposed implementation schedule. These focused efforts may involve the installation of structural BMPs at the mouth of these discharges.

In order to prevent pollution from entering the ASBS, certain waste prohibitions must be maintained (e.g., prohibition on trash, which can harm marine life due to ingestion and entanglement). Any proposed or new storm water runoff discharge must be routed to existing storm water discharge outfalls and must not result in any new contribution of waste to an ASBS. “Existing storm water outfalls” are those that were constructed or under construction prior to January 1, 2005. “New contribution of waste” is defined as any addition of waste beyond what would have occurred as of January 1, 2005. Other limiting conditions should include that:

- The existing discharges are authorized by an NPDES storm water permit, or under WDR, a conditional waiver of WDR, or a conditional prohibition;
- The existing discharges comply with all of the applicable terms and conditions contained in the Special Protections;
- The existing discharges must be essential for flood control or slope stability, including roof, landscape, road, and parking lot drainage, and are designed to prevent soil erosion;
- The existing discharges of runoff occur only during wet weather; and
- The existing discharges of runoff are composed of only storm water runoff.

Because this alternative provides greater protection for ASBS, staff is recommending this alternative.

Staff Recommendation: Alternative B - Allow discharges if limited by prohibitions and other special conditions beyond those in existing permits.

4.3.2 Non-storm water runoff

Issue: Should non-storm water runoff (e.g., dry-weather flows) be allowed under the Special Protections?

Issue Description: Generally, dry weather flow surface runoff accounts for a significant portion of the total mass of contaminants that enter the coastal ocean waters. Dry weather flows, which may occur during summer or winter dry seasons, often originate from multiple anthropogenic sources that may include groundwater from pumping and dewatering, swimming pool drainage, dehumidifier or HVAC condensates, and excess runoff from landscape irrigation. Such flows have the potential to mobilize household, industrial, and construction site wastes, used crankcase oil, pesticides, and bacteria and carry them untreated to the ocean through storm drains, streams and/or other conveyance systems. Thus, the potential for environmental impact is high. In addition, dry weather flow in storm drains and nonpoint source conveyances does not usually represent a natural hydrological condition in California.

Existing permitted storm water municipalities incorporating changes to address dry-weather flows can consider updating local ordinances and codes, reviewing and adjusting the General Plan, and updating existing policies and procedures. Additional funds and resources may also be required to ensure BMPs are maintained after the projects are complete through increases in inspections and education. BMPs that could trigger or benefit from ordinance modification in one or more agency jurisdiction include dry weather flow diversions. Dry weather flow diversion devices direct flow through a pipe or channel to a local municipal sanitary sewer system for conveyance and treatment at a local wastewater treatment plan during dry weather. Implementing dry weather flow diversions should be considered where the diversion is reasonably close to a sanitary sewer system, if cost effective to implement, and the sanitary sewer authority is willing to accept the flow during the dry season.[5]

Other measures could be implemented to prevent dry weather flows from permitted storm drain systems or nonpoint sources. These may include, but are not limited to, public education, installation of swales for intercepting flows prior to reaching the ASBS, and installation of other low impact development (LID) solutions.

Staff has also identified actual or potential situations in which groundwater seepage into storm drains may result in minor dry weather flows that are beyond the ability of the applicants to control. Staff believes that most, if not all, of this seepage is shallow groundwater resulting from precipitation infiltrating and raising the groundwater table. Inflow through cracks in drain pipes results in seepage into the storm drains. These flows are very minor and do not usually persist throughout the year.

Alternative A: Allow all non-storm water runoff.

Allowing all non-storm water runoff would conflict with the intent of the Ocean Plan to prevent the alteration of natural water quality within ASBS. Dry weather flows are frequently caused by human activities that can introduce pollutants into receiving waters, and in high-density areas result in significant waste discharge flows when not properly controlled. Staff does not support this alternative.

Alternative B: Do not allow non-storm water runoff.

Prohibiting all non-storm water runoff is impractical, especially when considering the number of discharges identified and the impact that this alternative could have on essential public utilities, emergency response actions, structural stability, or slope stability. Proposing this alternative would not benefit the public interest, because certain non-storm water runoff essential for environmental protection, public services, and public health and safety would be prohibited.

Alternative C: Allow only non-storm water runoff that is essential for emergency response purposes, structural stability, or slope stability, and discharge(s) associated with incidental groundwater seepage.

This alternative would allow only non-storm water runoff that is essential for environmental protection, public services, and public health and safety. This alternative

[5] Most Publicly Owned Treatment Works (POTWs) were not designed and constructed with sufficient excess dry weather flow capacity to accept dry weather flow discharges. Further, POTWs were constructed with development fees and operated and maintained with sewer connection charges. On-going operating and maintenance costs would need to be assessed to these dry weather diversion projects.

would define the discharges and those specific types that could be discharged through a storm water system in accordance with the general exception. All other discharges of non-storm water would be in violation.

Staff is proposing the terminology "Discharges of non-storm water runoff" that would be defined as: any waste discharge from an MS4 (or other NPDES permitted storm drain system), or from nonpoint sources, to an ASBS that is not composed of storm water. The following non-storm water discharges should be allowed, provided that the discharges are essential for emergency response purposes, structural stability, slope stability, or involve incidental groundwater seepage:

- Discharges associated with emergency fire fighting operations.
- Foundation and footing drains.
- Water from crawl space or basement pumps.
- Hillside dewatering.
- Naturally occurring groundwater seepage via a storm drain.

Authorized non-storm water discharges shall not be allowed to cause or contribute to a violation of the water quality objectives in Chapter II of the Ocean Plan nor alter natural ocean water quality in an ASBS. All other non-storm water runoff should be strictly prohibited.

A concern brought up in stakeholder meetings was construction dewatering. Upon consideration, staff does not believe that construction dewatering is essential for emergency response purposes, structural stability, or slope stability. Construction dewatering is a result of a coastal development project that would need to get permits and approvals, including coverage under an NPDES permit. This in turn would require compliance with water quality standards. Therefore, construction dewatering would continue to be prohibited from discharges into ASBS. Because this alternative attempts to balance the need for essential discharges with the intent to protect natural water quality, staff recommends this alternative for consideration by the State Water Board.

Staff Recommendation: Alternative C - Allow only non-storm water runoff that is essential for emergency response purposes, structural stability, or slope stability and incidental groundwater seepage.

4.3.3 Military Training Discharges

Issue: Should military training discharges be included in the exception?

Issue Description: The U.S. Navy operates at San Nicolas (SNI) and San Clemente (SCI) Islands for national security purposes, including training activities involving live ordinance. The use of military ordinance is obviously harmful to marine life, results in accumulations of pollutants on the sea floor, and may result in accelerated erosion from coastal cliffs. At SCI, training activities can involve explosives, naval gunnery target practice, discharges from small arms fire (collectively referred to as use of military ordinance), and amphibious vehicular/vessel activity on the shore. There are many places at SCI where this activity takes place, including but not limited to the Shore Bombardment Area (SHOBA) Operations and Basic Underwater Demolition/SEALs (BUD/S) locations. Missile launching is performed at SNI, and portions of the expended missiles are known to fall into the adjacent portion of that ASBS. All other locations on SCI and SNI are considered off limits for this type of activity as unexploded ordinance or off range live fire would represent a critical safety hazard to base personal.

Military operations have been ongoing at these islands before the ASBS were designated. These islands represent highly unique locations for many military test and training operations due to the close proximity to major bases located on the mainland while isolated far from large population centers to maintain public safety and national security. Currently, these islands are the only Navy facilities in the contiguous U.S. where these types of training activities can be conducted safely and routinely. As a result, these operations are considered essential to maintain operational readiness and national security.

Alternative A: Enforce the ASBS prohibition for all discharges of military ordinance for training purposes in ASBS waters. Staff does not recommend this alternative be pursued given the unique national security role these facilities provide.

Alternative B: Include the discharge of military ordinance in the exception, subject to prohibitions and limiting conditions. The discharge of explosives in ASBS waters at military closure areas in the vicinity of Wilson Cove and Castle Rock at SCI would be prohibited. At SNI, with the exception of discharges from missile operations, no other discharges of explosives or deposition of waste ordinance is allowed within ASBS waters. Discharges must not result in a violation of the water quality objectives, including the protection of the marine aquatic life beneficial use, anywhere in the ASBS.

Staff Recommendation: Alternative B, including discharges of military ordinance in the exception subject to prohibitions and limiting conditions. Military discharges would continue to be conditioned on compliance with water quality objectives everywhere in the ASBS.

4.3.4 Miscellaneous Point Source Discharges

Issue: Should point source discharges from sinks and fish cleaning stations be allowed under the General Exception?

Issue Description: Sinks and fish cleaning stations constitute non-storm water discharges, and are point sources of wastewater. Surface discharges of graywater and fish offal constitute waste discharges that alter natural water quality, and result in accumulations of organic matter in the ASBS. A fish cleaning station with a direct point source discharge of fish offal is located at Shelter Cove (King Range ASBS). Staff is also aware of a sink with a direct point source discharge at the marine mammal training Naval Ordnance Test Station (NOTS) pier on SCI. These discharges to ASBS surface waters are considered as non-essential because other options exist, such as collecting fish offal and transporting off-site for land disposal, and the use of onsite storage or treatment systems below ground for fish offal and graywater. This has been accomplished at Gerstle Cove ASBS, Salt Point State Park, that now utilizes a below ground storage tank.

Alternative A: Include point source discharges from sinks and fish cleaning stations into ASBS surface waters in the exception.

Alternative B: Do not include waste discharges from sinks and fish cleaning stations into ASBS in the exception.

Staff Recommendation: Alternative B, do not include waste discharges from sinks and fish cleaning stations into ASBS in the exception. This alternative will maintain the prohibition of waste discharges from sinks and fish cleaning stations into ASBS.

4.3.5 Monitoring and Compliance

Issue: How should ASBS monitoring be best performed?

Issue Description: Typically, major dischargers to coastal waters, such as POTWs, have provided the bulk of monitoring data on ocean receiving waters. Point source dischargers implement self-monitoring programs under NPDES permits that are designed to assess compliance with effluent and receiving water limitations. Resource agencies and some federal programs also provide monitoring data. Generally, these monitoring efforts have been the primary mechanism by which regulatory agencies, resource managers, and permitted dischargers have evaluated the condition of the ocean receiving water and effluent. However, this type of monitoring, with primary focus on major dischargers, has resulted in acknowledged data gaps and the lack of coordinated coast wide information. Further, these efforts in general were not designed to assess compliance with the Ocean Plan prohibition against waste discharge to ASBS and the goal to maintain natural water quality in ASBS.

Regional monitoring efforts, in contrast to individual discharger monitoring programs, can provide a greater awareness of the regional nature of environmental stressors and impact, and a greater knowledge of the interactions between localized sources of anthropogenic impact and larger-scale environmental processes (e.g., El Nino, Pacific Decadal Oscillation) and the role of terrestrial runoff and storm water plumes on the nearshore coastal zone. A regional scale monitoring program can provide information that focuses on key indicators and processes, and ensures a cost-effective approach to assessing conditions in the ASBS.

There are existing regional monitoring programs in the state. The Regional Monitoring Program in San Francisco Bay assesses each major permitted discharger into the Bay; fees are based on the dischargers' loadings to the Bay of key contaminants. These fees are combined and used to support the regional monitoring, data analysis, and reporting activities carried out by the San Francisco Estuary Institute.

The Central Coast Long-term Environmental Assessment Network (CCLEAN) program in Monterey Bay is currently funded by four POTW agencies with ocean discharges. One of these POTWs discharges into the Carmel Bay ASBS.

The Southern California Bight Program is coordinated by SCCWRP and is funded with a combination of in-kind support and monetary contributions from participants, much of which is made available as the result of periodic compliance monitoring offsets.

While the Ocean Plan gives background concentrations in Table C, these concentrations are intended to be representative of ocean water quality in deeper water where the POTW discharges are often located. Table C does not represent nearshore or surf zone natural water quality, especially during storm conditions with suspended bottom sediment and nearshore natural runoff. The State Water Board's Surface Water Ambient Monitoring Program (SWAMP) has provided funding to SCCWRP to determine the range of natural water quality in the nearshore environment, and to help develop statewide and regional efforts to monitor ASBS for comparison to those levels of natural water quality. To date, the groundwork has been set for regional monitoring in three sections of the state (southern, central, and northern), and regional ASBS monitoring has been initiated as part of the Bight 08 program. Furthermore, statewide random monitoring has been initiated in ASBS to determine water quality in ASBS areas with direct discharges and without.

Staff firmly believes that the best approach for understanding the effects of discharges is a regional monitoring approach using methods and protocols consistent with other regional efforts across the State. There are significant benefits associated with regional monitoring groups some of which include:

- Access to greater resources,
- Variety of expertise and experience amongst the members,
- Increased cost effectiveness through cost sharing and in kind services, and
- Greater flexibility or ability to respond to new findings or needs.

The use of consistent methods and protocols also provides many advantages. When consistent methods and protocols are employed, the resulting data can be compared and integrated across broad spatial scales and across programs, greatly increasing the overall utility of the data.

However, there may be some instances where an individual is unable or unwilling to join a regional monitoring group. Under this scenario, the individual discharger must adhere to prescriptive monitoring conditions in the Special Protections in order to assure the adequacy of that individual program.

Alternative A: Require all applicants to participate in a regional monitoring program. Under this alternative, all monitoring would occur under the Regional Monitoring Program. Each regional monitoring group would be responsible for sampling reference areas for natural water quality and, in addition, for evaluating the impact of discharges on the receiving water.

Alternative B: Allow applicants to choose either an individual monitoring program or to participate in a regional monitoring program. Although Alternative A, requiring participation in a regional monitoring group, provides many advantages over individual efforts, there may be some instances where an individual is unable or unwilling to join a regional monitoring group. As a result, staff believes that the type of receiving water monitoring, individual or regional, should be a decision made by the applicant.

However, if an individual monitoring program is chosen, the discharger must adhere to prescriptive monitoring conditions in the Special Protections in order to assure the adequacy of that individual program. Therefore, conditions contained in the Special Protections allow for the applicant to select an individual monitoring program or join a regional monitoring program.

Staff Recommendation: Alternative B, Allow applicants to choose either an individual monitoring program or to participate in a regional monitoring program.

4.3.6 Design Criteria for Structural Best Management Practices

Issue: What design criteria should be required of structural BMPs?

Issue Description: The cost of wet weather treatment systems and consideration that these systems may be physically incapable of handling some large wet weather events are major concerns. Engineers need a target control level to design a structural BMP to meet water quality needs.

Selecting the optimal storm size represents the first step toward the construction of effective structural BMPs. It is frequently impractical and not cost effective to plan and construct a structural BMP for the largest storm possible. Does one select the 100-year storm or the 1,000-year storm? In either case, such storm events do not have a high likelihood of happening in the near term. Staff believes that it is better to select a design storm that represents more typical conditions, so that runoff from the majority of storms is controlled to reduce waste discharges to minimal levels. A storm of one inch of precipitation per day should be the minimum design criteria, which would be consistent with design criteria in MS4s throughout the state. However, a BMP should not be constructed in such a way that will result in blockage at higher flows, divert water away from the main channel, or increase the risk of flood damage or loss of life.

BMP effectiveness is another important design consideration. Target concentrations could be obtained from the Ocean Plan. Those values presented in Table B, measured as instantaneous maximum chemical concentrations for the protection of marine life, are appropriate in this role, as these values were adopted to protect aquatic life in marine waters of California. Based upon baseline chemical water quality data evaluated to date, these targets appear achievable as most discharges sampled met those concentrations. Instantaneous maximums are appropriate because storm water runoff is highly episodic and brief in duration.

BMP effectiveness can also be evaluated by reduction of discharge flow. Dischargers have suggested that BMPs be designed to reduce flows by percolating the majority of the runoff into the ground; staff has considered this approach as well. This approach addresses overall pollutant loading by reducing flows rather than reducing concentrations. As design criteria, staff is recommending a reduction in flow equal to 90%.

Alternative A: Set a design criteria of Ocean Plan Table B for all storm events.

Alternative B: Set a design criteria of Ocean Plan Table B for typical storm events.

Alternative C: Set a design criteria of volumetric reductions for all storm events.

Alternative D: Set a design criteria of volumetric reductions for typical storm events.

Alternative E: Allow flexibility for the discharger to choose either Ocean Plan Table B or volumetric reductions for typical storm events. Staff believes that the goals of meeting compliance would be best served by allowing flexibility to address discharge conditions on a case-by-case basis. Therefore, staff recommends this alternative, to allow either a concentration approach using Table B Instantaneous Maximum or a volumetric reduction of 90% from baseline flow, and a design storm of one inch of precipitation per day, or in some instances, the design storm identified in MS4 permits as applicable to the Responsible Parties identified herein.

Staff Recommendation: Alternative E - Allow flexibility for the discharger to choose either Ocean Plan Table B Instantaneous Maximum concentrations or volumetric reductions of 90%, and a design storm of one inch per day.

4.3.7 <u>Compliance Schedule</u>

Issue: When should final compliance be determined?

Issue Description: Storm water management plans and other equivalent planning documents require considerable thought on the part of the discharger, considering a multitude of factors. Typically, these planning documents must then be approved by their respective management bodies, and approved by Regional Water Boards. Implementation of certain nonstructural BMPs may be relatively quick, but structural BMPs require further planning, design, permitting, and construction, and therefore may take some time to implement.

From an environmental protection perspective, it would be preferable for all ASBS discharges to achieve the condition to maintain natural water quality in ASBS immediately, but this could be difficult due to the reasons described above. The storm water and nonpoint source programs typically use an iterative approach to achieving compliance, which may last for more than one permit cycle. However, discharges to

ASBS are not typical discharges in that they clearly violate the Ocean Plan and put sensitive and significant biological communities at risk.

Staff does not believe that compliance should be required immediately nor does staff believe that an iterative approach is appropriate. Staff originally considered requiring the storm water management plans or other equivalent pollution prevention plans to be completed in six months, but staff has reconsidered based on comments received during stakeholder meetings. Staff has modified the draft Special Protections to allow one year for completion and submittal of the storm water and other pollution prevention planning documents.

Regarding final compliance, staff continues to believe that full compliance can be accomplished by addressing and controlling the highest threat discharges within a four-year period from the effective date of the General Exception.

Alternative A: Require immediate compliance.
Alternative B: Use an iterative compliance approach without fixed compliance deadlines.
Alternative C: Require compliance within a four year period.

Staff Recommendation: Alternative C - Require compliance within a four year period.

4.3.8 <u>Compliance Monitoring</u>

Issue: Should compliance monitoring rely on effluent or receiving water data, or both?

Issue Description: The special protections proposed for specific storm water discharges would allow some minimum amount of waste to be discharged during storm events, however, the discharges are required to maintain natural water quality. In order to evaluate a discharge's potential effect on receiving waters, samples may be collected of the effluent, described as "end of pipe", within the receiving water after mixing has occurred or through a combination of both. Staff held several stakeholder meetings, attended by the regulated community, environmental advocacy groups, scientists, and Regional Water Board staff, where considerable discussion occurred on the issue of how compliance should be measured. The stakeholders agreed that compliance should ultimately be measured in the receiving water by comparison to natural ocean water quality. Under this scenario, natural water quality is defined qualitatively and the range of concentrations and conditions is determined at reference stations, taking into account natural changes to water quality that occur as a result of the storm event.

However, there may be cases when the receiving water monitoring results indicate that natural water quality is not attained, but effluent monitoring indicates that the discharger is not causing or contributing to the receiving water exceedance. In such cases, when the discharger is not contributing to pollutant loading (i.e., discharging waste) into the ASBS, then the effluent monitoring data and oceanographic observations could be considered by Regional Water Boards to ascertain compliance.

Alternative A: Require each discharger to conduct effluent monitoring to determine compliance.

Alternative B: Require each discharger to comply by achieving natural ocean water quality as measured in the receiving water. Staff believes that compliance is best measured within the receiving water. However, staff recommends that core monitoring include effluent monitoring so that the loading and water quality characteristics of the discharges are well understood.

Staff Recommendation: Alternative B - Compliance with the ASBS special protections requiring each discharge to meet "natural ocean water quality" shall be measured in the ocean receiving water.

5.0 ENVIRONMENTAL BASELINE

This subsection presents the existing environmental conditions throughout the state as appropriate for the specific topic area, in accordance with California Environmental Quality Act Guidelines (State CEQA Guidelines) Section 15125. The discussions of the environmental setting focus on information relevant to the issue under evaluation.

5.1 ASBS DESCRIPTIONS

5.1.1. Redwoods National Park

The Redwoods National Park lies along the coast of northwestern California in Humboldt and Del Norte Counties. Inland, a series of overlapping jurisdictions include Federal Park Lands and three California State Parks: Jedediah Smith Redwoods State Park, Del Norte Coast Redwoods State Park, and Prairie Creek Redwoods State Park. The coastal boundaries of Redwoods National Park are just south of Crescent City in the north (41°44.1' north latitude, 124°9.5' west longitude) and just to the north of Stone Lagoon in the south (41°15.7' north latitude, 124°5.7' west longitude) (SWRCB 1981). The Redwoods National Park ASBS encompasses 62,643 acres (97.88 mi^2; 253,510,283 m^2) of various coastal marine habitats. The length of coastline included in the ASBS is 35.9 miles (57.826 km), encompassing about 2.31% of California's coastline[6].

The ASBS is included in this designation for the following reasons: (1) it has a diversity of habitat and biological assemblages; (2) it has a variety of intertidal and subtidal habitats; (3) high turbidity of coastal waters has resulted in the development of an unusual assemblage of plants and animals unique to this area of the California coast; (4) this area has large stocks of annual flora; (5) sea stars *Solaster simpsoni* and *S. dawsoni* are common in this region, but no where else in California; (6) intertidal biota is transitional in character with both boreal and temperate marine elements.

5.1.2 Trinidad Head

The Kelp Beds at Trinidad Head ASBS is located at approximately 41°03'15" north latitude, 124°08'10" west longitude, which is 28 miles (45 km) north of Eureka, California

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[6] The estimates of the areas, lengths, and percent of the coastline provided below are from the 1:24,000 scale coastline GIS layer "coastn27" from the State Lands Commission 1994, including the Northern and Southern Channel Islands, Ano Nuevo Island, Bird Rock, and the larger Farallon Islands. The estimates of percent of California coastline is based on a coast length of 1556 miles at a scale of 1:24,000, and does not include San Francisco Bay, other enclosed bays and inlets, or small coastal rocks/islands.

and encompasses areas both north and south of Trinidad Head. The northern area is fully exposed to winds and waves, while the southern area is semi-exposed because of the sheltering effects of Trinidad Head (SWRCB 1979). The ASBS encompasses 297 acres (0.46 mi^2; 1,201,206 m^2) of various coastal marine habitats. The length of coastline included in the ASBS is 1.8 miles (2.947 km), encompassing about 0.12% of California's coastline.

The ASBS is included in this designation for the following reasons: (1) it has a diversity of habitat and biological assemblages; (2) it has a diversity of intertidal habitat types, with close assemblage and association of seabirds, marine mammals, and intertidal plants and animals, and the dense beds of bull kelp; (3) there is an abundance of brown seaweed, *Cystoseira osmundacea*, a diverse population of intertidal algae and other major plant material producers in the nearshore zone; (4) a lack of abundant herbivore populations related to the presence of large amounts of silt in the water for a substantial period each year or lack of suitable habitat, particularly for juveniles within the ASBS; (5) the sea strawberry, *Gersemia rubriformis*, is commonly found, as well as intertidal presence of *Cnemidocarpa finmarkiensis*; (6) there are dense beds of *Nereocystis luetkeana*, which are uncommon in many areas of the State.

5.1.3 King Range

The King Range ASBS lies between the mouth of the Mattole River to the north (40°17'45" north latitude, 124°52'37" west longitude) and a point near Whale Gulch to the south (39°52' 37" north latitude, 123°58'34" west longitude). Most of the coastline is in Humboldt County, with approximately 4.5 miles (7.2 km) at the southern end of the area in Mendocino County. Two towns of small size are near the ASBS: Garberville, 18 miles (29 km) east of the coastline at Point Delgada, and Petrolia, 5.5 miles (8.8 km) from the mouth of the Mattole River (SWRCB 1979).

The coastline is impassible at several points during high tides, but can be negotiated at almost all points during low tides. Except for an all-weather road to the Shelter Cove development on Point Delgada, travel along the coastline is by foot or four-wheel drive vehicle. From the mouth of the Mattole River to the southern border, 30.2 miles (48.3 km) of coastline (exclusive of offshore rocks) lies within the King Range National Conservation Area (SWRCB 1979). The ASBS encompasses 25,055.5 acres (39.15 mi^2; 101,395,704 m^2) of various coastal marine habitats. The length of coastline included in the ASBS is 32.7 miles (52.621 km), encompassing about 2.10% of California's coastline.

A Marine Protected Area (MPA), the Punta Gorda State Marine Reserve, overlaps the King Range ASBS in about ¼ square-miles (0.64 km^2) in the northwest corner of the ASBS.

The ASBS is included in this designation for the following reasons: (1) it has a diversity of habitat and biological assemblages; (2) this is a remote area with very little human activity present; (3) most of the coastal area is fully exposed to wave impact, causing only the hardiest intertidal species to be successful in survival in the littoral zone; (4) in Shelter Cove, a highly diverse intertidal biota is encountered; (5) mussel beds and associated intertidal habitats are more extensive and better developed than at any other location in Humboldt and Del Norte counties and also experience the most severe of impacts caused by human activities; (6) bladder kelp, *Macrocystis integrifolia*, is present both at the northerly intertidal limits and afloat at Shelter Cove.

5.1.4 <u>Jughandle Cove</u>

The Jughandle Cove ASBS is located in Mendocino County, California at approximately 39°22’45” north latitude, 123°49'15” west longitude, and is 5 miles (8.04 km) south of Fort Bragg on California State Highway 1 (Highway 1) (SWRCB 1981). The ASBS encompasses 203 acres (0.32 mi^2; 822,094 m^2) of various coastal marine habitats. The length of coastline included in the ASBS is 1.5 miles (2.479 km), encompassing about 0.10% of California’s coastline.

The ASBS is included in this designation for the following reasons: (1) it has a diversity of habitat and biological assemblages; (2) it may include the northern extent of the ranges of the puffball sponge, *Tetilla arb*, the honeycomb worm, *Phragmatopoma californica*, and the compound ascidian, *Polyclium planum*.

5.1.5 <u>Saunders Reef</u>

The Saunders Reef ASBS is located in southern Mendocino County along the northern coast of California (38°51' north latitude, 123°40' west longitude), 4.6 miles (7.5 km) southeast of the town of Point Arena. The small town of Anchor Bay is located 5 miles (8 km) to the south. The exposed portion of the reef occurs in the south-central portion of the ASBS, approximately 0.6 mile (1 km) west of Saunders landing and is marked by a navigation buoy. Cliffs, up to 100 feet (30 m) high, border the eastern mean high tide boundary and Highway 1 parallels the ASBS near the edge of the cliffs (SWRCB 1980). The ASBS encompasses 730 acres (1.14 mi^2; 2,953,786 m^2) of various coastal marine habitats. The length of coastline included in the ASBS is 1.6 miles (2.559 km), encompassing about 0.10% of California’s coastline.

The ASBS is included in this designation for the following reasons: (1) it has a diversity of habitat and biological assemblages; (2) localized high population densities and large size of individual red abalone, offshore reef surrounded by a bull kelp, *Nereocystis luetkeana*, forest; (3) this area is relatively undisturbed by humans.

The designation was recommended by the Regional Water Board and supported by DFG. No opposition to this designation was submitted.

5.1.6 Del Mar Landing

The ASBS encompasses 53 acres (0.08 mi^2; 213,112 m^2) of various coastal marine habitats. The length of coastline included in the ASBS is 0.6 miles (0.961 km), encompassing about 0.04% of California's coastline. Del Mar Landing ASBS is entirely overlapped by Del Mar Landing State Marine Park.

The ASBS was designated for the following reasons: (1) it has a diversity of habitat and biological assemblages; (2) to preserve land, or land and water areas in a natural condition and to protect the aquatic organisms and wildlife found here for public observation and study. The designation was recommended by the Regional Water Board and supported by DFG. No opposition to this designation was submitted.

5.1.7 Gerstle Cove

The Gerstle Cove ASBS is located in Sonoma County at about 39°33'57" north latitude and 123°19'45" west longitude. The nearest towns are Gualala, located about 20 miles (32 km) north on Highway 1, and Jenner, located about 23 miles (37 km) south on Highway 1 (SWRCB 1979). The ASBS encompasses 10 acres (0.02 mi^2; 39,754 m^2) of various coastal marine habitats. The length of coastline included in the ASBS is 0.6 miles (0.961 km), encompassing about 0.04% of California's coastline.

The ASBS encompasses the Salt Point State Park and State Marine Conservation Area, a MPA designated by DFG.

The ASBS was designated for the following reasons: (1) it has a diversity of habitat and biological assemblages; (2) it is a relatively pristine cove that is representative of the natural marine environment of Sonoma County.

The designation was recommended by the Regional Water Board and DFG. This is inclusive of a reserve and underwater park for the use of divers and nature observers.

5.1.8 Point Reyes Headlands

The Point Reyes Headlands ASBS is located in Marin County, California. The area is situated entirely within the boundary of the Point Reyes National Seashore Park. The Headlands site is 11 miles (17.6 km) from the nearest town, Inverness (SWRCB 1980). The ASBS encompasses 1,047 acres (1.64 mi^2; 4,237,491 m^2) of various coastal marine habitats. The length of coastline included in the ASBS is 4.8 miles (7.720 km), encompassing about 0.31% of California's coastline.

In 1972, DFG declared the Point Reyes Headlands as a Marine Life Reserve. Since then, the Point Reyes Headlands has had the reserve status protection and all marine life has been protected from human collecting and fishing activities. The Point Reyes State Marine Conservation Area is entirely overlapped by the Point Reyes Headlands ASBS. The MPA and ASBS share the same boundary along the coastline. The oceanic boundaries are parallel to the shore and to each other, though the MPA boundary extends about ¼ mile off the coast and the ASBS boundary extends about ½ mile off the coast.

The ASBS was designated for the following reasons: (1) it has a diversity of habitat and biological assemblages; (2) the subtidal community at the ASBS is one of the most diverse in the San Francisco Bay region; (3) the intertidal zone has great species diversity including California mussel, gooseneck barnacles, acorn barnacles, and red abalone.

The designation was recommended by the Regional Water Board and supported by the Point Reyes Bird Observatory. No opposition to this designation was submitted.

5.1.9 Duxbury Reef

The Duxbury Reef ASBS is located near the town of Bolinas in Marin County, approximately 14 nautical miles (26 km) northwest of San Francisco. The ASBS is located within 37°53' to 37°56' north latitude, 122°44' west longitude. The center of the municipality of Bolinas is located approximately ¾ mile (1.2 km) from the Agate Beach entrance to Duxbury Reef. Subdivisions extend much closer, with some homes actually overlooking the reef from the surrounding mesa. The reef lies at the base of a high headland, called the Bolinas Mesa. According to contours shown in the most recent geologic map of the Point Reyes Peninsula, there are at least 8,320 acres (33,669,845 m^2) of watershed providing drainage to the ASBS (SWRCB 1979). The ASBS encompasses 876 acres (1.37 mi^2; 3,543,446 m^2) of various coastal marine habitats. The length of coastline included in the ASBS is 3.4 miles (5.0 km), encompassing about 0.22% of California's coastline.

The Duxbury ASBS is almost entirely overlapped by the Duxbury Reef State Marine Conservation Area. The MPA and ASBS share most of their boundaries along the coastline, but the northern boundary of the ASBS extends about 1/16 mile north of the MPA boundary. The south-eastern coastal boundary of the MPA extends about 1/8 mile beyond the ASBS boundary. Oceanic boundaries are parallel to the shore and to each other, though the MPA boundary extends about ¼ mile off the coast and the ASBS boundary extends about ½ mile off the coast.

The ASBS was designated for the following reasons: (1) it has a diversity of habitat and biological assemblages; (2) it contains a rich intertidal biota which has several unique components of sea slugs, rock inhabiting clams and worms, a rare burrowing anemone, and a unique acorn worm; (3) it is the largest shale reef in California.

The ASBS designation was recommended by the Regional Water Board and supported by DFG and Dr. Gordon Chang. No opposition to this designation was submitted.

5.1.10 <u>James V. Fitzgerald</u>

The James V. Fitzgerald ASBS is a strip of exposed coastline with adjacent intertidal reefs, extending from the westerly extension of the centerline of Fourth Street in Montara in the north to Pillar Point breakwater in the south (SWRCB 1979). The ASBS encompasses 518 acres (0.81 mi^2; 2,097,013 m^2) of various coastal marine habitats. The length of coastline included in the ASBS is 5.5 miles (8.784 km), encompassing about 0.35% of California's coastline.

The James V. Fitzgerald ASBS is entirely overlapped by the James V. Fitzgerald State Marine Park, though the southern ASBS boundary extends around Pillar Point, whereas the MPA boundary ends at the point.

The ASBS was designated for the following reasons: (1) it has a diversity of habitat and biological assemblages; (2) dense stands of bull kelp are found along with red algae; (3) there is a diverse array of invertebrates that inhabit the broad reefs such as sea stars, starfish, crabs, chitons, and purple urchins; (4) there are three types of subtidal habitat.

The ASBS designation was recommended by the Regional Water Board and supported by DFG, Department of Parks and Recreation (DPR), and the Sierra Club. No opposition to this designation was submitted.

5.1.11 <u>Año Nuevo</u>

The Año Nuevo ASBS is situated along the central California coast in San Mateo County (approximately 37°06' north latitude, 122°20' west longitude) near the San Mateo-Santa Cruz County Line. The nearest town, Davenport, is 9.7 miles (15.5 km) to the south of the ASBS. Pescadero is 14.4 miles (23 km) north of the ASBS. Other towns near the ASBS are Half Moon Bay, 35 miles (56 km) to the north and Santa Cruz, 25 miles (40 km) to the south. Within the ASBS boundary is the Año Nuevo State Reserve (SWRCB 1981). The ASBS encompasses 13,560 acres (21.19 mi^2;

54,875,399 m^2) of various coastal marine habitats. The length of coastline included in the ASBS is 4.9 miles (7.847 km), encompassing about 0.31% of California's coastline.

Approximately half of the Año Nuevo State Marine Conservation Area overlaps with the Año Nuevo ASBS. The ASBS, which extends about 3½ miles (5.63 km) offshore, is overlapped along ¾ of coastal boundary by the MPA, which extends about ¼ mile (0.4 km) offshore.

The ASBS was designated for the following reasons: (1) it has a diversity of habitat and biological assemblages, with large and highly diverse marine invertebrate populations that are very unique and not present at any other mainland ASBS site; (2) thousands of marine birds and mammals utilize the site as a breeding and feeding habitat.

5.1.12 <u>Pacific Grove</u>

The Pacific Grove ASBS is oriented in a northwest-southeast direction, adjacent to the town of Pacific Grove in Monterey County. For purposes of description, the ASBS is considered to lie along an east-west axis. The western seaward boundary of the ASBS is at 36°38'36" north latitude, 121°55'42" west longitude and is a seaward extension of Asilomar Avenue. The eastern seaward boundary is at 36°37'24" north latitude, 121°53'54" west longitude and is a seaward extension of Eardley Avenue. Land areas are only south of the ASBS, and offshore bay waters are north of the ASBS (SWRCB 1979). The ASBS encompasses 469 acres (0.73 mi^2; 1,898,526 m^2) of various coastal marine habitats. The length of coastline included in the ASBS is 3.2 miles (5.120 km), encompassing about 0.20% of California's coastline.

The ASBS overlaps with the Pacific Grove Marine Gardens State Marine Conservation Area.

The ASBS was designated for the following reasons: (1) it has a diversity of habitat and biological assemblages; (2) it has dense beds of giant kelp *Macrocystis pyrifera*; (3) surf grass dominates large areas; (4) endangered sea otters forage in this area.

5.1.13 <u>Carmel Bay</u>

The Carmel Bay ASBS is located in Monterey County, immediately adjacent to the town of Carmel. The ASBS is south of the Monterey Peninsula, just north of the Santa Lucia mountain range, and west of the Carmel Valley. Pescadero Point, the northern boundary of the ASBS, is located at 36°34' north latitude, 121°57' west longitude; Granite Point, the southern boundary, is located just north of Point Lobos at 36°31' north latitude, 121°56' west longitude. The seaward boundary of the ASBS is formed by a straight line drawn between Pescadero and Granite Points; the landward boundary is the mean high tide line (SWRCB 1979). The ASBS encompasses 1,584 acres (2.48

mi^2; 6,411,404 m^2) of various coastal marine habitats. The length of coastline included in the ASBS is 6.7 miles (10.756 km), encompassing about 0.43% of California's coastline.

The Carmel Bay ASBS is entirely overlapped by the Carmel Bay State Marine Conservation Area.

The ASBS is included in this designation for the following reasons: (1) it has a diversity of habitat and biological assemblages; (2) the intertidal zone is a valuable educational resource, due to the high biodiversity and excellent access.

5.1.14 Point Lobos

The Point Lobos ASBS is located at about 30°10' north latitude, 121°45' west longitude, within Monterey County, California. The closest town is Carmel, located immediately upcoast on Highway 1. The Point Lobos ASBS is adjacent to the Point Lobos State Natural Reserve (Park) and is entirely overlapped by the Point Lobos State Marine Conservation Area. The ASBS encompasses 691 acres (1.08 mi^2; 2,795,439 m^2) of various coastal marine habitats. The length of coastline included in the ASBS is 9.4 miles (15.131 km), encompassing about 0.60% of California's coastline.

The ASBS is included in this designation for the following reasons: (1) it has a diversity of habitat and biological assemblages; (2) a variety of marine mammals are present within the ASBS throughout the year, including the threatened Stellar Sea Lion (*Eumetopias jubatus)*.

5.1.15 Julia Pfeiffer Burns

The Julia Pfeiffer Burns ASBS is located at about 30°10' north latitude, 121°45' west longitude, within Monterey County, California. The closest town is Carmel, located about 35 miles (56.327 km) up the coast on Highway 1 (SWRCB 1980). The ASBS encompasses 1,743 acres (2.72 mi^2; 7,052,623 m^2) of various coastal marine habitats. The length of coastline included in the ASBS is 3.7 miles (6.020 km), encompassing about 0.24% of California's coastline.

The Julia Pfeiffer Burns ASBS is entirely coincident with the Julia Pfeiffer Burns State Park.

The ASBS was designated for the following reasons: (1) it has a diversity of habitat and biological assemblages; (2) it is a biologically rich portion of the California coast.

5.1.16 Salmon Creek Coast

The Salmon Creek ASBS is adjacent to the Los Padres National Forest at the southern end of the Big Sur area of central California's Coast Range. The ASBS encompasses 1,458 acres (5,898,623 m^2; 2.28 m^2) of coastal marine habitats. The length of coastline included in the ASBS is 3.4 miles (5.533 km), encompassing about 0.22% of California's coastline.

The ASBS was designated because it has a diversity of habitat and biological assemblages.

5.1.17 Laguna Point to Latigo Point

The eastern boundary of the Laguna Point to Latigo Point ASBS is Latigo Point (34°01'34" north latitude, 118 °45'20" west longitude) in Los Angeles County and the western boundary is Laguna Point (34°05'40" north latitude, 119°6'30" west longitude) in Ventura County. The ASBS lies in an approximate east-west orientation. Fifty-five percent (55%) of the shoreline (and area) lies in Los Angeles County and 45 percent lies in Ventura County. The eastern boundary is about 16.4 miles (26.4 km) from the City of Santa Monica and 4.1 miles (6.6 km) from Malibu Beach. The western boundary is about 6.5 miles (10.5 km) from Port Hueneme-Oxnard and 15 miles (24 km) from Ventura (SWRCB 1979). The ASBS encompasses 11,842 acres (18.50 mi^2; 47,923,090 m^2) of various coastal marine habitats. The length of coastline included in the ASBS is 24.0 miles (38.603 km), encompassing about 1.54% of California's coastline.

The Laguna Point to Latigo Point ASBS is overlapped by the Big Sycamore Canyon State Marine Reserve in about 1/8 of the ASBS area.

The ASBS is included in this designation for the following reasons: (1) it has a diversity of habitat and biological assemblages; (2) it has a healthy assemblage of giant kelp, *Macrocystis pyrifera*.

5.1.18 Santa Catalina Island

Santa Catalina Island is located at 33°22' north latitude, 118°25' west longitude and lies approximately 20 miles offshore of the Palos Verdes Peninsula. The island is 22 miles (35.4 km) long, 8 miles (12.9 km) across at its widest point, and is oriented in a general northwest to southeast direction. Santa Catalina Island is part of Los Angeles County. Avalon is the only city on the island. There is a community located between Catalina Harbor and Isthmus Cove, known as Two Harbors. Approximately, 100 permanent residents of Two Harbors maintain the local recreational facility utilized by vacationers, the area's primary industry (SWRCB 1979).

The Northwest Santa Catalina Island ASBS is located at the western end of the Island (33°27' north latitude, 118°33' west longitude). It includes most of the area west of Two Harbors (known locally as the Isthmus) (SWRCB 1979). The ASBS encompasses 13,235 acres (20.68 mi^2; 53,561,672 m^2) of various coastal marine habitats. The length of coastline included in the ASBS is 20.9 miles (33.599 km), encompassing about 1.34% of California's coastline. A small portion of the Northwest Santa Catalina Island ASBS overlaps all of the Arrow Point to Lion Head Point Invertebrate Area (MPA).

The ASBS is included in this designation for the following reasons: (1) it has a diversity of habitat and biological assemblages; (2) it is possibly a transitional zone between subtidal area containing predominantly northern and southern species; (3) due to the proximity to University of Southern California's Catalina Marine Science Center, many scientific studies have yielded valuable information about the area.

The Western Santa Catalina Island ASBS begins at the north end of Little Harbor and extends south to Ben Weston Point. Its seaward boundary follows the 300-foot (91.4 m) isobath or a line one nautical mile offshore, whichever is more distant. The ASBS encompasses 2,247 acres (3.5 mi^2, 9.09km^2) of various coastal marine habitats. The length of coastline included in the ASBS is 0.26 miles (0.42 km).

The Southeast Santa Catalina Island ASBS extends from Jewfish Point to Binnacle Rock on the east end of Santa Catalina Island. Its seaward boundary follows the 300-foot isobath or a line one nautical mile offshore, whichever is more distant. Approximate coordinates of the center of the area are 33°18'30" north latitude, 118°18' west longitude (SWRCB 1979). The ASBS encompasses 2,756 acres (4.31 mi^2; 11,151,303 m^2) of various coastal marine habitats. The length of coastline included in the ASBS is 2.9 miles (4.628 km), encompassing about 0.18% of California's coastline.

The ASBS is included in this designation for the following reasons: (1) it has a diversity of habitat and biological assemblages; (2) it represents a warm water region of the Channel Islands. The physical and biological conditions are a marked contrast to the northern Islands, and are more similar to San Clemente Island.

5.1.19 Robert E. Badham

The Robert E. Badham ASBS extends along the coast of Corona del Mar in Orange County. The area is contained within the approximate map coordinates 33°34'50" to 33°35'25" north latitude, 117°51'10" to 117°52'20" west longitude (SWRCB 1979). The ASBS encompasses 220 acres (0.34 mi^2; 888,804 m^2) of various coastal marine habitats. The length of coastline included in the ASBS is 0.7 miles (1.113 km), encompassing about 0.04% of California's coastline.

A small portion of the Robert E. Badham ASBS overlaps all of the Robert E. Badham State Marine Conservation Area MPA. The MPA and ASBS share the same coastal boundary, though the MPA extends a very short distance from shore (less than ¼ mile). The northwestern corners of both Irvine Coast MPA and Crystal Cove MPA also overlap with the ASBS.

The ASBS is included in this designation for the following reasons: (1) it has a diversity of habitat and biological assemblages; (2) offshore reefs provide abundant habitat for a variety of species.

5.1.20 Irvine Coast

The Irvine Coast Marine Life Refuge ASBS encompasses the nearshore waters between the southern border of Corona del Mar and Abalone Point in Orange County. Boundaries of the ASBS are contained within the approximate map coordinates 33°33'20" to 33°35'05" north latitude, 117°49' to 117°51'55" west longitude (SWRCB 1979). The ASBS encompasses 941 acres (1.47 mi^2; 3,806,657 m^2) of various coastal marine habitats. The length of coastline included in the ASBS is 3.4 miles (5.461 km), encompassing about 0.22% of California's coastline. The ASBS was designated because it has a diversity of habitat and biological assemblages.

The entire Irvine Coast ASBS is overlapped by MPAs. Crystal Cove State Park is adjacent to the ASBS, and the Irvine Coast State Marine Conservation Area and ASBS share coastal boundaries. The Marine Conservation Area extends about ¼ mile oceanward, into the ASBS, the oceanic boundary parallel to the coastal boundary. The Crystal Cove State Marine Conservation Area northeast boundary is shared with the oceanic boundary of the Irvine Coast State Marine Conservation Area. The Crystal Cove State Marine Conservation Area extends about ¼ mile beyond the oceanic boundary of the ASBS.

5.1.21 Heisler Park

The Heisler Park ASBS comprises the nearshore waters near the town of Laguna Beach, Orange County. The approximate map coordinates for the area's boundaries are 33°32'25" to 33°32'45" north latitude, 117°47'15" to 117°47'55" west longitude.

The Heisler Park ASBS is entirely overlapped by the Heisler Park State Marine Reserve and Laguna Beach State Marine Conservation Area, which overlap each other as well. Beyond the immediate coastal bluffs of the Reserve are located a public park and public beach access. The landward side beyond the park is fully developed with private residences and businesses. Access on foot to the Reserve is provided by paved paths and steps, and signs announcing the Reserve are posted on all of these accesses (SWRCB 1979). The ASBS encompasses 32 acres (0.05 mi^2; 129,456 m^2) of various coastal marine habitats. The length of coastline included in the ASBS is 0.5 miles (0.781 km), encompassing about 0.03% of California's coastline.

The ASBS was designated because it has a diversity of habitat and biological assemblages.

5.1.22 La Jolla

The La Jolla ASBS is located at 32°51'52" north latitude, 117°15'15" to 117°16'15" west longitude, in La Jolla Bay, adjacent to the town of La Jolla, in the City of San Diego in San Diego County. The shoreward boundary line is the mean high tide line from the south end of SIO to Goldfish Point. It is the south 1/6 of the San Diego-La Jolla Underwater Park, which was created in 1970 (City of San Diego Municipal Code). The Park itself extends from Point La Jolla westward, then northerly to the San Diego city limits, a north-south distance of approximately 7 miles (11.265 km) along a line about 1 mile out from the shoreline for a total surface area of 5,977 acres. The seaward boundaries are designated by a series of five orange-red marker buoys which are clearly identified; and the on-land accesses at Goldfish Point, the La Jolla Beach and Tennis Club, and the south end of Kellogg Park are visibly marked as entrances to the Ecological Reserve.

The northern shore is a fine sandy beach, whereas the southern shore is composed of rough boulders or ledges at the base of cliffs with one pebble beach in the Devil's Slide area. The northern three-fourths of the shoreline face westward while the southernmost one-fourth faces northward (SWRCB 1979).

The ASBS encompasses 453 acres (0.71 mi^2; 1,832,543 m^2) of various coastal marine habitats. The length of coastline included in the ASBS is 1.7 miles (2.714 km), encompassing about 0.11% of California's coastline.

The La Jolla ASBS is completely overlapped by the La Jolla State Marine Conservation Area MPA, which extends beyond the ASBS in the southwest corner.

The ASBS is included in this designation for the following reasons: (1) it has a diversity of habitat and biological assemblages; (2) it is in close proximity to SIO and is a desirable scientific study locale.

5.1.23 <u>San Nicolas Island & Begg Rock</u>

The ASBS encompasses 63,658 acres (99.47 mi^2; 257,615,348 m^2) of various coastal marine habitats. The length of coastline included in the ASBS is 26.9 miles (43.318 km), encompassing about 1.73% of California's coastline. The ASBS is included in this designation because it has a diversity of habitat and biological assemblages.

San Nicolas Island (SNI) is used by the U.S. Navy for shipboard launches of missiles and targets. The island is instrumented with metric tracking radar, electro-optical devices, and telemetry and communications equipment to support long-range and over-the-horizon weapons testing and fleet training.

5.1.24 <u>San Clemente Island</u>

San Clemente Island (SCI) is the southernmost of California's Channel Islands, located 78.3 miles (126.011 km) west of San Diego and 63.3 miles (101.871 km) south of Long Beach. It is the primary maritime training area for the U.S. Department of the Navy Pacific Fleet, and the Navy Sea, Air and Land (SEALS), and also supports the U.S. Marine Corps, the U.S. Air Force, and other users. SCI is used by the U.S. Navy to conduct readiness training, research, development, test and evaluation (RDT&E). Navy ownership of the island allows for fleet training, weapon and electronics systems testing, and research and development activities (U.S. Dept. of the Navy, 2007). It is also home to a variety of unique and rare ecological resources on land, and some of the richest marine communities in the world in adjacent waters. The island is approximately 24.1 miles (38.785 km) long and is 5.2 miles (8.368 km) across at its widest point (San Clemente Island website, www.scisland.org.) The ASBS encompasses 49,162 acres (76.82 mi^2; 198,952,668 m^2) of various coastal marine habitats. The length of coastline included in the ASBS is 58.5 miles (94.089 km), encompassing about 3.76% of California's coastline.

The ASBS was designated because it has a diversity of habitat and biological assemblages.

5.2 GEOLOGICAL SETTING

5.2.1 - Terrestrial Geological Setting

The terrestrial geological setting of the ASBS is important due to the influence of the topography, rock and soil on watersheds, runoff, and sediment deposition in the marine environment.

5.2.1.1. Redwoods National Park

The coastal geology of this ASBS is a mixture of three major components: the Franciscan Complex, Quaternary deposits, and modern beach sands. The Franciscan Complex consists mainly of chert, metavolcanics (greenstones) sandstones, shales, siltstones, and conglomerates that formed an accretionary wedge as ocean crust collided with the North American Plate. As a result, rocks of the Franciscan Complex are extensively folded, sheared, and metamorphosed, typical of a mélange. Most of the intertidal rocks and sea stacks are derived from Franciscan rock types. Differential weathering and erosion is prevalent within the Franciscan Complex as less competent beds composed of shales and siltstones are easily eroded when exposed directly to wind and wave action, resulting in unstable slopes.

The beach extending southward from Crescent City to Nickel Creek is composed entirely of geologically recent beach sands and is intermixed with boulders and rocks near White Knob at the south end of the beach (SWRCB 1981).

5.2.1.2 Trinidad Head

Similar to Redwoods National Park, surficial geology is also dominated by the Franciscan Complex, Quaternary marine deposits, and geologically recent beach sands. Highly resistant Trinidad Head consists of a metavolcanic, intrusive block of hornblende and diorite within the mélange. Greenstone and metavolcanic rocks are found around the base of Trinidad Pier and in the southern portion of the ASBS. Chert is found in the cobble field on the upper beach of the southern part of the ASBS. Most of the more resistant intertidal rocks and stacks are mineralized sandstone called "greywacke." The coastal bluff consists of a thick sequence of Quaternary deposits deposited during periods of marine inundation during the past 1 to 2 million years. The coast line has since been uplifted and eroded.

The present day geological picture is a result of differential weathering and erosion of the major components. Following winter storms, erosion of the Franciscan blue clays is particularly evident and results in increased turbidity of the nearshore zone. Coastal bluffs in the vicinity are relatively unstable and, as a result, the bluffs are currently designated as open space to lessen the possibility of increased erosion and damage to property (SWRCB 1979).

5.2.1.3 King Range

King Range consists largely of rocks in the ubiquitous Franciscan Complex formation, along with various metavolcanic intrusives or metamorphic rocks. However, greenstones and cherts typically characteristic of the Franciscan Formation are lacking for the most part. Metavolcanic intrusives, sometimes evident as pillow structures (indicating their origin underwater) are also found at Shelter Cove in the coastal bluffs.

Rocks of the King Range show evidence of persistent crustal deformation as evidenced by the numerous folds, thrust faults, reverse faults, and strike-slip faults initiated during the Tertiary period that have continued to develop into present times. The San Andreas Fault meets the Mendocino Fracture Zone just north of the ASBS; severe seismic hazard will continue to exist along this section of the coast (SWRCB 1979).

A high ridge runs parallel to the coast through the entire area. The slopes of this ridge drop precipitously into the intertidal zone along the coastline, and are cut by numerous small streams. The entire coastline is undergoing active uplifting as the Eastern Pacific Plate is moving under the Continental Plate.

Only three areas of relatively flat ground are found along the coast: (1) Shelter Cove, where the adjacent ridge line drops to gently rolling hills about 1/2 mile (0.8 km) from the coast; (2) Big Flat, an alluvial fan at the mouth of Big Flat Creek; and (3) Spanish Flat, a narrow terrace extending for 2 miles (3.2 km) from Randall Creek to Spanish Creek. Huge rock slides and talus slopes fall directly into the intertidal zone at several points.

The main fault in the area is the Point Delgada Fault, either a branch of the San Andreas Fault, or the main fault itself. At Shelter Cove, several surface breaks opened during the 1906 earthquake. Nowhere are the effects of local seismicity on intertidal substrates more evident than at the huge Kaluna Slide, just north of Shelter Cove. Fractured, broken rock extends from Kaluna Cliff directly into the intertidal zone. The main break of the Point Delgada Fault is exposed near the top of the cliff; movement along the fault apparently triggered the slide in 1906.

5.2.1.4 <u>Pygmy Forest Ecological Staircase</u>

The ASBS lies within the coastal belt of the Franciscan Formation, which reaches along the coast from Cape Mendocino to Point Arena. This section of the Franciscan Formation averages 15 miles (24 km) wide and consists primarily of greywacke. Subsequent and irregular uplifting in this portion of the Franciscan Formation resulted in the series of wave cut marine terraces that form the Pygmy Forest Ecological Staircase. Possibly, another terrace is still being formed subtidally (SWRCB 1981).

5.2.1.5 <u>Saunders Reef</u>

The Saunders Reef area is part of the Gualala Block, which comprises all the rocks west of the San Andreas Fault between Fort Ross and Point Arena. The block consists of over 3.8 miles (6 km) of Upper Cretaceous to recent marine sediments that are highly faulted and folded (Boyle, 1967). There are four major geological units in the area: (1) the German Rancho Formation; (2) the Iverson Basalt; (3) the Gallaway Formation; and (4) marine terrace deposits.

The German Rancho Formation outcrops only in the southern portion of the area near Iverson Point, where it underlies the marine terrace deposits. The sandstones of the

German Rancho Formation consist of medium to very coarse sand that is normally graded with sharp or erosional bases, deposited via turbidity currents in quite deep waters. The sands are mainly comprised of quartz and k-feldspar with muscovite and carbonaceous material. The mudstones in this formation contain muscovite, montmorillonite, kaolinite, feldspar, and quartz (SWRCB 1980).

The Iversen Basalt unit, stratigraphically, overlies the German Rancho Formation and underlies the Gallaway Formation. The Iversen Basalt comprises all of the sea stacks found in the southern part of the ASBS, and along most of the seacliffs.

The early-Miocene Gallaway Formation consists of cemented mudstones and occasional porcelanite, as well as some dolomite concretions and benitonite beds. The mudstones consist of quartz, feldspar, calcite, montmorillonite, pyrite, glauconite, and organic matter. The sandstones consist predominately of quartz and feldspar and are exposed in the intertidal only in the northern-most part of the ASBS study area. The broad, intertidal terrace in the northern portion of the ASBS study area is underlain by the Gallaway Formation.

On land, there are at least three marine terrace levels immediately adjacent to the Saunders Reef area. These Pleistocene terraces lie at elevations of up to 197 feet (60 m), providing evidence of the relatively recent tectonic uplifting which has occurred in this area.

Beaches along the Saunders Reef ASBS are cobble-boulder beaches with little sand. The sea cliffs at the northern-most part of the study area are of the Gallaway Formation. The remainder of the sea cliffs in the ASBS is composed of the massive Iversen Basalt. Consequently, the cliffs are steeper than they are to the north. Due to rock falls and fresh water runoff, the sea cliffs in the area appear to be retreating rapidly landward, undermining Highway 1 in some places (SWRCB 1980).

5.2.1.6 <u>Gerstle Cove</u>

Like the Saunders Reef ASBS described above, this ASBS is part of the Gualala Block, west of the San Andreas Fault. The geological units in the area are the German Rancho Formation; the Iverson Basalt; the Gallaway Formation; and marine terrace deposits described previously.

The adjacent land mass is emergent coast, featuring a series of wave-cut marine terraces produced by relatively higher sea levels (SWRCB 1979).

5.2.1.7 <u>Point Reyes Headlands</u>

Point Reyes Headlands lies west of the San Andreas Fault and consists largely of granodiorite, which are more closely associated with rocks from southern California that have traversed northwestward along the San Andreas Fault hundreds of miles (SWRCB 1980). Core samples have revealed that the granitic rocks extend 1,370 feet (417 m) below sea level. These rocks range in composition from quartz diorite to adamellite, containing more quartz and potash feldspar. Most of the granitic rocks of the Point Reyes Peninsula are deeply weathered. Overlying parts of the granite on the Point Reyes Headlands ASBS are large patches of conglomerate, a hard sedimentary rock composed of large and small-size pebbles and cobbles, all cemented together. From the Lighthouse area of the Headlands to the intertidal zone, there are large blocks of conglomerate. Giant sea caves have been etched into the conglomerates at the surf zone. These conglomerates are not found anywhere else on the Point Reyes Peninsula. The conglomerates are overlaid in an unconformed manner by basal glauconitic sand of the Drakes Bay Formation.

To the north of the Point Reyes granitic promontory are alignments of ridges and valleys that run approximately east to west. The ridges are harder layers of the Drakes Bay Formation and are folded into an anti-cline-syncline pattern. The valleys are remains of tributaries, which drain into the drowned-valleys of Drakes Estero and Estero de Limantour (Galloway 1977, cited in SWRCB 1980).

5.2.1.8 Duxbury Reef

This location is the southernmost point of the Monterey Shale Formation, which consists of chert, porcelanites, organic shales, and thin hard sandstones in considerable variation. The headlands are composed of sandstones that are undergoing continuous erosion by winds (SWRCB 1979).

Except for a small area of unconsolidated terrace deposits at the northern boundary of the ASBS, the whole of the area consists of Monterey shales. These shales cover most of the area from Duxbury Point to Double Point in the Point Reyes National Seashore, and extend as far north as some areas in the Tomales Quadrangle. The surfaces of outcrops are normally smooth and covered with vegetation, but where the shale is chert, a crag or pinnacle may be formed by differential erosion.

The headlands (Bolinas Mesa) overlooking the Duxbury Point area are composed of sandstones, which are undergoing continuous erosion by winds. The reef is composed of harder organic shales and some cherts. These harder rocks are continually being exposed by rapid erosion of the mesa.

The Monterey sandstones and mudstones are well bedded and dip at an angle 45° seaward. Thus when bedding planes are lubricated with rainwater or drainage, landslides are apt to occur at the sea cliff. Waves during high tides quickly move the material at beach level, with the slide gradually being eroded back to reach a stable angle of repose. Since 1859, Duxbury Point has eroded about 200 feet (60 m), Bolinas Point about 160 feet (50 m), and an unnamed point about 4,000 feet (1,200 m) north of Bolinas Point has eroded about 200 feet (60 m). Along the stretch of coast adjacent to the ASBS, the Monterey sandstones and mudstones are well bedded and dip seaward contributing to landslides at the sea cliff (SWRCB 1979).

A large slump block landslide is located north of Palomarin Beach, where beach erosion is undercutting the toe of the slide area (USGS, 2005). Between Bolinas and Duxbury points, the wave-cut platform and beach are also inundated by waves causing landslides by undercutting the base of the cliffs. Failure is facilitated by increased subsurface flow of water and saturation due to septic effluent from cliff-top homes as well as winter rainfall. Between Bolinas and Duxbury points, the average rate of recession along the cliff base ranges from 6 to 24 inches per year. Between Duxbury Point and Terrace Avenue, the mudstone is weathered and fractured, particularly near the San Andreas Fault. Numerous homes line the cliff edge and since the area was initially subdivided in 1927, many of these lots and Ocean Parkway have been damaged by cliff erosion; several homes have been removed from their foundations (Griggs et al, 2005).

Duxbury Reef is the largest exposed shale reef in California. Its prominences extend up to 1 mile (1.6 km) out to sea at Duxbury Point, and from 1/4 to 1/2 mile (0.4 to 0.8 km) from the high tide line in other areas. Wave action has carved channels and depressions in the rocks, but more resistant ridges have remained as high protrusions, resembling small islands (SWRCB 1979).

5.2.1.9 James V. Fitzgerald

The Fitzgerald Marine Reserve straddles the geologically active Seal Cove Fault, which extends northward to connect with the San Andreas Fault near Bolinas Lagoon in Marin County. The San Andreas Fault is probably responsible for the seismic activity of the Seal Cove Fault and secondary faults which diagonally transect the ASBS. Seismic activity at either the Seal Cove or Bay Area faults could result in surface rupture along the faults, high levels of ground shaking, ground failure (such as land sliding), and tsunami inundation (SWRCB 1979).

The trace of the Seal Cove Fault is exposed in the sea cliff just north of the reserve headquarters. The mouth of San Vicente Creek, which drains the San Vicente watershed, is located just south of the headquarters. South along the west side of Seal Cove Fault, bedrock and overlying marine terrace deposits are vertically lifted about 150 feet (45 m) to form the Pillar Point headland and ridge. It is the west face of this ridge which forms the sea cliffs south of the headquarters. The bedrock cliffs are composed of consolidated sandstone, siltstone, and mudstone, much of it embedded in clay, which together form the Tertiary (Pliocene) Purisima Formation. The overlying marine terrace deposits, which cap the Purisima bedrock, consist of weakly consolidated, slightly weathered sands and gravels of more recent (Pleistocene) origin. The cliffs gradually increase in height in the southerly direction and are being actively eroded over most of the length of the reserve. With little or no beach present, the most resistant subtidal and intertidal reefs offer only local resistance to wave action. As a result, land-sliding occurs along the length of this section of the ASBS (SWRCB 1979).

North of the marine reserve headquarters, the shoreline of Fitzgerald ASBS changes abruptly. This section of coastline is characterized by rugged rock outcrops and smaller reefs of granodiorite of Mesozoic origin (Geologic Map of California 1963). Elevation of these cliffs ranges from 25 to 50 feet (7.6 to 15 m) in most places. Occasional sandy or cobble beaches are present between rock outcrops (San Mateo County 1976, cited in SWRCB 1979).

5.2.1.10 Año Nuevo

The ASBS consists of a small rocky island lying about 0.5 miles (600 m) offshore from a low headland which juts about 1.5 miles (2 km) out into the Pacific Ocean from the general north-northwest trend of the coastline in San Mateo County. The surface of an emergent marine terrace forms the broad, nearly horizontal plain of Point Año Nuevo. The wave-cut platforms mantled with terrace deposits truncate folded beds of the Purisima (Pliocene) and Monterey Formations (Miocene) (Tinsley 1972, cited in SWRCB 1979). With the exception of the south shore of Point Año Nuevo where near vertical sea cliffs of 60 to 90 feet (20 to 30 m) are present, the coastline either lacks cliffs or has small cliffs, usually less than 6 to 10 feet (2 to 3 m) high. South of Point Año Nuevo, three major fault strands within the San Gregorio Fault zone intersect the coastline and the rather continuous Santa Cruz terrace sequence comes to an abrupt end. Lateral discontinuities and tilting of well-preserved marine terraces help define major structural blocks within the fault zone and document significant differential movement among these blocks from Point Año Nuevo north to San Gregorio Creek (SWRCB 1981).

Along the south shore of Point Año Nuevo, five faults exposed in the sea cliff clearly offset the 100,000 year-old marine terrace. The Frijoles Fault consists of a 300 foot wide zone of crushed and pervasively sheared sandstones and siltstones of the Pliocene Purisima Formation and is exposed in the sea cliff on the south shore of Point Año Nuevo. The competent rock of the Purisima Formation dips gently northeast and forms high vertical seacliffs, capped by the first marine terrace west of the fault zone. Lower cliff height and greater instability due to numerous landslides off the cliff face characterize the sea cliff in the fault zone.

Alluvial deposits consisting of interbedded clays, peats, silts, and poorly sorted sand and gravel, composed primarily of clasts of Santa Cruz Mudstone, are found east of the fault juxtaposed against the crushed Purisima Formation (Weber and LaJoie 1979, cited in SWRCB 1981).

There are two dune fields within this ASBS at Point Año Nuevo and Franklin Point. The 300 to 350 acre dune field at Point Año Nuevo consists of fine-to-medium grained sand derived from a windward beach. Along the north shore of Point Año Nuevo, beach sands are winnowed by the prevailing northwesterly winds and the finer grained sands are carried up onto the low terrace above the beach (SWRCB 1981).

5.2.1.11 Pacific Grove

The ASBS is located at the northern end of the Santa Lucia Mountains, where these mountains descend beneath Monterey Bay. The geology of the shoreline and nearshore waters of the ASBS is relatively simple, consisting only of Santa Lucia granodiorite. The rock is highly fractured and, therefore, weathers easily to sand size particles. The rock mass is cut by dikes, which are somewhat more resistant to weathering than the granodiorite. The rocks are extensively jointed in several directions, the most persistent being parallel to the shoreline; jointing frequently occurs perpendicular to this, thus producing a blocky pattern in the exposed outcrops best seen at Lucas Point and Otter Point.

The sandy beaches within and adjacent to the ASBS are derived entirely from the granodiorite. Arnal et al (1973) noted that Monterey Bay is a closed system with no sediment being transported into or out of the bay to the north and south. Also, the shoreline at Pacific Grove is situated such that longshore transport into the area from south bay beaches is highly unlikely (SWRCB 1979).

5.2.1.12 Carmel Bay

The ASBS coastline is characterized by alternating rocky points and extensive granitic sand beaches. The Carmel River drains into the ASBS just south of Carmel Point. San Jose Creek drains into the south end of the Carmel River State Beach, a steep sandy cove that encloses the Carmel submarine canyon.

Several distinct formations are found at different locations along the shoreline. The granite outcroppings represent the northwestern-most extension of the Santa Lucia mountain range, for which granodiorite is the basement rock. Subtidally, most of the floor and walls of the Carmel submarine canyon consist of granodiorite, which accounts for the unusually high visibility here. Intertidally, granodiorite occurs as promontories, boulders, and cobble at Pescadero Point, Carmel Point, in the vicinity of the buried sewer outfall, and at the north end of Hudson Cove. Inland of the ASBS, granite outcrops occur north of Stillwater Cove, in the Carmel Valley, and along San Jose Creek, extending south to Point Lobos (Simpson 1972, cited in SWRCB 1979).

The Carmelo series, also common in and adjacent to the ASBS, consists of sandstone, siltstone, conglomerate, and shale. The dominant rock type in the ASBS is a conglomerate, consisting of igneous pebbles embedded in a coarse-grained, well-cemented matrix. Subtidally, the Carmelo Formation consists of all four rock types and underlies Stillwater Cove; from here, it continues southward to a point 300 yards (274 m) seaward of Ocean Avenue at the north end of Carmel City Beach. In the intertidal zone, this formation is visible adjacent to Stillwater Cove, in the promontory just north of

Monastery Beach, and adjacent to Hudson Cove. Inland, the Carmelo Formation occurs north of the Carmel Mission (northeast of the Carmel River mouth).

The Tremblor Formation, consisting of a white to brownish sandstone intermixed with conglomerate occurs at several shoreline locations between the volcanics at Arrowhead Point and amongst the Carmelo Formation at Pebble Beach and Stillwater Cove. Inland, this formation occurs northeast of the Carmel Mission. Lava outcrops or extrusions occur both subtidally and intertidally at Arrowhead Point.

Quaternary rocks identified as Aromas Red Sandstone occur in cliff sides and along the beach from Arrowhead Point south to Carmel (Mission) Point. Recent unconsolidated sediments form terraces, which underlie the Pebble Beach Golf Course and are visible adjacent to the intertidal area. Submerged terraces of this composition also occur throughout Carmel Bay. Sand beaches occur frequently along the ASBS (SWRCB 1979).

5.2.1.13 Julia Pfeiffer Burns

The area is within the Coast Range Geomorphic Province and is classified as Mesozoic granitic rock. The coastline is very steep resulting in restricted watersheds that are drained by canyons. Within the ASBS, two small watersheds occur, Partington Creek draining into Partington Cove and McWay Creek Draining into Waterfall Cove (SWRCB 1980).

The geology, climate, and ecology make the Big Sur area landslide-prone. Landslides in frequently damage Coast Highway and may impact nearshore marine life. Rocks weakened by faulting and fracturing contribute to landslide conditions. During the storm season Big Sur experiences heavy rainfall and high wave energy, and during the fire season wildfires remove vegetation, making slopes vulnerable to erosion. In 1983 a landslide at Julia Pfeiffer Burns ASBS resulted in closure of the highway for more than a year and generated nearly 3 million cubic yards of debris (USGS, 2004).

5.2.1.14 Salmon Creek Coast

Salmon Creek is among the most southern of watersheds along the Big Sur coast. The eastern boundary of the watershed is the coastal ridge of the Santa Lucia Range. This area is underlain by rocks of the Franciscan Complex, which are known to erode more easily than rocks further north in the same mountain range. A major fault, the Sur-Nacimiento fault, traverses the area. There are an abundance of ultramafic rocks rich in magnesium and iron and there is more serpentine here than elsewhere in Big Sur. Soils derived from these rocks support an unusual flora, including a number of plants that grow only in serpentine (Henson et al., 1996).

5.2.1.15 San Nicolas Island

SNI topography was initially formed and subsequently shaped by changes in sea level and differential uplift of the island. The central portion of the island gently slopes upward (from north to south) to a height of 900 feet (274 m) above mean sea level. Cliffs along the northern perimeter of the island's central mesa lead to seven well-defined marine terraces visible on the north side of the island. The most notable geographic feature of SNI is the series of Eocene marine terraces. Terraces are covered by windblown sand (dune) deposits that decrease in depth from northwest to southeast. The average surface elevation is 500 feet (152 m) above mean sea level, with a maximum elevation of 908 feet (276 m) above mean sea level.

SNI is thought to be underlain by the Franciscan Formation, which consists of a variety of rocks including deep-marine sedimentary rocks as well as metamorphosed igneous rock. Underlying both dunes and marine terrace deposits are alternating layers of Tertiary marine sandstone and siltstone. All units have been folded into a broad anticline. The axis of this fold runs parallel to the length of the island, plunges slightly southeast, and is offset by several Pre-Quaternary faults. Marine terrace deposits are composed of unconsolidated clayey, silty sands, some of which are cemented together by caliche, a cement-like calcium carbonate deposit formed by the downward percolation of rainwater in dune and marine terrace deposits. Fossils occur throughout Eocene sedimentary units and marine terrace deposits on SNI, and occur extensively throughout surface and subsurface units. Fossils of marine terrace deposits consist of over 250 species of mollusks and other invertebrates. These assemblages are presumed to occur throughout marine terraces on SNI and are unique in their completeness (Vedder and Norris 1963 in US Navy San Nicolas Island Integrated Natural Management Resources Plan 2006-2010).

5.2.1.16 Laguna Point to Latigo Point

The Ventura-Oxnard plain lies at the north end of this ASBS and consist of a large alluvial deposit from the Ventura River, Santa Clara River, and Calleguas Creek drainages. Calleguas Creek drains into the ASBS through Mugu Lagoon. A barrier bar with a single tidal opening bounds the seaward side of the lagoon.

The Santa Monica Mountains rise steeply to the east of the Ventura-Oxnard plain. These mountains, part of the Transverse Ranges province, are primarily composed of sedimentary rocks. This region is characterized by steep mountain slopes and few offshore reefs. Along the coastal bluffs, the region is structurally the most complex within the ASBS. The rocks are highly folded and steeply dipping so that very different rock types lie next to one another. The western part of this bluff coast from Little Sycamore Canyon to Trancas Beach is made up of older Tertiary (Miocene) erosion resistant rocks of the Trancas Formation. The white cliffs of Paradise Cove are outcrops of the Miocene Age Modelo Formation, which forms steep inclined bids from Zuma Beach Eastward to Corral Beach (beyond the ASBS boundary). This formation is predominantly siliceous shale and was probably formed in the deep sea. The headland at Point Dume is a highly resistant igneous breccia that has protected the softer sedimentary shale behind it from erosion. In addition to the Miocene deposits, there is an irregular veneer of Pleistocene marine terrace deposits on the bluff, between the ocean and the mountains adjacent to the eastern section of the ASBS that tends to form steep-sided stream gullies and sea cliffs.

A major east-west low angle thrust fault, the relatively young Malibu Coast Fault, separates the Santa Monica Mountain escarpment from the central Malibu bluff coast. The fault generally can be traced in the central and eastern part of the land adjacent to the ASBS by the distinct change in slope between the terrace of the Malibu bluff and the rapidly rising Santa Monica Mountains behind. High angle faults tend to run north from this fault into the Santa Monica Mountains. The Malibu Coast Fault runs inland from offshore at Las Flores Canyon to the east of the ASBS, and re-enters the sea at Little Sycamore Canyon within the ASBS. Many smaller faults run roughly north-south in the Santa Monica Mountains and often provide the basis of the steep-sided canyons in the area. The largest of these faults is the Sycamore Canyon Fault. Additional faults may separate the Trancas and Modele Formations at the western end of Zuma Beach and another fault may exist offshore of Point Dume, separating the Point from the Modele Formation.

Between Point Mugu and Deer Canyon the shallow water areas off the headlands are regularly bordered by bedrock outcroppings and boulder fields that give way to sand beyond a depth of no more than 10-15 feet (3 to 4 m) (SWRCB 1979).

5.2.1.17 <u>Santa Catalina Island</u>

The major exposed rock on Santa Catalina Island is Catalina schist, a low-grade layered metamorphic rock. Landslides commonly occur where it forms steep slopes. To the northwest, the land adjacent to the ASBS is extremely rugged, with steep drop-offs to the ocean and narrow ravines.

The highest peak adjacent to the ASBS is Silver Peak, reaching an elevation of 1,804 feet (549 m). Adjacent to the Northwest Santa Catalina Island ASBS the isthmus is the land area with the lowest elevation (less than 20 feet; 6.1 m) and also has the narrowest width of any portion of the island (0.25 miles). The Isthmus area is geologically very active, as indicated by frequent landslides (SWRCB 1979).

Approximately 59% of the island's surface drainage enters Western Santa Catalina Island ASBS; streams include Big Springs and Little Springs Canyon, Fern Creek, Cottonwood Creek, Sweetwater Canyon, Cape Creek, Middle and Bullrush Canyons. Only Cottonwood and Middle Canyons have perennial flow into the ASBS. Runoff and erosion during the storm season is known to cause road damage on the road to Ben Weston Beach.

The southeast portion of the island is mountainous with steep, rocky cliffs. A large industrial quarry operation is located adjacent to the Southeast Santa Catalina Island ASBS (SWRCB 1981).

5.2.1.18 San Clemente Island

SCI is the exposed portion of an uplifted fault block composed primarily of a stratified sequence of submarine volcanic rock (andesite, dacite, and rhyolite) and volcanic rocks of Miocene age (12 to 15 million years old). The volcanic rock is over 1,969 feet (600 m) thick and is overlain and interbedded with localized sequences of Miocene and Pliocene marine sediments, many of which contain microfaunal and megafaunal fossils. The highest point on the island is about 2,000 feet (610 m) above sea level, in an area southeast of the island's center. Elevations gradually slope toward the north and south ends of the island (Olmsted 1958 in US Navy, 2008). Several steep, narrow canyons are located throughout SCI, with some over 500 feet (152 m) deep and drop sharply into the sea (SCS 1982 in US Navy, 2008).

The steep east-facing cliffs of the northeastern portion of the island are part of a continuous escarpment along the eastern side of the island, from Pyramid Head to Wilson Cove; there is also an isolated segment of the escarpment from Wilson Cove to Lighthouse Point (Dolphin Bay). Elevations of the eastern escarpment range from sea level to 1,965 feet (599 m) above mean sea level. The coastal and upland marine terraces dominate the western side of the island, as well as the northern and southern ends; the terraces are considered among the most well-defined examples of such features (Yatsko 1989 in US Navy, 2008).

5.2.1.19 Robert E. Badham

The ASBS is fronted by sandstone bluffs that slough rubble at their base. Several small drainages enter the beach zone in the northern portion of the ASBS forming marshy areas (SWRCB 1979). One of these drainages is Buck Gully.

5.2.1.20 Irvine Coast

The Abalone Point region is composed of a siltstone bench that is easily accessible from the adjacent beach only at times of low spring tides. The benchwork is part of a several hundred foot high cliff that also helps to limit access to the area. Just north of Abalone Point is a broad sand beach that stretches the entire length of the reserve. This sandy beach, over 3 miles (4.8 km) long, is interrupted by small rocky outcroppings only twice, at Reef Point and at a small rocky bight just south of Crystal Cove. Sandstone bluffs line the entire beach; erosion of these bluffs is particularly noticeable in the Scotchman's Cove region. The bluffs appear less eroded in the area around Pelican Point, where fossil-bearing rocks are found (SWRCB 1979).

5.2.1.21 La Jolla

The La Jolla ASBS is a small alluvial basin bounded on the south by the westward-trending sides of the Soledad Mountain, which reach the sea at Devil's Slide to Point La Jolla (commonly called Alligator Head). To the east and north, the basin is bordered by a high ridge that forms the cliffs north of SIO. The alluvial fill of this basin rests on a seaward sloping basement Eocene sandstone and shale with a thickness of 30 to 40 feet (10 to 12 m) (SWRCB 1979).

5.2.2 - Intertidal and Subtidal Topography and Substrate

The intertidal and subtidal geological setting provides habitat for benthic marine life. Different substrates (e.g., mud, sand, and various types of hard rock) and topographic features (e.g., slope, orientation, etc.) represent different habitats and therefore are inhabited by different biological communities.

5.2.2.1 Redwoods National Park

A variety of subtidal substrates exist within the ASBS. North of the Klamath River, substrates are composed of sands, gravels, and rocks ranging in size from boulders [5 feet (1.5 m) or greater in diameter] to giant sea stacks. South of the Klamath River, substrates appear to be composed mostly of sands and finer sediments (SWRCB 1981).

5.2.2.2 Trinidad Head

On the South Side of Trinidad Head, the substrate is rocky. Typical profiles include sheer rock faces from three to 14 meters deep. When surveyed in the late 1970s rock substrate was generally clean to about four meters deep; below that depth there was progressively more silt deposition to the bottom at about 14 meters deep. On the East Side of Trinidad Head, to about two meters deep, rocky substrates are generally either vertical or steeply inclined. Deeper than two meters, piles of boulders slope to the bottom between approximately three to six meters. On the East Side of Trinidad Rock, the bottom consists of well-worn boulders of low relief. Immediately east of Trinidad Rock, the area consists of irregular bedrock and boulders to a depth of about six meters. Obtrusive bedrock extends upward and often above datum. Patches of gravel also occur in the ASBS (SWRCB 1979).

5.2.2.3 King Range

The submarine topography off the coastline is complex and varied. Tidally emergent rocks are common within a quarter of a mile (400 m) of the shore, usually surrounded by coarse sand bottoms. The continental shelf (200 m depth) is apparently quite near the shoreline, within 4 to 5 miles (6.5 to 8.0 km), at several points. Three submarine canyons approach the shore along the coast: the Delgada Canyon just north of Point Delgada, the Spanish Canyon off Spanish Flat, and the Mattole Canyon just north of Punta Gorda.

Flat, shelf-like intertidal rock formations are absent along the coast except at two points. The first, about 1.1 miles (1.8 km) north of Punta Gorda, is a sedimentary (probably Franciscan) formation extending into the intertidal zone for approximately 40 yards (38 m) perpendicular to the sand beach. The second, at Point Delgada, is a well developed series of bench formations (clearly Franciscan) extending 80-90 yards (70-80 m) from the coastal bluffs to a drop-off into the subtidal zone. The intertidal rock formations at Point Delgada are extensive, with evidence of weathering by surge channels and wave action. Boulders 0.5-2 meters in diameter are scattered through the intertidal zone and have fine to medium grain sands around their bases. The stable substrate and modest protection from predominantly northwest waves have resulted in the establishment of a geologically amenable intertidal habitat (SWRCB 1979).

5.2.2.4 Jughandle Cove

Areas to 10 feet (3 m) deep within the small northern cove consist of boulders and interspersed sand. Beyond this depth, the bottom is bedrock, boulder, and some localized cobble and gravel patches. A series of offshore rocks extend northwesterly from the southern border of the cove. Their faces are roughly vertical and descend 10 to 35 feet (3 to 11 m) to the bottom (SWRCB 1981).

The headlands north of Jug Handle Creek Cove drop vertically, as an irregular and often overhanging wall, to about 15 feet (5 m) deep, where the bottom is dominated by large boulders and submerged pinnacles. The bottom of Jug Handle Creek Cove is filled with clean medium-grained sand, which continues offshore to beyond 60 feet (18 m) deep. Boulders emerge from the sand on the borders of the cove (SWRCB 1981).

A series of rocks extend northwestward from the southern border of Jug Handle Creek Cove. From 10 to 30 feet (3 to 9 m) emergent rocks rise from the sand to the surface. Further offshore, to 45 feet (14 m) deep, the series continues as isolated submerged rocks rising out of the sand (SWRCB 1981).

The extreme southern cove within the ASBS has a gently sloping bedrock and boulder bottom. Nearshore emergent rocks in the northerly portion of this cove are in places surrounded by sand and cobble bottoms. Bedrock dominates deeper areas within the cove and offshore the bottom is similar to that off the northern headlands (SWRCB 1981).

5.2.2.5 <u>Saunders Reef</u>

Rock samples obtained by SCUBA divers indicate Saunders Reef is part of the Gallaway Formation. The reef is actually a complex of low parallel ridges and outcrops from 1.5 to 39 feet (0.5 to 12 m) high. Some of these are exposed at low tide. The bottom between the ridges and outcrops is composed of rock, cobble, and coarse sand. Large ripple marks were found in this area indicating very high surge velocities (SWRCB 1980).

5.2.2.6 Gerstle Cove

The submarine topography within the ASBS is extremely irregular, probably owing to exposure of the coastline to wave action, and concomitant erosion of the shoreline. The hardness of the sedimentary rock is highly variable, resulting in differential erosion producing a wave-cut and indented coastline. Thus, large slump blocks and boulders are continually being supplied to the marine environment. Large to small boulders dominate most of the gently sloping subtidal terrain. Slump blocks, wash rocks, and emergent sea stacks also occur immediately offshore and constitute the only other topographic features in and adjacent to the ASBS (SWRCB 1979).

5.2.2.7 <u>Point Reyes Headlands</u>

The Point Reyes Headlands ASBS extends from the intertidal zone out to 2,000 feet (609 m). At the south face of this 2,000 foot line, the depth is about 100 feet (30 m). However, at the western boundary of the ASBS zone, the depth probably is greater than 150 feet (45 m), while at the eastern boundary, at the Chimney Rock area, the depth is less than 60 feet (18 m) (SWRCB 1980).

The submarine topography consists of large granitic boulders throughout the shallow water zones with large amounts of sand interspersed between the boulders. At the west end, almost directly below the lighthouse, is “The Wall" - a vertical granitic face which drops 60 feet (18 m) to the sloping sandy bottom at 85 feet (26 m) (SWRCB 1980).

In contrast to “The Wall" of the western side of the ASBS, the submarine topography at Chimney Rock consists of large boulders 3 to 8 feet (1 to 2.4 m) in diameter. Sand surrounds these boulders and gently slopes out to the 60-foot isobath line. Large, vertical intertidal sea caves are also located amidst the conglomerate rocks about 150 feet (45.7 m) east of the Lighthouse (SWRCB 1980).

Chimney Rock: At the east end of the ASBS is a large granitic sea stack with a single 50 foot (15 m) pinnacle that resembles an isolated chimney. This stack was a part of the main cliff during the past; erosion divided the section from the eastern promontory. Surrounding Chimney Rock are large boulders which make up the intertidal and subtidal configuration. Sand surrounds these granitic rocks and continues in a gentle slope out beyond the 60 foot (18 m) isobath. Since the refractory waves sweep around the Chimney Rock area, there is movement of sand throughout the year (SWRCB 1980).

Pelican Arch: This unique granitic rock is 30 feet (9 m) in height and is a sea arch that is a frequent habitat of the Brown Pelican, Pelecanus occidentalis. The birds often perch on the arch while resting from their feeding activities within the area (SWRCB 1980).

Saddle Cove: The cliffs between Chimney Rock and Saddle Cove are nearly vertical, rising from sea level to about 190 feet (58 m). A small beach at the base of a sloping grade illustrates much erosion (SWRCB 1980).

Split Rock: Massive granitic rocks which have split off from the south cliffs provide the name of this area as Split Rock Cove. The waters of this cove are much deeper than that of the major coves within these southern-facing cliffs. The 30 foot (9 m) isobath bends deeply into Split Rock Cove. The deep water enables large waves to come very close to the area which gives Boulder Beach a steep profile with rounded cobbles and boulders (SWRCB 1980).

Sea Lion Cove: Granitic rocks, large and small, are scattered throughout the area west of Split Rock Cove. The smooth surfaces of these rocks enable many sea lions to haul out in this area. Coarse sand surrounds these granitic stacks. Sea Lion Cove is the major area for the California Sea Lions. Two sandy beaches in Sea Lion Cove enable hundreds of these mammals to haul out (SWRCB 1980).

Sea Caves: The conglomerates of the Point Reyes Headlands ASBS extend from the highest point of the cliff at 612 feet (186 m) to the surf zone where the depth is 30 feet (9 m). The waves erode these conglomerates, etching out giant sea caves. Large conglomerate boulders and coarse sand make up the benthic substrate at the base of these cliffs, which are a favorite niche for the Common Murre, Uria aalge (SWRCB 1980).

“The Wall”: It is a 60 foot submarine cliff just below the Lighthouse at the western edge of the ASBS. The base of “The Wall" is 85 feet (26 m) below sea level with sand and rocks sloping out beyond 100 feet (30 m). This unique vertical wall is probably a result of faulting action of the Headland (SWRCB 1980).

Ideal diving conditions are almost impossible to realize as giant waves smash across this western promontory year-round. The underwater surge from the refractory wave trains is severe, preventing divers from maintaining a fixed position on the wall. Moreover, the water visibility is extremely poor, at best about 30 inches (76 cm), both from the sediments stirred up by the wave-surge and by the darkness of these depths (SWRCB 1980).

Murre Rock: Just west of the Lighthouse, outside of the ASBS boundary, are two large granitic sea-stacks, which are the main nesting sites for thousands of Common Murre, Uria aalge. These birds reside at the rock year-round (SWRCB 1980).

5.2.2.8 Duxbury Reef

Duxbury Reef is also the largest exposed shale reef in California. The bottom topography immediately offshore from the ASBS consists of eroded reef remnants interspersed with sand bottoms. Depth increases to 30 feet (9.1 m) about ½ mile (0.8 km) from shore and to 60 feet (18 m) at a distance of 1 mile (1.6 km). The bottom types in this outer area beyond the ASBS were not investigated, but probably consist of sand (SWRCB 1979).

Duxbury Reef's prominences extend up to 1 mile (1.6 km) out to sea at Duxbury Point, and from ¼ to ½ mile (0.4 to 0.8 km) from the high tide line in other areas. Wave action has carved channels and depressions in the rocks, but more resistant ridges have remained as high protrusions, resembling small islands. Most of these islands or prominences can be reached by foot at very low tides, but intervening channels are often deep and treacherous. Presumably, as the waves erode the outer reef rocks, new areas are continuously being exposed at the base of the cliffs. The reef, then, is slowly moving in a northeasterly direction as new rocks are exposed by wind erosion and old rocks are eroded down by waves. The rocks making up the reef itself contain calcium carbonate. Boring organisms, such as clams and worms, also contribute to the destruction of carbonate in the reef as do humans who chip away the rocks to extract the clams (SWRCB 1979).

5.2.2.9 James V. Fitzgerald

The overlying marine terrace deposits consist of weakly consolidated, slightly weathered sands and gravels of more recent origin. The reefs in the southern section are comprised of Pliocene shale or mudstone. These flat shale beds form a discontinuous rocky intertidal area.

The flat shale beds in the southern section of the ASBS form a discontinuous rocky intertidal area almost 3 miles (4.8 km) long. During low tides [below mean lower low water (MLLW)], much of the outer edge of the reefs, 500 to 1,000 feet (150 to 300 m) offshore, may be reached from shore. The reefs are broken up by numerous tidal channels with steep or overhanging sides, which run perpendicular to the shoreline, and by protected lagoons with rock/cobble bottoms, as at Seal Cove where a sand beach also occurs. Most of the reefs are fairly flat, but often exhibit greater relief toward the inner edge next to the cliffs. Tidepools of varying size and at varying tidal heights are abundant throughout the reefs. South of Frenchman's Reef and Whaleman Harbor, intertidal reefs are largely replaced by a wider sandy beach. Another extensive intertidal reef occurs south of Pillar Point. The southernmost edge of the Pillar Point Reef is marked by Sail Rock, which rises 32 feet (9.7 m) out of the water.

Approximately 1,000 feet (300 m) offshore to the south of Frenchman's Reef and 650 feet (200 m) southwest of the Pillar Point, there are extensive subtidal reefs adjacent to the intertidal reefs at depths of 20 to 35 feet (6 to 11 m). Due south from Sail Rock (on the Pillar Point Reef), the intertidal and subtidal reefs are continuous with one another at least for a distance of 250 feet (80 m) offshore. The subtidal reefs at Pillar Point occur as a series of urchin-pitted shelves extend into gradually deepening water. The reefs here, as at the dive site off Frenchman's Reef, exhibit great relief, rising as high as 10 to 15 feet (3 to 4.5 m) from the bottom. The reefs are frequently broken by narrow surge channels, which run roughly perpendicular to the shore.

Seaward of the exposed rock to the northwest of Frenchman's Reef, similar subtidal reefs and outcrops occur, which are of lower relief (5 to 10 feet or 1.5 to 3 m) than those south of Frenchman's Reef and the Pillar Point Reef. Large boulders protruding from the base of the reefs and outcrops are common. Away from the rock, the reef drops off to what appears to be the end of the reef system in that immediate vicinity. Approximately 300 feet (100 m) from the rocks is a broad, flat sandstone bottom at a depth of approximately 35 feet (11 m). Very little sand was present. The sandstone was devoid of macroscopic organisms.

About 300 feet (100 m) off the southern tip of Seal Cove, for at least 150 feet (50 m) to the north, the bottom consists of small reefs, large outcrops and associated boulders at an average depth of 20 feet (6 m). Large sandy areas were not encountered; increasing surge indicated the presence of shallower reefs to the north.

Further evidence of continuity between the intertidal and subtidal reef systems was indicated by the presence of broad 30 to 50 feet (10 to15 m) flat reefs about 1,000 feet. Moss Beach has similar flat reefs (350 m) offshore of Moss Beach. In this area, the subtidal reefs are at a depth of about 30 feet (9 m) and typically rise 3 to 7 feet (1 to 2 m) off the bottom.

Extensive subtidal reefs were not found in the northern end of the ASBS, though small reefs and rock outcrops appeared to be prevalent close to shore. Deeper water occurs closer to shore in the northern section of the ASBS than in the south. For the Reconnaisance Survey (SWRCB 1979), a dive was made approximately 1,300 feet (400 m) offshore of the Montara sewage outfall line, which existed at that time but has since ceased operation. At a depth reading of 70 feet (21 m), the bottom had not yet been reached, so the dive was terminated. Small reefs and outcrops were located at a depth of about 40 feet (12 m) around 500 feet (150 m) offshore. These were similar in size and relief [5 to 10 feet (2 to 3 m) high] to those found northwest of Frenchman's Reef. Similarly, large boulders were often found at the base of the outcrops. At this northern site, proportionately more of the bottom is comprised of wider sandy surge channels at the base of the rocky areas (SWRCB 1979).

5.2.2.10 Año Nuevo

The region of Año Nuevo Island to Año Nuevo Creek is characterized by very irregular bottom topography with shoals and stacks rising vertically from the ocean floor (Arnal et al., 1978 in SWRCB 1981). An average depth of approximately 29 feet (10 m) was found for the submarine plateau (SWRCB 1981).

Beach sediments are coarser in the winter than in the summer. Beach sediments found at Waddell Creek, Greyhound Rock, and Elliott Creek are coarser than those of the Año Nuevo area. Very coarse sediments are present only in the winter and are probably due to the high energy of the storm waves. Waddell Creek and Greyhound Rock receive the direct impact of wave energy, as the prevailing direction of waves is from the northwest and the Año Nuevo area has a southern shore exposure. For Point Año Nuevo, the coastal erosion due to wave energy from 1603 to 1970 was found to be 25,000 cubic yards/year (SWRCB 1981).

5.2.2.11 Pacific Grove

The ASBS is located in Monterey Bay, a wide-mouthed, deep bay which is bisected by an extensive submarine canyon. The canyon, as delineated by the 100-fathom curve, occupies 19% of the Bay's area. It drops off most steeply near shore and is 100 fathoms deep only 1½ miles (2.4 km) offshore. At the mouth of the Bay, the canyon is about 450 fathoms deep and 5 miles (8.0 km) wide (SWRCB 1979).

The canyon is aligned in a northeast-southwest direction, so at the mouth of the Bay the canyon is much closer to the southern headlands (4.1 miles, 6.5 km) than it is to Santa Cruz, at the north end of the bay. The south canyon wall is also steeper, dropping from 100 to 900 fathoms in 1½ miles (2.4 km) off Point Pinos (SWRCB 1979).

The ASBS lies within the southern "shallows" of the bay, a water area enclosed by the Monterey Peninsula on the west side. Within the ASBS, depth contours are more compressed than in the rest of the southern shallows. The 40 fathom curve is 1 mile (1.6 km) offshore at Pacific Grove, but 3 miles (4.8 km) offshore at Monterey (SWRCB 1979).

The subtidal topography of the ASBS consists of shallow water reefs, interspersed with fields of coarse-grained sand. Kelp beds generally mark the location of reefs during the summer. There are also numerous shallow submerged rocks in the ASBS near Point Pinos, Lucas Point (Aumentos Rock), Lovers Point, and Point Cabrillo (SWRCB 1979).

5.2.2.12 Carmel Bay

The submarine topography of the ASBS is dominated by the Carmel Canyon, a major tributary of the Monterey submarine canyon. The Monterey canyon, one of the largest in the world, originates just offshore from Moss Landing, and extends into the center of Monterey Bay. The Carmel Canyon originates about ¼ mile offshore from the mouth of San Jose Creek in the ASBS. It extends offshore in a westerly direction for about 3 miles (6 km), then turns abruptly and continues to the northwest for 12 miles (19 km) before joining the Monterey canyon. The Carmel Canyon drops off steeply, reaching a depth of 1,200 feet about 1 mile (200 fathoms, 1.6 km) offshore and a depth of 3,000 feet about 6 miles (500 fathoms, 9.7 km) offshore. The 120 foot (20 fathom) contour generally separates the canyon from shallower regions of the bay. In most locations, the 120 foot (20 fathom) curve is less than ½ mile offshore; the canyon widens quickly so that it includes most of southern Carmel Bay.

It is thought that fault lines determined the orientation of Carmel Canyon (Martin and Emery, 1967). The nearshore 3 mile portion of the canyon is aligned with the westward trending Carmel Valley fault; the offshore 12 mile portion is aligned with the northwesterly feeding Carmel Canyon fault (a seaward extension of the Sur and Palo Colorado faults) (Moritz, 1968 in SWRCB 1979).

5.2.2.13 Point Lobos

Vertical rocky walls are associated with coastal cliffs, promontories, offshore rocks, and submerged reefs with overhangs, crevices, and seams as additional features. Boulders ranging up to 10 feet (3 m) or more in diameter are common. Reefs occurred to at least 60 feet (18 m) deep and rose 30 feet (9 m) from the bottom. Reef tops are of low relief. Gravel and sand are found at all depths on horizontal surfaces, and play a role in scouring rock and, therefore, changing topography. No bathymetric information is available for the ASBS or surrounding areas (SWRCB 1979).

5.2.2.14 Julia Pfeiffer Burns

Vertical rocky walls are associated with coastal cliffs, promontories, overhangs, crevices, and seams offshore rocks and submerged reefs with as additional features. Boulders ranging up to 10 feet (3 m) or more in diameter are common. Reefs occurred to at least 60 feet (18 m) deep and rose 30 feet (9 m) from the bottom. Reef tops are of low relief. Gravel and sand are found at all depths on horizontal surfaces, and play a role in scouring rock and, therefore, changing topography (SWRCB 1979).

5.2.2.15 <u>Salmon Creek Coast</u>

A dive survey was recently conducted by Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO) researchers at a location ½ mile (2.4 km) north of Salmon Creek. The subtidal habitat was characterized as gravel and small cobble at 60 feet (18 m) deep. There were also boulder fields and sand-filled channels (Carr et al., 2006).

5.2.2.16 Laguna Point to Latigo Point

The Laguna Point to Latigo Point ASBS extends from the intertidal zone seaward to the 100 foot contour line, except at the head of Mugu Canyon, where it includes depths of, at most, 125 feet (38.1 m). Except near the canyons, the bottom slopes off gently with a gradient of about 1.7% to 3% and consists primarily of medium to very fine, well sorted sand, especially below 60 feet (18.28 m) depths.

Nearshore areas, particularly between Bass Rock, just west of Deer Canyon, Lechuza Point, and between Point Dume and Latigo Point, have a variable relief where the sand is replaced by extensive rock reefs. These reefs show a high degree of variability, ranging from cobble fields on a sand base to towering and precipitous bedrock ridges and gigantic boulders up to 30 to 40 feet (9 to 12 m) in diameter. The soaring reefs and ridges between Bass Rock and Lechuza Point generally lie parallel to shore and consist primarily of an erosion resistant brecciated rock. The more inclined reefs between Point Dume and Latigo Point generally run perpendicular to or at an angle away from the shore and consist of a more erosive sandstone. A few small reefs of this latter type run parallel to shore off Zuma Beach. Point Dume itself is of a mixed igneous brecciated rock origin. Just off the point, a few sea stacks terminate in sand.

The generally gentle sand slope of the ASBS is interrupted at two locations by submarine canyons: Mugu Canyon to the west and Dume Canyon to the east. Both are steep walled canyons of very fine sand to mud. These canyons are primarily offshore from the ASBS. They begin at about 50 to 60 foot depths, 500 to 800 feet (154 to 244 m) offshore, and rapidly descend with a slope of 8 to 33%. In the deeper parts of both canyons (beyond the ASBS), poorly described rock outcrops apparently occur (Shepard and Dill, 1966 in SWRCB 1979).

Beyond the boundary of the ASBS, the ocean floor continues to slope off gradually as the continental shelf. Below a depth of about 300 feet (91.4 m) (ca. 2 to 3 miles offshore), the bottom drops off more steeply as the continental slope. The slope terminates in the enclosed Santa Monica Basin at a depth of about 1,500 feet (457 m).

There is a large submarine ridge about 5 miles offshore due south of La Jolla Beach, which projects out from the shelf. It rises to within 250 feet (76 m) of the surface.

There are two old artificial reefs within the ASBS. The one off Paradise Cove was installed by DFG in 1959. It is in 60 feet (18 m) of water, is composed of old autos, and covers an area of about one-tenth of an acre. This reef has largely deteriorated. The second reef, at about a 45 foot depth, is off the County Lifeguard Headquarters at Zuma Beach. It is small and composed of old toilets, bathtubs, etc. Both reefs are surrounded by sand (SWRCB 1979).

5.2.2.17 Santa Catalina Island

Northeast Santa Catalina Island: Sand and mud comprise the majority of the subtidal substrate from the outer boundary of the ASBS to within approximately 500 yards (457 m) offshore. Nearshore, the main subtidal substrates in the ASBS are boulder slopes and sandy slopes, with a few rocky reefs. Cliffs are rare.

In general, the subtidal area of the ASBS is rimmed with boulder slopes to a depth of 50 to 100 feet (30 m). Boulder size varies with depth. Shallow sloped areas often have a narrow band of medium-sized boulders (1 m diameter) interspersed with coarse sand closer to shore. Cactus Bay exemplifies this type of substrate. Larger boulders (4 - 8 m diameter), also interspersed with sand, are found from 10 to 50 foot (15 m) depths. With increased depth, the number and size of boulders decreases and the percentage of sand increases. In most areas surveyed, sand comprised nearly 100% of the substrate beyond 100 foot (30 m) depths.

Sandy substrate is rare in water shallower than 40 feet (12 m) between Catalina Head and Arrow Point, with the exception of Starlight Beach and Parson's Landing. However, from Arrow Point to Blue Cavern Point there are many coves, such as Emerald Bay, Howland's Landing, and Isthmus Cove, with sandy subtidal substrate. These coves are enclosed by rock outcroppings and boulders extending to a depth of approximately 40 feet (12 m).

There are three types of nearshore sediments: (1) Lithic sediment composed of rock particles; (2) organic sediment composed of biological fragments such as shells and sea urchin tests; and (3) calcareous sediment composed of $CaCO_3$ primarily from coralline algae.

Areas with heavy runoff, such as Parson's Landing and Cactus Bay, have lithic sediments, usually grading from coarse to fine sands as depth increases. Catalina Head and West End areas, which have large populations of mollusks and relatively heavy wave action, have organic sediments. Sediments found in some of the coves from Emerald Bay to Big Fisherman Cove contain a large percentage of calcareous debris.

The intertidal area of the ASBS is not extensive. The shoreline is extremely rugged, with the main landmass rising steeply out of the ocean. Consequently, intertidal habitats are quite restricted in vertical range. The southwest (windward) side of the island is exposed to wave action and, in certain areas, minimal intertidal areas exist (e.g., Catalina Head). However, the leeward side does not benefit from wave activity, and the combination of steep slopes and low wave action results in poor intertidal habitats. Relatively good intertidal habitat, characterized by gently sloping solid substrate, can be found only at Ship Rock, Bird Rock, and Big Fisherman Cove Point.

Approximately 40% of the ASBS intertidal area consists of solid rock walls, and about 45% consists of various-sized boulders. The majority of these habitats are extremely steep in profile. The remaining 15% of the intertidal area consists of sandy or cobble beaches. Virtually no beaches exist from Catalina Head to the West End, with the exception of Sandy Beach. Between Catalina Head and Arrow Point boulders occupy most of the intertidal habitat. Many small coves and sandy beaches occur along the northeast (leeward) coast from Arrow Point to Blue Cavern Point, although cliffs and boulder areas predominate in this region as well (SWRCB 1979).

Western Santa Catalina Island: Intertidal geomorphology ranges from fine sand beaches to bedrock outcrops often forming boulder aprons. About 20% of the beaches are sandy and 80% are rocky. Little Harbor is the most protected from wave action and therefore the sandy beach has a slightly higher organic content. The nearshore substrate ranges from sandy areas offshore sandy beaches to high relief boulder fields near rocky headlands. Approximately 55 % of the nearshore subtidal substrate is sandy bottom. Grain size in these soft bottom areas decreases with depth, with muddy bottom in some areas on the shelf. Large exposed offshore rocks structures are located off of Ben Weston Point, the rocky headlands between Shark Cove and Beach, and between Beach and Ben Weston Beach (Sentinel Rocks) (SWRCB 1981).

Southeast Santa Catalina Island: The ASBS is fully exposed to south swell and steep, rocky cliffs limit the extent of the intertidal area. Binnancle and Church Rock are the most exposed; Jewfish Point is somewhat protected. About 60% of the intertidal zone is rocky substrate.

In the western portion of the ASBS about 80% of the subtidal habitat is composed of sandy sediment, but the subtidal substrate near headlands are characterized by exposed bedrock, sometimes with pockets of sand. Boulders are also common in the nearshore subtidal. Rocky bottom becomes less common with increased depth and distance from the shore. Sediments grain size in soft bottom areas decreases with depth, with muddy bottom in some areas on the shelf.

In the eastern portion of the ASBS a shallow, flat shelf extends from the shore to a depth of about 15 feet (4.5 m). The shelf is composed entirely of gravel and cobble. Beyond the shelf, the substrate slopes sharply into deeper water.

The intertidal area of the eastern portion of the ASBS has been highly modified by the quarry operations there. Most of the intertidal zone there consists of large boulders, and smaller areas have gravel or small boulders as intertidal substrate. Subtidally within the quarry area the substrate has been modified by quarry operations as well. Occasionally, boulders are dislodged by waves and are deposited subtidally, and the quarry operators replace these boulders in the intertidal zone. In addition small amounts of rock debris is lost to the subtidal zone during barge loading operations (SWRCB 1981).

5.2.2.18 La Jolla

The general submarine topography in the La Jolla Basin area can be described as a narrow (about 2 miles; 3.2 km) continental shelf, traversed submarine canyon that approaches to within about 300 m of the shore. The canyon empties into the broad San Diego Trough, which is a part of the irregular submarine region of deep basins and intervening ridge termed the Continental Borderland.

The substrate in the northern half of the Reserve is fine sand mixed with varying amounts of silt and/or mud. Surveys on sandy substrates, both on the northern sand shelf and inshore of the head of Jolla Canyon, describe this sand as fine and white, interspersed with occasional patches of mud. Presumably, this mud is derived from storm water runoff. The mud is never so abundant that the sand appears a thing other than clean, white sand on superficial glance. The fine sand is well sorted, with median grain diameters of: 0.20 mm in samples from the beach; 0.12 mm in samples from 5 to 10 meters depth; and 0.09 mm in samples from 30 meters depth. The sand grains are fairly uniform in size, with 90% of the 5 to 10 meter samples in the 0.08 to 0.19 mm size. The sand is mainly quartz, although 5% is heavy minerals, 3% micaceous materials, and less than 3% silt (Fager, 1968). According to Fager, this silt/mud content from storm water runoff is insignificant, but this area was close to the end of the SIO pier. The silt/mud concentration or deposition is probably considerably 9 as one moves southward, approaching the offshore area of the largest storm drain located at the foot of Avenida de la Playa.

The sandy bottom in the northern third of the Reserve slopes evenly and gently seaward down to depths of 100 feet (30 m) at a distance 1200 to 1300 feet (365 to 396

m) from shore. The slope steepens somewhat so that depths of 400 to 500 feet (122 to 152 m) are reached in the next 500 meters. This broad sandy shelf is bordered on the north and south by the two branches of the La Jolla branch of the La Jolla Submarine Canyon. The shore-most 300 meters consists of a fine, white sandy substrate that is similar to the sandy shelf immediately north. At a depth of ca. 30 feet (9 m), however, the slope steepens noticeably and there is a 4 to 5 feet (1 to 2 m) clay bank that distinguishes the canyon at a depth of 50 feet (15 m). The canyon head itself is characterized as a wide bowl-like structure, rimmed by a basement of Eocene sandstone/shale. The sides are extremely steep (nearly vertical) in some areas, whereas other areas have a gradual sloping side. There are occasional small rock outcroppings, but these are rare and this branch of the canyon is much less spectacular in its steepness and undercut ledges than the head of the more northern SIO branch. The biota reflects the difference between the physical structures of these two heads.

The southern third of the ASBS is much more diverse in substrate than the others. The area immediately inshore of the southern wall of the canyon is sandy, at least to depths of 35 feet (10 m). Flat sandstone ledges are exposed in much of the Devil’s Slide corner of the Ecological Reserve, extending as far northward as the southern end of the La Jolla Beach and Tennis Club. These ledges are found from shore to depths of at least 25 to 30 feet (7.5 to 9 m). In the subtidal areas offshore from the westward-facing section of shoreline, these flat ledges are a reflection of the intertidal and cliff strata, being tipped up some 20 to 30° northward. This allows for undercutting along the northern ledges of these reefs, and it is along these northern, undercut ledges of the larger reef formations that many of the marine animals concentrate. Offshore from the northward-facing shoreline, this pronounced tipping becomes less and less distinguishable, especially with the shallow substrate along this section of the shoreline. At depths between 20 and 35 feet, there is a series of more or less parallel ridges made up of mudstone boulders. These ridges point shoreward toward the corner between Devil's Slide and La Jolla Caves and trend seaward on a northwesterly direction where they cross the Ecological Reserve boundary depths of 35-50 feet (10-15 m).

There is a small deposit of cobbles offshore from the La Jolla Beach and Tennis Club that becomes exposed during the winter months some years after a period of heavy surf; this patch extends for about 100 meters along a front parallel to the shoreline and at depths of 40 feet (3 to 12 m) (SWRCB 1979).

5.2.2.19 <u>San Nicolas Island</u>

SNI is farthest offshore and is more exposed to open ocean conditions than any of the Channel Islands. Its orientation with respect to the prevailing swell patterns create exposure to more severe sea states and wave conditions along both sides of the island. There are few coves and wave protected areas on San Nicolas Island (MLPA SAT

2009). Little else is known by staff about the subtidal and intertidal geology at San Nicolas Island, except that the presence of rocky intertidal and kelp forest communities (see biological baseline section) indicate the presence of rocky substrate.

5.2.2.20 San Clemente Island

The bathymetry surrounding SCI is irregular in shape, with Catalina Basin to the east and San Nicolas Basin to the west. A narrow island shelf extending to a depth of about 330 ft (100 m) surrounds SCI, extending from 0.3 to 3 nm (0.5 to 5.5 km) from the island's coast. Offshore relief east of SCI is extreme due to San Clemente Escarpment, leveling off at a depth of about 3,280 ft (1,000 m) below Mean Sea Level (MSL) in Catalina Basin. Offshore relief south and west of SCI is more gradual, though depths reach a maximum of about 5,900 ft (1,800 m) in San Nicolas Basin (CDMG 1986 in US Navy 2008).

The eastern shoreline of SCI is protected from most prevailing swell patterns and generally receives little wave exposure. This "lee" effect results in the structuring of species assemblages and relatively warm-water, wave-protected communities. The western or windward side of SCI includes substantial bedrock, has a more gradual slope, and receives more wave exposure compared to any other site in its bioregion (MLPA SAT 2009). Little else is known by staff about the subtidal and intertidal geology at SCI, except that the presence of rocky intertidal and kelp forest communities (see biological baseline section) indicate the presence of rocky substrate.

5.3. METEOROLOGICAL AND OCEANOGRAPHIC CONDITIONS

5.3.1 - Climate

Climactic conditions influence ASBS habitat conditions. For example, precipitation is the major factor influencing runoff quantities, and air temperature can influence intertidal life.

5.3.1.1 Northern Coast ASBS

The northern California climate is characterized by a mild maritime climate. In the summer months, a region of high pressure lies off the coast, generating the prevailing northwesterly winds and coastal fog. In winter, this high pressure zone moves southward and is replaced by a low pressure zone off the coast. Storms are common in the fall and winter. Cool, moist air masses move toward the coast during winter months and on contacting the coastal hills, are uplifted, cool, and drop their moisture as rain. The highest average monthly temperatures occur in late summer and fall, and the lowest in December and January. During the day, cool ocean air moves onshore as air heated over the land rises; at night, air tends to move from the cooler land masses toward the warmer ocean. In general, the seaward night flow is best developed in

January (winter months) and least developed in July (summer). This seaward night flow is primarily from the northeast and flows down the canyon slopes to the ocean (SWRCB 1979) (Felton 1965, cited in SWRCB 1980).

5.3.1.2 <u>ASBS at Point Reyes Peninsula and Near the Entrance to San Francisco Bay</u>

The area of the Point Reyes Peninsula and the entrance to San Francisco Bay are characterized by cool, dry, foggy summers and cool, rainy winters. This coastal climate keeps summer temperatures well below those found a few miles inland. The Pacific Ocean tends to reduce the seasonal temperature range. Wind patterns reflect seasons. During winter storms, winds originate from the south, while high pressure systems generally bring brisk northwesterly winds in the spring and summer. Offshore breezes are warmer (SWRCB 1979).

5.3.1.3 <u>Central California ASBS</u>

In general, the climate of the central California coast is characterized throughout the year as having moderate temperatures controlled by the circulation patterns of the North Pacific Ocean (SWRCB 1981). Wind direction varies seasonally with the location of the Pacific High pressure cell. When this cell is centered over the North Pacific, generally between April and September, the coast catches the eastern edge of the gyre, and prevailing winds are from the northwest. These winds are deflected down the coast by the coastal mountain ranges. Upwelling begins and the cooler water brought to the surface creates a cold zone near the coast. The interior valleys begin to heat up and the rising air creates a thermal low pressure area that draws cold air in from the ocean. Water vapor then condenses to produce the fog and low cloud-cover. In the late summer and early fall, the Pacific high-pressure system moves offshore and the interior valleys cool down (SWRCB 1979).

5.3.1.4 <u>Southern California Bight ASBS</u>

Southern California is characterized by a Mediterranean climate with mild temperatures and seasonal winter rainfall. Weather in this area is largely controlled by the Eastern Pacific high, which is located off the coast of Northern California during the spring and summer months; this high pressure cell prevents low pressure systems from moving down the coast into southern California. The summers are warm and without precipitation but moderated by prevailing westerly winds from the ocean and typical summer coastal fogs (SWRCB 1979).

5.3.2 - Oceanographic Conditions

The physical and chemical oceanography in each coastal region represents the habitat that determines the type and abundance of marine life in ASBS. The following information is intended to provide a generalized description of oceanographic conditions that influence ASBS along the California coast.

Seasonal changes in wind direction commonly create seasonal patterns for the currents off of the California Coastline. For much of the year, the California Current brings colder northern waters southward along the shore as far as southern California (MLPA 2006). The California current is the eastern leg of the North Pacific Gyre, a massive, clockwise-moving current system which encompasses the entire North Pacific Ocean (SWRCB 1979). The California Current is a wide, slow moving southeastward flow between 48°N and a southern limit of 23°N. The western limit of the California Current is the boundary region between sub arctic water and eastern north Pacific central water, which at 32°N is about 434.9 miles (700 km) from the coast. The western edge is often set at 621.4 miles (1,000 km) offshore. The majority of the water movement to the south occurs between 124.3 and 310.7 miles (200 and 500 km) offshore, maximum water speeds are shallower than 0.12 miles (200 m). The upper waters of the transition area are more influenced by sub arctic water than the waters below 0.06 miles (100 m) (Allen et al. 2006).

The flow off of the northern California coast is strongest nearshore during the spring and early summer and offshore during the late summer and early fall (Allen et al 2006). Most of the California coast north of Point Conception is dominated by the southward flowing California Current (SWRCB 1980).

The seasonal presence of the California Current corresponds with that of the Pacific high-pressure cell, which is responsible for prevailing northwest winds that blow of the north and central coast. Beginning in March, as the California Current travels south along the coast, surface waters are driven to the right, or offshore, by the combination of northwesterly winds and the Coriolis force. This triggers the upwelling of cold, nutrient-rich water from the depths along the coast, causing this oceanographic season to be termed the Upwelling Period. By September, as the northwesterly winds die down, upwelling ceases and warmer waters return to the coast making way for the Oceanic Period (SWRCB 1979).

The Oceanic Period lasts into October, when the predominant winds move to the southwesterly direction. Close to shore, the California Undercurrent carries equatorial water northward along the Baja California and California coasts beneath the California Current, at depths greater than 655 feet (200 m) (SWRCB 1979). North of Point

Conception in late fall and winter, its core gradually rises from 200-300m to the surface and becomes known as the Davidson Current (MLPA 2006). This current reverses direction intermittently even in surface waters during the winter (SWRCB 1979), and may be continuous with the California countercurrent during this period (Allen et al 2006). It carries equatorial Pacific water of higher salinity and temperature than generally exists at this latitude, and has an important moderating effect on winter ocean temperatures (SWRCB 1979).

The Southern California Bight is the 300 km of recessed coastline between Point Conception in Santa Barbara County and Cabo Colnett, south of Ensenada, Mexico. The dramatic change in the angle of the mainland coastline creates a large backwater eddy in which equatorial waters flow north near shore and subartic waters flow south offshore. This unique oceanographic circulation pattern creates a biological transition zone between warm and cold waters that contains approximately 500 marine fish species and more than 5,000 invertebrate species (SWRCB 1979).

The water transport in the Southern California Bight is influenced by the California Current and the Southern California Counter Current (SWRCB 1980). The prevailing direction of swell in the California Bight is from the west (SWRCB 1979). The California Current flows southward along the coast (Michaels 2005). The California Current is generally located at the surface over the seaward slope, well outside of San Clemente Island and several hundred kilometers offshore of the mainland; it flows toward the equator. Within the Bight a large scale eddy effect takes place and surface water is transported poleward by the Southern California Counter Current. The Southern California Countercurrent occurs in the upper half of the Southern California Bight throughout the year except during April. It occurs in the southern half of the Bight from April to December. Around Point Conception, the Southern California Countercurrent meets with the California Current, creating a rich transition zone. Counterflow north of Point Conception occurs during the fall and winter months (Allen et al 2006). Closer to shore, the current over the coastal shelf, in depths up to 60 meters, flows toward the equator (Dailey et al 1993). In very shallow water adjacent to the surf zone, the longshore current has a net southward flow and deposits sand into the heads of submarine canyons (SWRCB 1980). Upwelling also takes place in the Southern California Bight, in which nutrient rich bottom water rises to the surface.

When the California Current reaches Point Conception, it continues south well off the coast of the Southern California Bight and even beyond the outer islands. However, some of the California Current is diverted eastward at San Miguel Island. This water flows along the north coast of the northern Channel Islands and then splits into three parts and becomes the Southern California Countercurrent. One segment continues eastward along the northern Channel Islands and escapes into the Santa Monica Basin off Anacapa Island. Another segment moves northward across the channel at about the latitude of Santa Barbara. As it nears the coast, it divides into the other two parts: a westerly flowing current along the coast from Santa Barbara to Point Conception (thus forming a counterclockwise gyre in the Western Santa Barbara Basin) and an easterly flowing and weaker portion of the current moves along the coast from Santa Barbara to Port Hueneme, where it also enters the Santa Monica Basin. The eastern arm of the Southern California Countercurrent forms a counterclockwise gyre in Santa Monica Bay, which flows northerly and then westerly along the Malibu Coast from El Segundo all the way to Point Dume; here it rejoins the offshore eastward flowing current. The combined water mass moves primarily southward off the coast from Santa Monica Bay to well beyond the Mexican Border, where it finally rejoins the California Current (SWRCB 1979).

Laid over this general pattern throughout California are both short-term and long-term changes. Local winds, topography, tidal motions, and discharge from rivers create their own currents in nearshore waters. Less frequently, a massive change in atmospheric pressure floods the eastern Pacific with warm water, which suppresses the normal pattern of upwelling. These short-term climatic changes, called El Niño, reduce the productivity of coastal waters, causing some fisheries and seabird and marine mammal populations to decline and others to increase. For instance, warm waters that flow north in an El Niño carry the larva of California sheephead and lobster from the heart of their geographical range in Mexico into the waters off California (MLPA 2006).

Other oceanographic changes last for a decade or more and these natural fluctuations can have significant impacts on the health and composition of marine life. In these regime shifts, water temperatures rise or fall significantly, causing dramatic changes in the distribution and abundance of marine life. The collapse of the California sardine fishery occurred when heavy commercial fishing pressure on sardine populations coincided with population reductions in response to cooling of offshore waters in the late 1940s and early 1950s. In response to the decline in sardines, California law severely curtailed the catch. In 1977, waters off California began warming and remained relatively warm. The warmer water temperatures were favorable for sardines, whose abundance greatly increased. But the warmer waters also reduced the productivity of other fish, including many rockfishes, lingcod, sablefish, and those flatfishes that favor cold water for successful reproduction (MLPA 2007).

Currents and other bodies of water may differ dramatically in temperature and chemistry, as well as speed and direction. These factors all influence the kinds of marine life found in different bodies of water. In general terms, geography, oceanography, and biology combine to divide California marine fisheries and other marine life into two major regions north and south of Point Conception. Within each region, other differences emerge (MLPA 2007).

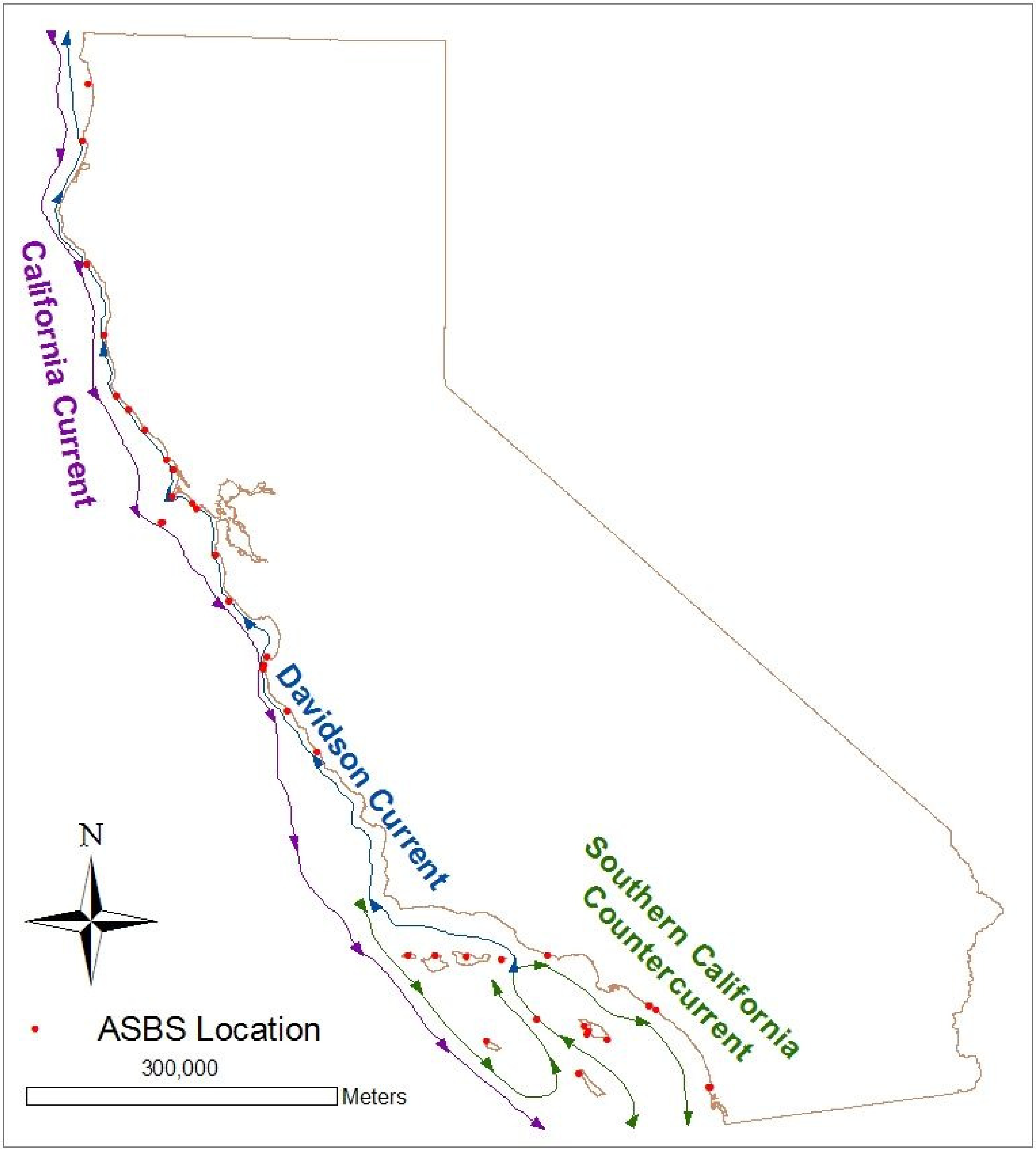

Figure 1. Generalized Major Surface Currents in California Coastal Waters.

5.4. WATERSHED AND LAND USE CHARACTERIZATIONS

State Water Board staff analyzed watersheds adjacent to ASBS for impermeability (impervious surfaces) based on land use data [Calwater 2.2]. The results are presented in Table 5.4.1. Impervious surface greater than 50% was found in watersheds draining to the Pacific Grove, La Jolla, Robert E. Badham, and Irvine Coast ASBS.

Table 5.4.1. Percent Impervious Surfaces adjacent to ASBS

ASBS Name	%
Redwoods National Park	7.61
Trinidad Head	8.55
Kings Range	2.46
Jughandle Cove	28.04
Saunders Reef	10.59
Del Mar Landing	29.69
Gerstle Cove	8.69
Point Reyes Headlands	4.03
Duxbury Reef	5.37
James V. Fitzgerald	24.73
Año Nuevo	4.86
Pacific Grove	64.52
Carmel Bay	25.57
Point Lobos	11.05
Julia Pfeiffer Burns	5.62
Salmon Creek Coast	4.77
Laguna Point to Latigo Point	18.05
North West Santa Catalina Island	4.05
Southeast Santa Catalina Island	4.05
Robert E. Badham	72.50
Irvine Coast	53.73
Heisler Park	28.19
La Jolla	91.64
San Nicholas Island and Begg Rock	6.24
San Clemente Island	5.15

Specific watershed land uses and conditions adjacent to ASBS are as follows:

5.4.1 - Redwoods National Park

Most of the land adjacent to this ASBS is occupied by Redwoods National Park and is jointly managed by the National Park Service and the California State Parks. Rugged cliffs and sparse primitive campgrounds are the primary land use, in addition to limited recreation hiking trails. There are 27 streams emptying into this ASBS mostly carrying runoff from rural and wilderness watersheds. The Klamath River and Redwood Creek are impaired by NPS pollutants attributable mainly to agricultural, timber harvesting, and urban land uses. This watershed is also impacted by hydro modification and removal of riparian vegetation.

Caltrans classified and mapped the land use and summarized population density within ASBS tributary drainage areas (TAS). Sixty-nine point nine percent (69.9%) of the TAS is open space-public land, 17.5% is agricultural land, and 7.8% is very low density-residential. The remaining land use type is less than 2% each of medium and low density-residential, water, and urban reserve. Population density in the TAS is less than 100 people per squared mile.

5.4.2 - Trinidad Head

This watershed encompasses both urban and rural watersheds. Trinidad Bay has marina facilities including mooring field, vessel haulout, maintenance facilities, and commercial crabbing/fishing pier facilities. Bleach and other detergents are known to still be in use by boat owners within the ASBS mooring field. The City of Trinidad's main storm drain discharges directly into the ASBS. Sources of other NPS pollutants arise from vehicle and boat parking directly on the beach, and runoff originating from the adjacent asphalt parking lot. Humboldt State University Marine Lab is located near the headlands. Residences and commercial structures in Trinidad are served by septic systems. Timber harvesting is also a major land use in the watershed and may contribute sediment and related silviculture chemicals.

5.4.3 - King Range

The northern part of this watershed is mostly wilderness managed by the Bureau of Land Management. The town of Shelter Cove is in the southern part of this ASBS on approximately 2 miles (3.2 km) of developed coastline, including houses, businesses, a golf course, a paved airstrip and parking lots along the shore. There is also a fish cleaning station and boat launch. Shelter Cove is primarily residential, with some commercial development to support the local tourism industry. Immediately north of the ASBS is the mouth of the Mattole River, which is impaired by sediment and temperature resulting from livestock agriculture, timber harvesting, and urban land uses.

5.4.4 - Jughandle Cove

The watershed of the Jughandle Cove ASBS is the California State Parks Jug Handle State Reserve. This largely natural watershed, located about 5 miles (8.04 km) south of Fort Bragg, is natural open space and undeveloped. The primary use is dedicated to the Ecological Staircase hiking trail, with a visitor parking area adjacent to Highway 1. The watershed includes Highway 1, which crossed over Jughandle Creek approximately 100 meters upstream of the ASBS. Jughandle Creek may be a source of sediment load in the winter, due to past logging operations. Homes in the area have septic systems, and there is also a lumber mill that may contribute pollutants to the watershed. With the exception of NPS runoff from the Reserve's parking lot and associated access trail, there are no other potential sources of pollutants known to drain directly into the ASBS.

5.4.5 - Saunders Reef

The watershed of this ASBS has about 1.6 miles (2.57 km) of coastline that runs parallel to Highway 1 along a fairly rural part of Northern California. A residential area is located inland of the southern end of the ASBS, directly adjacent to the southern boundary point. These homes are served by septic tanks, and due to the soil conditions, drainage from these septic tanks may escape into this ASBS. There are also two parking lot turnouts with the boundaries of the Saunders Reef ASBS coastline.

Caltrans classified and mapped the land use and summarized population density within ASBS TAS. Fifty-seven point seven percent (57.7%) of the TAS is open space-public land and 41.5% is low density-residential. The remaining land use is undetermined. Population density in most of the TAS is less than 100 people per squared mile.

5.4.6 - Del Mar Landing

The watershed immediately adjacent to this ASBS is a part of the Sea Ranch private community, which has residential development, storm drains, and walking trails along the coastline. The watershed includes Highway 1, which is less than ½ mile from the coast. With the exception of four nonpoint source and storm water conveyances, there are no other sources of pollutants known to drain directly into the ASBS; however, eight ephemeral streams draining into or near the ASBS potentially carry pollutants from upstream sources. Homes in the project study area are serviced by a sanitary wastewater treatment system. A golf course is located approximately ½ mile north of the ASBS.

At The Sea Ranch Association (TSRA), nearly 60% of land use is common area, of which the primary use is open space dedicated to the preservation of the natural environment. A small percentage of commons at TSRA is used for roads, recreation facilities, and community facilities. Remaining land use consists of residential and commercial areas. The County of Sonoma limits lot coverage (building footprint) to no more than 35% of the lot area. As a result, impervious surfaces are reduced by lot coverage limitations and by paving restrictions of TSRA's design review body. Of the 58 lots in the study area, most have gravel drives and only a few have paved drive surfaces.

5.4.7 - Gerstle Cove

The watershed of Gerstle Cove ASBS is primarily State Parks recreational open space, with Highway One located in the watershed as well. State Parks facilities include a public restroom, fish cleaning station, campground, roads, multiple parking lots, and a visitor's center. There are six ephemeral watercourses and seven groundwater seeps along the coast.

5.4.8 - Point Reyes Headlands and Duxbury Reef

The surrounding land mass of the Duxbury Reef ASBS has at least 8,320 acres (33,669,845 m^2) of drainage leading into several streams. During storm events, it is common to see small waterfalls in the Bolinas Point area, flowing directly into tide pools on the reef. At various points along the ASBS, groundwater is observed seeping from the cliffs into the beaches or over the rocks.

The largest Bolinas Mesa drainage network includes Alder Creek and several tributary drainages to the north and south. Storm water runoff flows overland or through groundwater seepage within a system of roadside ditches and culverts to the major drainages on the Mesa. The majority of the land use draining to the discharge point and into Alder Creek is single family residential served by septic systems; however, there are several agricultural operations (commercial gardens); a variety of commercial sole proprietorships (Dentist offices, massage offices, etc.); and certain ranching/livestock operations—most notably a small portion of Niman Ranch (cattle) and the Vanishing Point Ranch (horses). Due to the rural nature of the area, many Bolinas Mesa residents have chickens, goats, horses, and/or other livestock property.

Approximately 250 developed properties drain into the Alder Creek watershed. An estimated 79% of the roads within the Alder Creek watershed are unpaved and are not maintained by Marin County. The remaining 21% of roads are County maintained, paved roads. The area of land that drains to Alder Creek is 275 acres (1.11 km^2).

5.4.9 - James V. Fitzgerald

This watershed encompasses an array of land uses such as residential, rural residential including horse properties, and agricultural. The beaches are well visited by the public. Half Moon Bay Airport is directly east of the ASBS and Pillar Point Harbor marina is located immediately south of the ASBS. San Vicente Creek drains a developed portion of the watershed directly to the ASBS and is chronically contaminated with coliform bacteria and is 303d listed.

Caltrans classified and mapped the land use and summarized population density within ASBS TAS. Seventy-two point six percent (72.6%) of the TAS is low density-residential, 17.8% is medium density-residential, 8.7% is agricultural, and 0.8% is industrial. Population density varies from 100 to 5,000 people per squared mile.

Pillar Point Air Force Station (AFS) occupies the land at the southern end of the ASBS. There are about 10-15 site personnel employed there. The storm water runoff discharge into the ASBS originates from Pillar Point AFS tracking station on the bluff. Storm water runoff at Pillar Point AFS either infiltrates into site soils, sheet flows over the cliff side into the ocean, or is channeled off-site through engineered drainages. Storm water runoff from the developed areas, approximately 8.3 acres (33,589 m^2) of Pillar Point AFS, collects in a small concrete drainage channel adjacent to the circular facility perimeter road and is directed towards a sump near the guardhouse. Runoff is then discharged to the north through a culvert and subsequently conveyed through an engineered concrete drainage channel down the cliff face to the beach below. The watershed draining to the ASBS is composed of approximately 36% impervious surface (includes pavement and building coverage) and the remaining 64% is composed of vegetated hillsides. The land use is primarily characterized by open space, as well as administrative and industrial land uses.

County of San Mateo properties north of Pillar Point AFS within the Fitzgerald ASBS watershed are approximately 4.5 square miles (11.65 km^2) and are located in unincorporated San Mateo County. The dominant land uses are residential, park/open space, ranching and equestrian facilities, a sewage pumping facility, small-scale agriculture, and light commercial/industrial. Three residential communities are located in the watershed; Montara, Moss Beach, and Seal Cove. The community of El Granada is also located in the southern end of the ASBS and drainage from the area flows to Pillar Point Harbor, discharging at a point located just outside of the ASBS boundary.

As of 2000, the combined population of Montara and Moss Beach was less than 5,000. The Half Moon Bay Municipal Airport majority of storm water runoff from this facility flows to the Pillar Point Harbor, which is located outside of the ASBS boundary.

5.4.10 - Año Nuevo

The watershed adjacent to the Año Nuevo ASBS is the Año Nuevo State Preserve, managed by California State Parks. Access to beaches is limited and most visitors to the park are confined to marked footpaths, and trail bypasses are sources of erosion and downstream sedimentation. There are 17 natural streams or gullies that drain into the ASBS; the most significant are from the rural watersheds of Año Nuevo Creek to the south, and Cascade Creek to the north. Highway 1 is also a source of road runoff, and is located in those watersheds. Farming (primarily artichokes, brussel sprouts, and flowers) is conducted adjacent to and within the reserve boundaries. There are direct nonpoint source discharges into the ASBS from those agricultural fields, and agricultural discharges may influence the streams as well.

Caltrans classified and mapped the land use and summarized population density within ASBS TAS. Sixty point nine percent (60.9%) of the TAS is low density-residential, 24.4% is open space-public lands, and 14.5% is agricultural. Population density in the TAS is less than 100 people per squared mile.

5.4.11 - Pacific Grove

Flows originating from this Monterey County watershed arise primarily from urban runoff. The Hopkins Maine Laboratory and the adjacent Monterey Bay Aquarium have several point sources of laboratory and aquarium waste seawater that discharge into the ASBS. These two institutions will be covered under an individual exception, and not part of this General Exception.

The only somewhat natural drainage into the Pacific Grove ASBS is from Greenwood Creek, which runs through Greenwood Park. Upstream from the park, the creek again becomes part of the storm drain system. All other freshwater discharges to the ASBS are from storm drains (SWRCB 1979).

Within the jurisdiction of the City of Pacific Grove, this area of watershed adjacent to the ASBS comprise of a total of approximately 940 acres (3.80 km^2), predominately residential. The downtown retail sector comprises 30 acres (121,405 m^2). The Pacific Grove Golf Links contribution is approximately 43 acres (174,014 m^2) in size. Parks, open space, and a recreational trail system border the entire length of the ASBS.

5.4.12 - Carmel Bay

The watersheds adjacent to the Carmel Bay ASBS include the city of Carmel-by-the-Sea and Pebble Beach Golf Course. Approximately 60% of the urban runoff from Carmel-by-the-Sea flows through storm drains directly into the ASBS, and 40% drains directly into the Carmel River, which also flows into the ASBS. The Carmel Area Wastewater District sewage treatment plant has an existing exception and discharges treated wastewater at a submerged location offshore of the Carmel River. The other discharges drain runoff from the Pebble Beach golf course, streets, highways, and private homes. And there are ten springs/seeps that may drain nonpoint source pollutants into the ASBS.

Eight natural streams also drain the golf course and Carmel-by-the-Sea before flowing into the ABSS. There are several watersheds adjacent to the Carmel Bay ASBS; however, all freshwater discharges are seasonal. Pescadero Canyon drains into the ASBS at the north end of Carmel City Beach, and San Jose Creek drains into Monastery Beach. The principle drainage is the Carmel River Basin, which covers a total of about 225 square miles (585 km^2) (Army Corps of Engineers, 1974) in a northwest-southwest direction. Carmel Valley, the lower portion of the watershed, extends eastward about 15 miles (24 km) from the river mouth.

Caltrans classified and mapped the land use and summarized population density within ASBS TAS. Twenty-nine point one percent (29.1%) of the TAS is low density residential, 28.5% is agricultural, 25.2% is open space-public lands, and 14.6% is medium-residential. The remaining land use type is less than 2.0% each of urban reserve, low density commercial and high density residential. Population density of about half of the TAS is less than 100 people per squared mile. Population density in the remaining area of the TAS ranges from 100 to 10,000 people per squared mile, though, it should be noted that density exceeds 5,000 people per square mile in the city of Carmel-by-the-Sea.

5.4.13 - Point Lobos

Located just south and adjacent to the Carmel Bay ASBS, inland in the Point Lobos State Reserve, managed by State Parks. The State Reserve is regularly visited by a large number of day hikers and scuba divers, and included several small campgrounds and a small boat launch ramp at Whalers Cove. Land use outside of, but near, the State Reserve is primarily rural residential. There are 39 streams or natural gullies that drain small watersheds and walking paths along the coastline. To the south there are residences and a hotel.

Caltrans classified and mapped the land use and summarized population density within ASBS TAS. Eighty-two point nine percent (82.9%) of the TAS is open space-public land, 13.8% is low density-commercial, and 2.3% is medium density-residential. Population density of the TAS is less than 100 people per square mile.

5.4.14 - Julia Pfeiffer Burns

Cliffs along this stretch of Big Sur Coastline are rugged and steep, greatly limiting access to the shoreline. Inland is the Julia Pfeiffer Burns State Park, which has a small campground and parking area near McWay Falls. Most drainage into the ASBS is runoff from rural and wilderness watersheds, but there are 25 discharge locations from Highway 1. After a large landslide triggered by heavy rains during the winter of 1982-83, Caltrans road-clearing operations on Highway 1 resulted in the deposition of massive amounts of sediment into the ASBS, completely filling McWay Cove. The cove had been populated by diverse rocky intertidal and subtidal marine life; now McWay Falls flows onto a sandy beach. As a result, sediment erosion and downstream deposition into the ASBS is a continuing concern as deposition of sand, and scour, associated with the currents transporting that sand is known to impact marine life there.

Within the Julia Pfeiffer Burns ASBS, two small watersheds occur, Partington Creek draining into Partington Cove and McWay Creek draining into Waterfall Cove (SWRCB 1980). Caltrans classified and mapped the land use and summarized population density within ASBS TAS. Ninety-nine point two percent (99.2%) of the TAS is open space-public lands and 0.7% is low density-residential. Population density of the TAS is less than 100 people per square mile.

5.4.15 - Salmon Creek Coast

Caltrans classified and mapped the land use and summarized population density within ASBS TAS. Ninety-nine point seven percent (99.7%) of the TAS is open space-public lands and the remaining land is agriculture. Population density of the TAS is less than 100 people per square mile.

5.4.16 - Laguna Point to Latigo Point

This watershed is located in both Ventura and Los Angeles counties. It is the largest mainland ASBS in southern California. State Parks administers many beaches and campgrounds in the northern and central sections along the coast, and Los Angeles County administers the beaches in the southern portion. About 31 natural streams drain into the ASBS. Point Mugu Naval Base occupies the northern portion of the watershed and surrounds Mugu Lagoon, which is an estuary of Calleguas Creek. Calleguas Creek is impaired by a variety of pollutants. The land in the northern section of the watershed is otherwise largely undeveloped, and the majority of the direct discharges into the ASBS are from the pipes leading to the beach from Highway 1. The southern and central sections of the watershed lie in Los Angeles County and include the populated portion of Malibu developed with beachfront homes. A large number of direct discharges in this area are from roads including Highway 1, and urban landscape runoff from homes and small businesses. Most of the residential sited and commercial buildings are on septic systems or are served by small secondary treatment systems. Effluent from the septic or secondary treatment systems is discharges to land via leach fields or spray irrigation. Some of the leach fields are located on or near the beach. Several beaches along the coast are CWA Section 303d listed for beach closures and high coliform counts.

Within the City of Malibu jurisdiction the watershed environment westward of Malibu Canyon Road to the Ventura County line is in a relatively undisturbed state. The slopes and hillsides are dominated by coastal sage scrub and chaparral vegetation, and large areas of riparian habitat in the canyons. The natural environment from the Civic Center and eastward has suffered some biological degradation. Grading and development eliminated some native hillside vegetation in some areas, portions of creeks have been channelized, and kelp beds have largely diminished or disappeared, but reef and rock zones still provide habitat for many species of fish.

More than 15% of the total land in Malibu is public open space. One thousand eight hundred and sixty-nine point nine (1,869.9) acres (7.57 km^2) of open space are used for public recreation, including regional parks, local parks, beach parks, and general open space. Local and regional parks make up 743.7 acres (3.0 km^2) of the open space in Malibu. Vacant, undeveloped private land comprises 60.4% of all land in the City

(7578.3 acres; 30.66 km^2), most of which is in its natural state containing tree, brush, shrub, and grassland vegetation. With a majority of the land in Malibu still sitting as undeveloped open space, it is evident that the general character of the land has changed little since 1974, when the ASBS was first designated.

Eight small watersheds totaling 33,000 acres (133.5 km^2) drain into the ASBS along the County of Los Angeles coastline. This area consists of the unincorporated County of Los Angeles, City of Malibu, State Parks, National Parks, and Caltrans roadways. The County of Los Angeles has jurisdiction over approximately 12,300 acres (49.7 km^2) of the total drainage area. The land use is almost entirely natural open space. Small portions of the drainage area also include low density residential developments, small agriculture plots, and beach parking areas.

Within the State Department of Parks and Recreation jurisdiction, Point Dume is comprised of 31 acres (125,452 m^2) of parkland. There are 2,972 lineal feet (905.8 m) of beach associated with this unit; about half of that is isolated from the unit with a parking area that is administered by the County of Los Angeles. There are other State Parks with associated infrastructure located at this ASBS.

Caltrans classified and mapped the land use and summarized population density within ASBS TAS. Eighty-six point one percent (86.1%) of the TAS is open space-public lands, 4.9% is low density-residential, 4.8% is very low density-residential, and 2.6% is medium density-residential. The remaining land use type is less than 1.0% each of low density commercial, industrial, high density residential, planned development, high density commercial, water, urban reserve, and mixed use. Population density of the TAS varies from less than 100 to 10,000 people per square mile, and in a few relatively small areas, reaches 20,000 people per square mile.

5.4.17 - Northwest and Western Santa Catalina Island

Within the Northwest portion of the Island, there are 17 natural streams and gullies draining into the ASBS. Drainage from the community of Two Harbors consists of small gullies and pipes used mainly for storm water runoff. Two Harbors also has marina facilities consisting of mooring field and pier facilities. Youth camps with structures for camping, picnicking, and recreational use much of the coastline in this area. Adjacent to the Blue Cavern Cove are the intake line for the University of Southern California (USC) Wrigley Catalina Marine Science Laboratory and the leach field for the treated domestic wastewater from the Marine Science Center. USC has a waste seawater discharge covered under an existing exception.

Western Catalina is used primarily by boaters, the island residents and tourists, and has areas for camping, picnicking, hiking, and surfing. There are five natural streams draining this area. A road runs along part of the coastline of the ASBS, and may contribute to storm water runoff, portions of the road are annually paved with oil slurry that may be discharged into the ASBS.

Santa Catalina Island Company (SCICO) occupies the majority of the land adjacent to the ASBS, Open Space Easement and Conservancy Area. The Two Harbors area and Little Geiger Cove to Howland's Landing are the Non-Easement, Non-Conservancy areas owned by the SCICO. The land use is dominated by residential areas, view corridors/public uses, campgrounds/hostels, and lodges/inns. The SCICO has two secondary stage wastewater treatment plants with land disposal near the ASBS. Additionally, SCICO has removed the underground fuel storage tanks previously located at the vehicle fueling facility, located adjacent to the beach.

The high use visitor period runs roughly from Memorial Day in May through Labor Day in September. During that time, the City of Avalon, as well as other recreation areas and summer camps on the island, are generally filled to capacity. During the remaining months, the population drops to a fairly constant level of permanent residents while other areas retain a minimum number of more-or-less permanent, maintenance-type personnel (Los Angeles County, Department of Regional Planning. 1983. Local Coastal Plan, Santa Catalina Island).

5.4.18 - Southeast Santa Catalina Island

The City of Avalon is located on Santa Catalina Island and is relatively close to but not immediately adjacent to the ASBS.

This watershed has two direct discharges and three natural streams draining to the ASBS. The major source of anthropogenic impact is associated with a large quarry. The Connolly-Pacific Company (Connolly) facility is located in the Pebbly Beach Extractive Use Zone in the Santa Catalina Island Local Coastal Plan. Connolly leases the property from the Santa Catalina Island Company. There is a jetty constructed at the quarry. Connolly must maintain the natural shoreline contours, meaning some rocks are added periodically to areas where storms have caused slippage. Connolly is also required to reconstruct a "natural" hillside topography upon reclamation. The facility is approximately 248 acres (1 km^2) and is completely pervious (i.e., no paved roads or parking areas).

5.4.19 - Robert E. Badham

Uses of the watershed, nearshore and offshore, areas in this ASBS include industrial service supply, navigation, recreation, commercial, sport fishing, and shellfish harvesting. Three natural streams flow into the ASBS which carry urban runoff from the Corona Del Mar area of Newport Beach. Urban runoff may be contributing toxic pollutants such as pesticides and other organics, and some impacts are also resulting from hydromodification in the upstream portions of one of the streams, Buck Gully, which is CWA Section 303d listed.

The land immediately behind the coastal bluffs of the Robert E. Badham ASBS is nearly completely developed, and private homes line most of the cliff edge. Public access to the Refuge is provided by a large, partially paved walkway at Poppy Avenue and by climbing over the rocks along shore from the north (from the Corona del Mar area) (SWRCB 1979).

The City of Newport Beach urban land use includes 38,394 housing units and a population of 70,032 in 2000. Within the immediate watershed drainage area of the ASBS, there is a total population of 4,523. Of the approximately 32,000 acres (129.5 km^2) that make up the City of Newport Beach, the drainage area of the Newport Beach Marine Life Refuge consists of 1,659.32 acres (6.72 km^2). The majority of the drainage area is either residential, 733.27 acres (2.95 km^2), or vacant land, 729.06 acres (2.95 km^2). The rest of the watershed is open land and recreation (100.22 acres; 405,575.9 km^2), mixed use or under construction (82.74 acres; 0.33 km^2), commercial and public (10.44 acres; 42,249 m^2), and transportation and utilities (3.61 acres; 14,609 m^2)). There are no industrial areas within the watershed. The vacant land is located on either side of Buck Gully and Morning Canyon Creek and is bordered by residences and open parks.

5.4.20 - Irvine Coast

Most of the watershed is urbanized with the exception of the Crystal Cove State Park area, which contains some of the last undeveloped Orange County coastline. There are 16 natural gullies or streams in this watershed mostly drain urban areas, the Pacific Coast Highway, and park facilities and then into the ocean. Los Trancos Creek is impaired by fecal coliform bacteria. In addition there is groundwater spring that drains the coastal bluff forming a small surface stream into the ocean.

Caltrans classified and mapped the land use and summarized population density within ASBS TAS. Fifty-six point two percent (56.2%) of the TAS is open space-public lands and 43.8% is medium density-residential. Population density in about 65% of the TAS is less than 100 people per squared mile. Population density of a relatively small area of the TAS ranges from 5,000 to 10,000 people per square mile. The remaining area of the TAS has a population density of 100 to 500 people per square mile.

The California Department of Parks and Recreation, in the Crystal Cove State Beach area, is comprised of 2,791 acres (11.29 km^2) of land. There are 16,800 lineal feet (5.12 km) of beach associated with this park. The park has approximately 8 miles (12.87 km) of trails. The park is bisected by Highway 1. There are 174,120 square feet (16,176 square meters) of parking lot at the Pelican Point facility. Developed area in the park amounts to about 0.5% of the total area. Caltrans has developed collection infrastructure to accumulate all roadway drainage and eliminate any direct runoff from the Highway 1 section over most of the area that has the potential to impact the ASBS. About 50% of the park is bordered by urban development and golf course; with the remainder undeveloped back country to the top of the coastal drainage ridgeline.

5.4.21 - Heisler Park

Discharges into the Heisler Park ASBS arise from hardscape, street, and storm drains. There is one gully that drains runoff from an urban portion of the City of Laguna Beach. The City of Laguna Beach jurisdiction includes 1,225 property lots, 26,000 residents, and the current resident watershed population of approximately 2,500 to 3,000 people. It is estimated that about 3,000,000 tourists visit the city each year. Land use of the watershed area is predominantly residential and a small percentage of commercial use along the Pacific Coast Highway. The reserve watershed area consists primarily of residential development from the beach cliff area, extending inland to the narrow coastal plain and up on the hillsides. There are no industrial businesses or facilities within the watershed. There are five city parks and recreation areas which amount to 61 acres (246,858 m^2), and there is one city facility, the City Park Division operations yard.

5.4.22 - La Jolla

The adjacent, highly urbanized watershed here has nine naturally occurring streams or gullies also drain the developed La Jolla town area into the ASBS. Within the ASBS watershed area, there are approximately 1,640 households based on the 2000 census. It is estimated that the current resident population is 6,060 people in the watershed. During the summer months, visitors and tourists significantly increase the amount of people in the community.

Because the watershed is built out, it is anticipated that the existing percentage of impervious surface will not significantly change in the future. The watershed is fully developed and has been for several decades; land uses, and assumedly storm water quality, have remained fairly static during this time. There are approximately 1,452 acres (5.87 km^2) in the ASBS drainage area. Of this total, 80% is urbanized area and 20% is undeveloped or dedicated open space. There are no industrial businesses or facilities within the watershed.

5.4.23 - San Nicolas Island and Begg Rock

SNI is approximately 61 miles (98 km) from the mainland. The island, managed by the U.S. Navy, is not open to the public. There are 35 natural gullies and ephemeral streams on the island, which drain into the ASBS. There are residential and industrial areas, pier, barge landings, roads, structures, missile testing activities, and an airfield on this island that may contribute to pollutants into the ASBS. A desalination plant operated by the Navy discharges brine under an individual exception.

5.4.24 - San Clemente Island

SCI is located 49 miles (79 km) from the mainland. The island is managed by the U.S. Navy and is not open to the public. There are residential and industrial areas, piers, barge landings, roads, structures, military training activities (including the use of ordinance), and an airfield on this island that may contribute to pollutants into the ASBS. There are also 100 natural gullies and ephemeral streams that drain into the ASBS. A large area in the southern part of the island is used for military operations, including explosion of ordinance. This undoubtedly results in erosion and resulting sedimentation into the coastal portion of the ASBS. A sewage treatment plant operated by the Navy discharges into an excluded zone within the ASBS under an individual exception.

There are 214 watersheds on the island. The revised universal soil loss erosion occurs on most of the island at a rate of less than 4 tons per acre per year, though the northeast coast of the island erodes at 12 to 23 tons per acre per year.

5.5. BIOLOGICAL COMMUNITY BASELINE

5.5.1 - ASBS Reconnaissance Surveys (1979-81)

Biological surveys were conducted and reported in the State Water Board's California Marine Waters, Areas of Biological Significance Reconnaissance Survey Reports (1979-1981). The results have been summarized in Table 5.5.1 (below) to display the number of flora (plant and algae), invertebrate, and fish species found in each ASBS.

Table 5.5.1. Number of flora (algae and marine vascular plants), invertebrate, and fish species found in each ASBS, as summarized from biological surveys conducted for the State Water Board's Reconnaissance Survey Reports (1979-1981)

ASBS Name	Number of Flora Species	Number of Invertebrate Species	Number of Fish Species
Redwoods National Park	35	433	29
Trinidad Head	24	407	0
King Range	28	181	11
Jughandle Cove	14	72	9
Saunders Reef	31	157	13
Del Mar Landing	No Survey Conducted		
Gerstle Cove	39	310	26
Point Reyes Headlands	31	299	16

ASBS Name	Number of Flora Species	Number of Invertebrate Species	Number of Fish Species
Duxbury Reef	6	89	0
James V. Fitzgerald	33	159	12
Año Nuevo	35	634	14
Pacific Grove	87	521	17
Carmel Bay	30	125	78
Point Lobos	27	242	15
Julia Pfeiffer Burns	17	151	26
Salmon Creek Coast	No Survey Conducted		
Laguna Point to Latigo Point	43	613	86
Northwest Santa Catalina Island	38	254	38
Southeast Santa Catalina Island	44	260	27
Robert E. Badham	7	90	13
Irvine Coast	5	187	24
Heisler Park	15	160	28
La Jolla	20	151	36
San Nicolas Island & Begg Rock	No Survey Conducted		
San Clemente Island	No Survey Conducted		

5.5.2 - Marine Wildlife

5.5.2.1 <u>Marine Reptiles</u>

Marine sea turtles occur in California waters. Four species of federally protected sea turtles may be along the California coast: green (*Chelonia mydas* FE), leatherback (*Dermochelys coriacea* FE), loggerhead (*Caretta caretta* FE), and olive ridley sea turtles (*Lepidochelys olivacea* FE). These marine turtles are circum-global in distribution but breeding colonies have not been observed in California (Coastal Conservancy 2005).

5.5.2.2 <u>Marine Birds</u>

Birds comprise the most conspicuous group of animals occurring along the California coast; that many individuals are easily visible from land during all seasons and tidal conditions. Most marine bird populations are seasonal; heaviest use occurs during spring and fall migrations, and in winter. During the summer, most of the species are nesting elsewhere (SWRCB 1979).

Birds are important predators of many of the fish and invertebrates inhabiting the coast. In the rocky intertidal zone, several species of shorebirds (especially black turnstones, surfbirds, rock sandpipers, black oystercatchers, willets, and whimbrels) prey on water lice, salt water fleas, and other small crustaceans. Bristle worms, a variety of small mollusks, and occasionally representatives of other invertebrate taxa are also preyed upon. Gulls feed on crab, seastars, *Pisaster ochraceus*, and sea urchins. On the sandy beach, sanderlings and marbled godwits probe for water lice, *Excirolana*, salt water fleas, *Orchestoidea* and *Paraphoxus*, the sandcrab, *Emerita analoga*, and adult and larval insects. Seabirds that capture food near the water surface (pelicans, phlaropes, terns, and gulls) or dive beneath the surface (loons, grebes, cormorants, sea ducks, and alcids) forage on zooplankton, squid and fish, as well as mollusks and crustaceans taken from the seafloor (SWRCB 1979).

Of the 100+ other species occurring somewhat regularly along the California coast, the great majority nest outside of California, with many species migrating annually to the Arctic to breed. Small numbers of some of these species, often immature birds, remain here throughout the summer (SWRCB 1979).

Seabirds found in the Southern California Bight include Xantu's murrelet (*Synthliboramphus hypoleucus*), California gull (*Larus californicus*), Heermann's gull (*Larus heermanni*), western gull (*Larus occidentalis*), Royal tern (*Sterna maxima*), California brown pelican (*Pelecanus occidentalis*), ashy storm-petrel (*Oceanodroma homochroa*), Brandt's cormorant (*Phalacrocorax penicillatus*), and double-crested cormorant (*Phalacrocorax auritus*) (SWRCB 1979) (PRBO 2005). The California least tern (*Sterna antillarum*) and elegant tern (*Thalasseus elegans*) forage and nest along the California coast. The bald eagle (*Haliaeetus leucocephalus*) is also present along the coast and in the Channel Islands. They were listed as an endangered species in 1967 when their population drastically diminished from exposure to the chemical pesticide DDT. Recovery efforts were made to repopulate this species and, after successful attempts, they were downgraded to threatened species in 1995. As of July 6, 1999, they were recommended for delisting by the U. S. Fish and Wildlife Services due to the increase in numbers found to exist (DFG 2001).

North of the Bodega Marine Life Refuge, along the California coast in the area of the Saunders Reef ASBS, pelagic birds spotted included the Pigeon Guillemot, Brown Pelican, Pelagic Cormorant and Western Gull. On the cliffs over the inter-tidal, birds found nesting include Common Ravens, Black Oyster Catchers, Cliff Swallows, and Pelagic Cormorants (SWRCB, 1980). Gerstle Cove, Del Mar Landing, and Jughandle Cove ASBS are all in the vicinity of the Saunders Reef ASBS and would likely have similar wildlife species.

Farther north, at the Trinidad Head ASBS, Western Gulls rest on offshore rocks. Numerous sea-birds also rest or nest on Blank Rock and Flatiron Rock. Blank Rock specifically serves as a nesting are for Fork-tailed Petrels, Leach's Petrels, Brandt's Cormorants, Pelagic Cormorants, Western Gulls, Common Murres, Pigeon Guillemots, Cassin's Auklet, and the locally rare Tufted Puffin (SWRCB, 1979). Due to the close proximity of the Trinidad Head ASBS to both the Redwood National Park ASBS and the King Range ASBS, the bird life found at these locations should be similar.

Along the northern and central coast, several species nest close to the intertidal zone, and are present as year-round residents. The black oyster catcher nests on rocks just above the reach of the waves. A smaller shorebird, the snowy plover, nests on the upper areas of beaches. Among seabirds, pelagic cormorants nest in scattered colonies along sea cliffs. This species builds nests on rock shelves along the cliff faces above the surf. Brandt's cormorant, a larger species which typically selects flat areas on islands for colony sites, is also present in large numbers along the northern and central coast. Gulls and black oyster catcher also nest along the coast (SWRCB 1979).

5.5.2.3 Marine Mammals

All marine mammals are protected under federal law (Marine Mammal Protection Act). Members of this group are predominantly carnivorous and represent the upper end of the marine food chain in the coastal waters. The three orders of marine mammals found along the California coast are the seals and sea lions (*Pinnipedia*), the sea otters (*Fissipedia*) and the dolphins, porpoises, and whales (*Cetacea*); the seals and sea lions are the most easily observed and abundant (SWRCB 1979). Table 5 displays NOAA's information about the presence of marine mammals within certain ASBS from Point Reyes southward.

North of Point Reyes, marine mammals in the Saunders Reef ASBS include the Harbor Seal and the California Sea Lion (SWRCB, 1980). Other ASBS locations in the area such as Gerstle Cove, Del Mar Landing, and Jughandle cove would also support Harbor Seals and California Sea Lions. At the Trinidad Head ASBS, both California Seal Lions and Stellar Sea Lions haul out on Blank Rock and Flatiron Rock. Harbor Seals use exposed rocks in Trinidad Bay and the western sector of the ASBS as resting sites (SWRCB, 1979). Due to the close proximity of the Trinidad Head ASBS to both the Redwood National Park ASBS and the King Range ASBS, similar marine mammal activity is assumed to also be found in these localities. River otters have been observed along the east side of Trinidad Head (SWRCB, 1979).

Table 5.5.2 Information on Presence of Marine Mammals within Certain ASBS

		Source (1)									Source (2)								
		Pt. Reyes	Duxbury	James V. Fitzgerald	Año Nuevo	Pacific Grove	Carmel Bay	Pt. Lobos	Julia Pfeiffer Burns	Salmon Creek	Laguna Point to Latigo Point	Northwest Santa Catalina Island	Southeast Santa Catalina Island	Robert E. Badham	Irvine Coast	Heisler Park	La Jolla	San Nicolas Island & Begg Rock	San Clemente Island
PINNIPEDS & FISSIPEDS	Southern Sea Otter *Enhydra lutris nereis*	x	x	x	x	x	x	x	x	x								x	
	California Sea Lion *Zalophus californianus*	x	x	x	x	x	x	x	x	x		x	x					x	x
	Stellar Sea Lion *Eumetopias jubatus*	x			x		x	x											
	Northern Fur Seal *Callorhinus ursinus*	x		x	x														
	Pacific Harbor Seal *Phoca vitulina richardsii*	x	x	x	x	x	x	x	x	x	x	x	x					x	x
	Northern Elephant Seal *Mirounga angustirostris*	x			x					x								x	x
CETACIANS	Dall's Porpoise *Phocoenoides dalli*	x	x	x	x	x	x	x	x	x		x						x	x
	Harbor Porpoise *Phocoena phocoena*	x	x	x	x	x	x	x	x	x									
	Pacific White-sided Dolphin *Lagenorhynchus obliquidens*	x						x	x	x	x	x							x
	Risso's Dolphin *Grampus griseus*					x	x	x	x	x	x		x	x	x	x			x
	Northern Right-whale Dolphin *Lissodelphis borealis*								x	x		x						x	x
	Humpback Whale *Megaptera novaeangilae*	x		x	x				x	x									
	Gray Whale *Eschrichtius robustus*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Minke Whale *Balaenoptera acutorostrata*	x	x	x								x							x
	Killer Whale *Orcinus orca*	x																	
	Bottlenose Dolphin *Tursiops truncatus*										x	x	x	x	x	x	x		x
	Fin Whale *Balaenoptera physalus*																		x
	Common Dolphin *Delphinus spp.*										x	x	x	x	x	x	x		x
	Blue Whale *Balaenoptera musculus*										x							x	x

(1) NOAA Biogeographic Assessment off North/Central California in Support of the Cordell Bank, Gulf of the Farallones and Monterey Bay National Marine Sanctuaries, Phase II: Environmental Setting and Update to Marine Birds and Mammals

(2) A Biogeographic Assessment of the Channel Islands National Marine Sanctuary: November 2005 (NOAA Technical Memorandum NOS NCCOS 21)

(3) Food limitation leads to behavioral diversification and dietary specialization in sea otters: Proceedings of the National Academy of Sciences 105.02 (2008) 560-565

5.6. EXCEPTION APPLICATION BIOLOGICAL SURVEYS – MARINE BENTHIC COMMUNITY

5.6.1 - Redwoods National Park ASBS

5.6.1.1 Marine Resources of Redwood National and State Parks (Cox et al. 2005)

Redwoods National and State Park submitted a report entitled Marine Resources of Redwood National and State Parks (Cox et al. 2005), which was a comprehensive assessment of coastal resources on sandy shores and rocky in Redwoods National and State Parks. This report included an inventory of the algal, invertebrate, and fish species present at three selected sites, and community dynamics surveys consisting of seasonal monitoring of abundant and/or ecologically important organisms.

Sandy intertidal sites include: Crescent Beach, Gold Bluffs Beach, and Redwood Creek Beach. Rocky intertidal sites include False Klamath Cove (FKC), Enderts Beach (END), and Damnation Creek. The study site at FKC was near discharges, previously identified in the Southern California Coastal Water Research Project (SCCWRP) 2003 Report, associated with Highway 101 roadway runoff. END and Damnation Creek happened to be near natural outlets of varying sizes. The species distribution in the rocky intertidal was examined on a presence/absence scale at each of the sites, with a standardized biodiversity protocol used to map and derive a complete species list for Damnation Creek.

It should be noted that Cox et al re-inventoried the identical sites as that described in reports by Boyd and DeMartini from 1977 (1974-76 field work for National Park Service) and 1981 (1980 field work for State Water Board). Voucher specimens were collected for all possible invertebrate and algal species. Some species were photographed in lieu of collection due to preservation difficulties. Algae were identified using Abbott and Hollenberg (1976) and Gabrielson et al (2004). Invertebrates were identified using Morris et al. (1980) Kozloff (1993), and Kozloff (1966). Measurement of the algal and invertebrate species of the July 2005 survey were recorded as five abundance categories; abundant, common, present, uncommon, or rare.

A total of 114 algal taxa were recorded in inventories of FKC and END in 2005. Thirty eight algal species were found at these sites in 2005 that were not listed by Boyd and DeMartini (1977). Three species of algae (*Haplogloia andersonnii, Pterygophora californica and Pikea robusta*) were found at END in 2005 and 1977 and at FKC in 1977, but were absent from FKC in the 2005 survey. One species, *Odonthalia washingtoniensis*, was only found at FKC in 2005 and 1977. Two species, *Calliiarthron tuberculosum* and seersucker kelp *Grateloupia setchellii,* were only found at END in 2005 and 1977. However, when comparing the algal community found during the 2005 and 1977 rocky intertidal inventories, no clear patterns emerged to assess potential impacts from storm water runoff or ocean water conditions.

Invertebrate inventories at FKC and END found a total of 176 invertebrates in 2005. Of these, 77 were not previously recorded. Invertebrate species inventoried at FKC (near to discharge sites) and END showed no clear pattern in species presence or absence. There were no conclusions pertaining to storm water runoff effects.

From June 2004 to November 2005, community dynamics surveys were conducted for algal and invertebrate communities based on the design of Multi-agency Rocky Intertidal Network (MARINe) (www.marine.gov). Methods adapted from MARINe included scoring percent cover of algal species in permanent photo-plots as well as enumerating mobile invertebrates within the plots, and monitoring seastar plots and surfgrass transects. In addition, select rocky tidepools were repeatedly sampled to provide a more quantitative assessment of specific resident species of tidepool fishes.

Permanent photo-plots were set up at FKC, Damnation Creek, and END. All plots were sampled and photographed every 2 to 3 months from June 2004 though November 2005. Sampling was done for all three sites within six days during lowest tides. The photo-plots were established to record changes in the cover of certain populations including: mussels (*Mytilus californianu*s), barnacles (*Chthamalus dalli and Balanus glandula*), and three species of algae (*Endocladia muricata*, *Pelvetiopsus limitata*, and *Fucus gardneri*). These five sessile populations were chosen for monitoring because they are conspicuous, bed-forming, abundant, and ecologically important. *Fucus gardneri* was not dense and continuous enough at END, nor was there dense enough *P. limitata* at Damnation Creek when the study was initiated, to merit plot establishment for those species at those sites. At Damnation Creek, five additional mussel plots were sampled. These plots were located in the outflow of Damnation Creek where salinity is often much lower than in the other mussel plots. Otherwise, each species type was monitored in five replicate plots at each site.

The 2004-2005 surveys do not provide adequate data to directly assess a response to the effects of storm water runoff or possible constituents in the ocean water. The targeted species are generally known for their tolerance to a variety of physical and chemical environmental conditions, and were not chosen by the researchers as selected species with known tolerances or sensitivity to anthropogenic contaminants occurring from storm water runoff or in the ocean receiving waters. However, this approach does constitute a thorough representation of seasonal data for the year and provides valuable baseline data on the conditions at three sites.

The State Water Board staff asked Dr. Peter Raimondi, of the University of California at Santa Cruz Center for Ocean Health (2008), to evaluate the Cox et al report in the context of the ASBS discharge question. According to Dr. Raimondi, the purpose of this report was to generally characterize the intertidal resources in the Park and the study design was not suitable to provide a dedicated assessment of the possible impacts of storm water to ASBS.

5.6.1.2 PISCO/MARINe (Raimondi 2006)

Dr. Peter Raimondi performed a data assessment for 8 of the 10 ASBS within the influence of Caltrans discharges. In his report (Data assessment for ASBS/Ocean Plan for Caltrans, March 12, 2006), Dr. Raimondi summarized site characteristics and provided a brief ecological community analysis of established rocky intertidal monitoring stations. These established stations are either a PISCO or MARINe site and provides a continuum of data collected using either Community Dynamics Survey or Biodiversity Protocol. PISCO/MARINe monitors three sites in the Redwood National Park ASBS at END, FKC, and Damnation Creek. All three are sites monitored using Community Dynamics Surveys, but only since 2004. Damnation Creek was also monitored using the Biodiversity Protocols.

Enderts Reef is comprised of a gently sloping (5°) bench of intermediate width and moderate relief. The surrounding coast is made up of boulder, bedrock, and pebble beaches. No biodiversity data were collected here but the species trends seem typical for this sort of site. One species of special interest was recorded here, the surfgrass, Phyllospadix spp. No invasive species were recorded at this site.

FKC reef is comprised of bedrock and boulders. The reef is a gently sloping, long reef of moderate relief. The surrounding coast is made up of bedrock, boulders, and sand. No biodiversity data have been collected here but species trends have been collected (since 2004) and seem typical to this point. Two species of special interest were found here, the surfgrass, *Phyllospadix* spp. and the sea palm, *Postelsia palmiformes*. No invasive species have been found here.

Damnation Creek reef is comprised of pebbles, boulders, and bedrock. The reef is a gently sloping, long reef of moderate relief. The surrounding coast is similar to the sample site. One species of special interest was recorded here, the surfgrass, *Phyllospadix* spp. No invasive species were recorded at this site. Dr. Raimondi compared the ecological communities in a series of "reference" sites in northern California. Species richness at Damnation Creek was 111 species, whereas species richness at reference sites ranged between 98 and 113. However, Damnation Creek differed in community composition significantly from all other sites. This was likely due to the site being remote, pristine, and of different geomorphology than the reference sites.

5.6.2 - Trinidad Head ASBS

One report was available for the Trinidad head ASBS, Sean Craig's 2006 Humboldt State University (HSU) Study intertidal survey, prepared for the City of Trinidad, and the Trinidad Rancheria Ocean Plan exception application. This survey provided a quantitative comparison of rocky intertidal species at one of the discharge sites, identified in the SCCWRP 2003 survey, and at a location distant from the discharge.

The selected waste discharge location is a site where the City of Trinidad's primary storm water outfall is located. Directly adjacent to this pipe is the outfall pipe of HSU's Telonicher Marine Lab, and the location is also influenced by the pier's parking lot runoff and certain boat cleaning operations. The selected "undisturbed" rocky intertidal sampling site was comparable in substrate and located approximately 100 meters northeasterly along the shoreline away from the first site.

Both sampling sites were similar in appearance consisting of boulders partially submerged in sand and appeared to be generally unmoved throughout time. Both sampling stations were examined for vertical and horizontal zonation of the marine life. Boulders were randomly selected along a single axis within four distinct shore regions from the high shore to the low shore. These regions were labeled: High, Mid-High, Mid, and Low. A 0.25 square meter quadrat was placed at each sampling point measuring both the vertical and horizontal arrangement of organisms on each boulder. Surveys were conducted during low tide on three consecutive days, May 25, 26, and 27, 2006. Thirty quadrat samples were collected on 10 boulders at the outfall site, and 36 quadrat samples were collected from 12 boulders at the undisturbed site. Each randomly selected boulder was measured for species abundance, composition, and general pattern of zonation of the intertidal algae and invertebrates. Measuring the vertical and horizontal arrangement of organisms allowed for the examination of changes in species composition at the outfall site as compared to the control site.

The log-normal model of abundance and diversity was used to compare the discharge site with the control site. Sessile and mobile invertebrates were measured for abundance using a count and then the log was taken. Anemones and algae were counted as percent cover. The report stated that when considered together, the diversity and abundance of biologically similar organisms within a community are more powerful in assessing the effects of disruption than when taken separately. A log-normal model of abundance and diversity is one tool in applied ecology for use to test ecosystem integrity, disruption, and health.

Craig reported the same species present at both the outfall (discharge) site and the "undisturbed" location; a total of 23 species were recorded, 10 macrophyte and 13 invertebrate species. The report stated that the outfall site and the "undisturbed" site show a similar pattern in both vertical and horizontal zonation of species. Fucoid algae, including *Fucus gardneri* and *Pelvetiopsis limitata,* were found restricted to the higher regions of boulders generally below the barnacle line across the shore. Also found in the highest zone were a group of red algae species *Mastocarpus papillatus*, *M. jardinii*, *Cryptosiphonia woodii*, *Endocladia muricata* and *Neorhodomela larix.* All four shore zones included barnacles *Chthamalus dalli* and *Balanus glandula,* abundant at the upper reaches of the boulders. The anemone *Anthopleura elegantissima* was present in all but the high zone at both locations.

Abundance between the two sites was not the same. Craig provided the explanation that the difference in organism abundances between the two sites may be due to the physical positioning and slope of the shore line, and describe the outfall site as a long gentle slope more protected from heavy wave action as compared to the “undisturbed” site and filling in more slowly during the incoming tide. The “undisturbed” site was described as being less protected with the potential to be more rapidly immersed with an incoming tide.

At the request of State Water Board staff, Dr. Raimondi performed a statistical analysis of the Trinidad intertidal data set described above. In that assessment, he used Bray-Curtis ordination (PRIMER software) to compare community structure at reference and impact locations. Using the design and data provided, there is evidence that the impact (outfall) location is different from the “undisturbed” location based on comparison of community composition. This effect was complicated by the interaction between effluent “treatment” (impact vs. undisturbed) and tide height.

For species sampled by counts and those sampled by percent cover, 1 of 3 tidal height zones differed between outfall and undisturbed areas, although the differences in the other zones were close to significant. The p value for the species sampled by counts in the low tide zone was 0.023 (2.3%) and the p value for percent cover species in the mid tide zone was 0.005 (0.5%). The p values describe the level of significance of the sample statistics, with lower p values indicating a greater certainty that there are differences between outfall and undisturbed sites.

Algal species contributing the greatest difference between the discharge and undisturbed site was the red algae *Cryptosiphonia woodii,* being more abundant at the discharge site (Table 5.6.1). The aggregating sea anemone *Anthopleura elegantissima* was clearly more abundant at the undisturbed site.

Table 5.6.1. Percent cover, intertidal algae, and the aggregating sea anemone A. elegantissima, and their contribution to differences between the outfall site (Group 1) and the undisturbed site (Group 2)

	Group 1	Group 2	
Species	Av.Abund	Av.Abund	Contrib%
Cryptosiphonia woodii (%)	40.33	0.2	21.38
Anthopleura elegantissima (%)	1.78	17.6	17.52
Endocladia muricata (%)	6.11	17.2	16.04
Fucus gardneri (%)	15.67	3.3	14.9
Pelvetiopsis limitata (%)	8.11	1.1	9.59
Mastocarpus papillatus (%)	4.44	4.3	7.46
Mastocarpus sporophyte (%)	2.56	5.2	6.69

The barnacle *Chthamalus dali*, black limpets, and the barnacle *Balanus glandula* contribute the greatest differences between the outfall and undisturbed sites (Table 5.6.2.).

Table 5.6.2. Counts, Intertidal invertebrates, and their contribution to differences between the outfall site (Group 1) and the undisturbed site (Group 2)

	Group 1	Group 2	
Species	Av.Abund	Av.Abund	Contrib%
Chthamalus dali (count)	2.47	3.82	34.97
Little Black Limpets (count)	0.64	2.34	20.81
Balanus glandula (count)	1.69	1.35	15.71
Littorines (count)	0.42	0.69	8.49
Lottia digitalis (count)	0.61	0.1	6.23
Chitons	0.41	0	4.5

For species sampled by counts and those sampled by percent cover, 1 of 3 tidal height zones differed between outfall and undisturbed sites, although the differences in the other 2 of 3 zones were close to significant.

The following figures provide a graphic representation of the Bray-Curtis multivariate results provided by Dr. Raimondi. Each symbol represents a quadrat sample result. The graphs show that some outfall and undisturbed quadrats cluster together, but some outfall quadrats cluster separately as do some undisturbed quadrats. This displays the differences between the outfall and undisturbed community data sets.

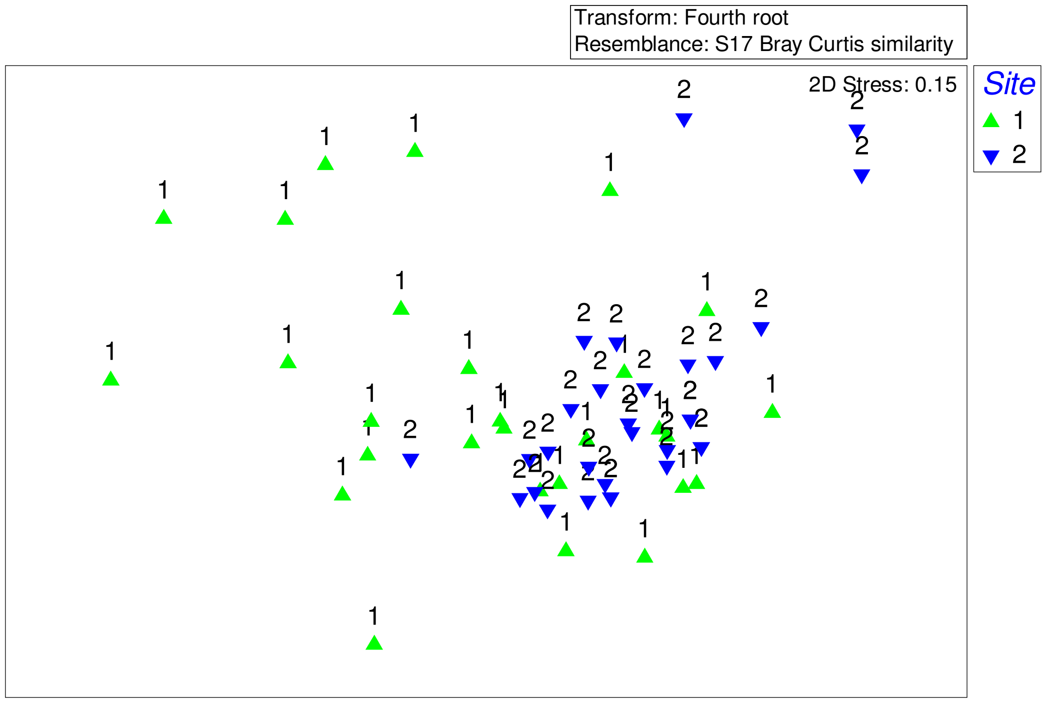

Figure 5.6.1. Trinidad Head ASBS. All tidal zones combined. Site 1 is the outfall site and Site 2 is the "undisturbed" site.

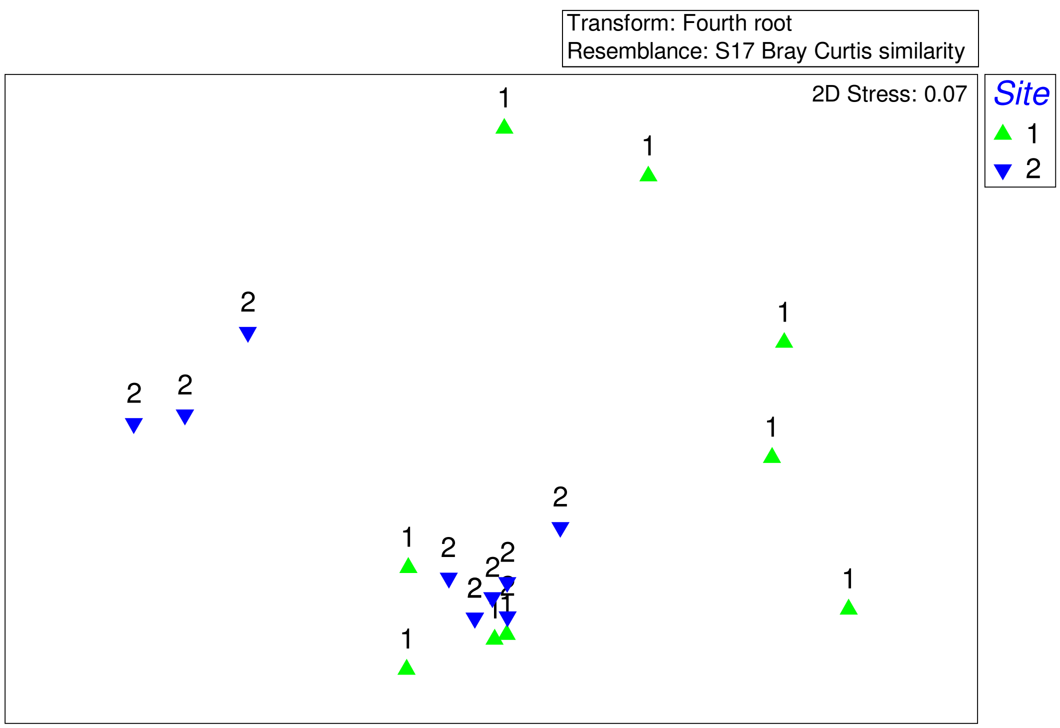

Figure 5.6.2. Trinidad Head ASBS. Low tide zone, species measured by counts. Site 1 is the outfall site and Site 2 is the "undisturbed" site.

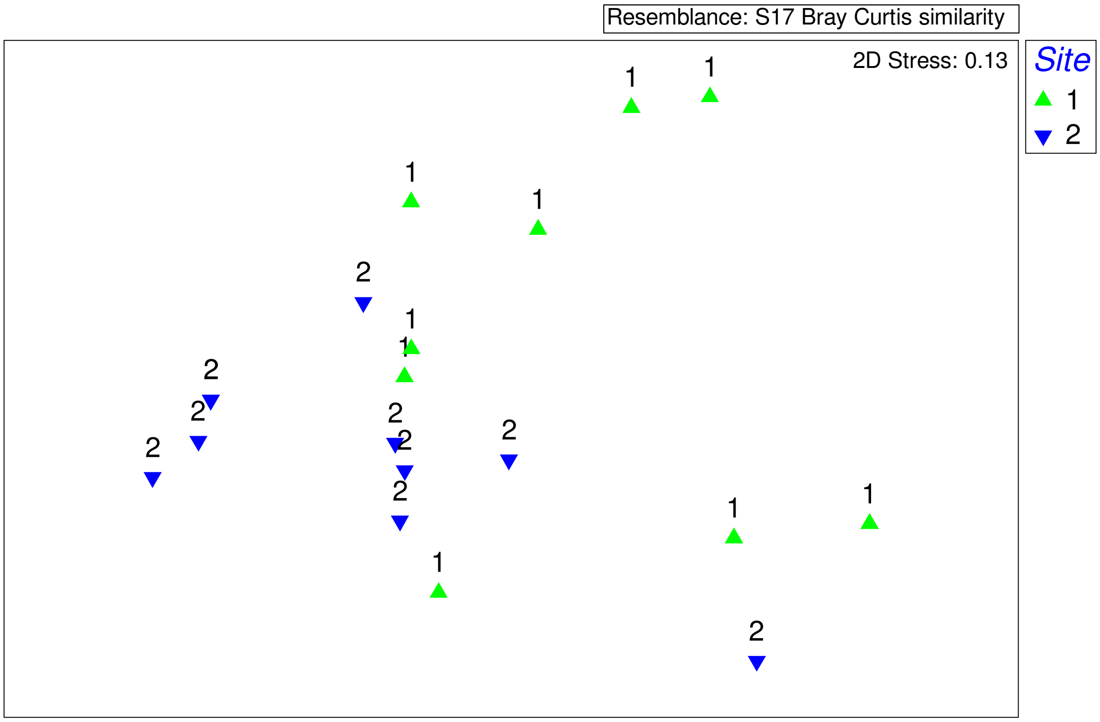

Figure 5.6.3. Trinidad Head ASBS. Mid tide zone, sessile species measured by percent cover. Site 1 is the outfall site and Site 2 is the “undisturbed” site

5.6.3 - Del Mar Landing ASBS

There was one report available, a Baseline Inventory of the Rocky Intertidal Zone at the Del Mar Landing Ecological Reserve May 2006 by Jacqueline Sones et al. This inventory was prepared for the TSRA Ocean Plan exception application and provides a quantitative comparison of marine species at two of TSRA’s discharge sites and at two control sites.

The 2006 Sones report provided relevant quantitative information at four selected points along the 1 kilometer of rocky shoreline of the ASBS. Prior to this work, very little rocky intertidal community inventory work had been done at the Del Mar Landing ASBS. Steve Obreski conducted some work at Sea Ranch in 1972, but the exact locations of his study sites are unknown and the data in his report was considered too preliminary and too narrow to use for this initial study (Sones et al. 2006). John Pearse wrote a site description for a rocky intertidal area near Walk-On Beach, a location approximately 3 kilometer south of the Del Mar Landing ASBS. This report did not represent a complete inventory effort of the rocky intertidal biotic community, but did provide an informative overview of the area (Sones et al. 2006).

Also near Walk-On Beach and part of TSRA, the University of California at Santa Cruz's Coastal Biodiversity Survey Team (Raimondi, SWAT) conducted surveys of the rocky intertidal community in 2001 and 2005. Though the topography at Walk-On Beach is slightly different than at Del Mar Landing, that inventory provides a quantitative measure of diversity and abundance of the rocky intertidal algal and invertebrate community in the vicinity.

Sones conducted her biological inventory of the rocky intertidal community at the Del Mar Landing ASBS in April 2006. The ASBS is located off Helm Road at the northern end of the Sea Ranch community. It covers approximately 1 kilometer of rocky shoreline. Four rocky intertidal sites were sampled during the inventory, two discharge sites and two control sites. Two discharges (storm water conveyances) drain into the ASBS near the "discharge" sites, one at Helm Road, and another approximately 185 meters further east. "Control" sites were selected in areas distant from discharge sites, approximately 80 meters away, and considered by the survey team to be most likely free from potential influence of the discharges. Transects were set up and surveyed near both discharge sites and at two control sites located a reasonable distance away from the direct influence of the storm water outfalls. The control sites were also chosen based on similarities in substrate, slope, aspect, and wave exposure.

Surveys were conducted on two consecutive days, April 21 and 22, 2006. At each site, single 5-meter long transects were laid out in each of four tidal zones (high, upper-middle, lower-middle, and low zones). Transects were set up parallel to the shoreline running from east to west at approximately the same tidal height for each zone. Photographs were taken of each transect, as well as selected algae and invertebrates encountered during the surveys. Five 20cm x 20cm quadrats were randomly placed along each transect. The sampling design was 5 quadrats per zone x 4 zones per site x 4 sites for a total of 80 quadrats. The entire survey comprised of 40 quadrats in discharge sites and 40 in control sites.

All species in each quadrat were identified and the percent cover of sessile invertebrates and algae, and number of individuals for mobile invertebrates, were calculated. Mussels were not destructively sampled, so the algae and invertebrate counts represent the topmost layer of the mussel bed, most notable in the lower-middle zone.

Fifty-eight species of marine algae and invertebrates were recorded in all the quadrats and pooled across discharge and control sites. Of these, there were 26 species of algae and 32 species of invertebrates. Of the 32 invertebrates, 13 were sessile species and 10 were mobile species. Twenty-two species of algae were found at the discharge sites versus 25 species of algae at the control sites. Twenty-nine species of invertebrates were found at the discharge sites versus 22 species of invertebrates at the control sites. Approximately 70% (n=40) of all species were shared between the discharge and control sites.

Raw data was pooled from all tidal zones prior to statistical analysis. Species richness, sessile invertebrate cover, sessile invertebrate diversity, mobile invertebrate abundance, mobile invertebrate diversity, algal cover, algal diversity, and total cover were analyzed using a general linear model (Analysis of Variance). Models evaluated the measures of interest as a function of location (west vs. east) and outfall (discharge vs. control). Thus, the results reflect overall impacts of the discharge after accounting for differences in the two locations. Measures of diversity were calculated using the Shannon Diversity Index (H). Dr. Matt Bracken (Bodega Marine Laboratory) performed the data analysis.

Sones et al reported no significant differences between the discharge and control sites. However, invertebrate richness was reported to be slightly higher at the discharge sites and algal richness was slightly higher at the control sites. The only measure that was close to being significantly different was the mobile invertebrate abundance driven by one species, the checkered periwinkle (*Littorina plena/scutulata).* Sones et al concluded that these trends were insignificant and probably due to sampling artifacts and the high variability of rocky intertidal communities.

At the request of State Water Board staff, Dr. Raimondi performed a statistical analysis of the Sea Ranch/Del Mar Landing intertidal data set described above. In that assessment, he used Bray-Curtis ordination (PRIMER software) to compare community structure at discharge and control locations. Using the design and data provided, there is evidence that the discharge locations are different from the control locations based on comparison of community composition. For species sampled by percent cover and those sampled by counts, 2 of 4 zones differed between discharge and control areas. For species sampled by percent cover, the upper-middle tide zone (p=0.042) and the low tide zone (p=0.002) differed between discharge and control locations. For species sampled by counts, the high tide zone (p=0.001) and the upper-middle tide zone (p=0.015) differed between discharge and control locations.

Algal species contributing the greatest difference between the discharge and control sites in the upper-middle intertidal was the red algae *Endocladia muricata,* being more abundant at the discharge site (Table 5.6.3.). Two red algal species, *Odonthalia floccosa* and *Polysiphonia* sp., both had an average abundance of zero at the discharge sites.

Table 5.6.3. Percent Cover, Upper-middle intertidal algae, and their contribution to differences between the discharge site (Group Impact) and the control site (Group Reference)

	Group Impact	Group Reference	
Species	Av.Abund	Av.Abund	Contrib%
Endocladia muricata	30.2	24.4	19.23
Mastocarpus papillatus	28.6	8.4	14.65
Gelidium coulteri	24.7	3.8	14.51
Cladophora columbiana	16	13.43	11.79
encrusting coralline algae	1.83	10.8	6.78
Odonthalia floccosa	0	8.63	5.42
Petrocelis	2.6	7.33	4.85
Halosaccion glandiforme	6.53	2.33	4.37
Fucus gardneri	1.1	5.1	3.46
Mazzaella flaccida	0.63	5.45	3.32
Polysiphonia sp.	0	4.6	2.99

Algal species contributing the greatest difference between the discharge and control sites in the low intertidal zone was encrusting coralline red algae*,* being more abundant at the discharge site. *Odonthalia floccose*, while present at the discharge sites, was more abundant at the control sites (Table 5.6.4.). The sand castle worm *Phragmatopoma californica* had an average abundance of zero at the discharge sites.

Table 5.6.4. Percent Cover, Low intertidal algae and sessile invertebrates, and their contribution to differences between the discharge site (Group Impact) and the control site (Group Reference)

	Group Impact	Group Reference	
Species	Av.Abund	Av.Abund	Contrib%
encrusting coralline algae	60.5	19.4	26.29
Hedophyllum sessile	33.8	20.8	20.47
Odonthalia floccosa	17.1	35.5	16.23
Phragmatopoma californica	0	20	10.08
erect coralline algae	9.4	12.6	6.31
Polysiphonia sp.	0.93	8.1	4.55
Petrocelis	5.2	2.7	3.58
Endocladia muricata	0.7	4.1	3.25

Limpets (*Lottia)* and littorine snails contributed all of the difference between the discharge and control sites in the high intertidal zone (Table 5.6.5.)*. Lottia digitalis* and *L. scabra* were more abundant at the control sites, while *Littorina* was more abundant at the discharge sites.

Table 5.6.5. High intertidal mobile invertebrates (measured by count), and their contribution to differences between the discharge site (Group Impact) and the control site (Group Reference)

	Group Impact	Group Reference	
Species	Av.Abund	Av.Abund	Contrib%
Lottia digitalis	0.33	1.33	33.88
Lottia scabra	0.49	1.44	31.95
Littorina plena/scutulata	3.34	2.41	31.7

From the following table, it can be seen that limpets and littorine snails again contributed to the difference between the discharge and control sites in the upper-middle intertidal zone, as did the black turban snail *Tegula funebralis* and the murex snail *Nucella ostrina* (Table 5.6.6.).

Table 5.6.6. Upper-middle intertidal mobile invertebrates (measured by count), and their contribution to differences between the discharge site (Group Impact) and the control site (Group Reference)

	Group Impact	Group Reference	
Species	Av.Abund	Av.Abund	Contrib%
small limpets	0.63	1.29	19.72
Littorina plena/scutulata	1	0.59	19.62
Tegula funebralis	0.61	0	16.37
Lottia scabra	0.46	1.01	15.61
Lottia pelta	0.33	0.32	8.42
Nucella ostrina	0.1	0.42	7.14
Lottia paradigitalis	0	0.24	3.69

The following figures provide graphic representations of the Bray-Curtis multivariate results provided by Dr. Raimondi. Each symbol represents a quadrat sample result. Red symbols represent the west discharge (WD) and east discharge (ED) sites. Blue symbols represent the west control (WC) and east control (EC) sites. The numbers represent the tidal zone (1= high, 2= upper-middle, 3= lower-middle, 4= low) of each quadrat.

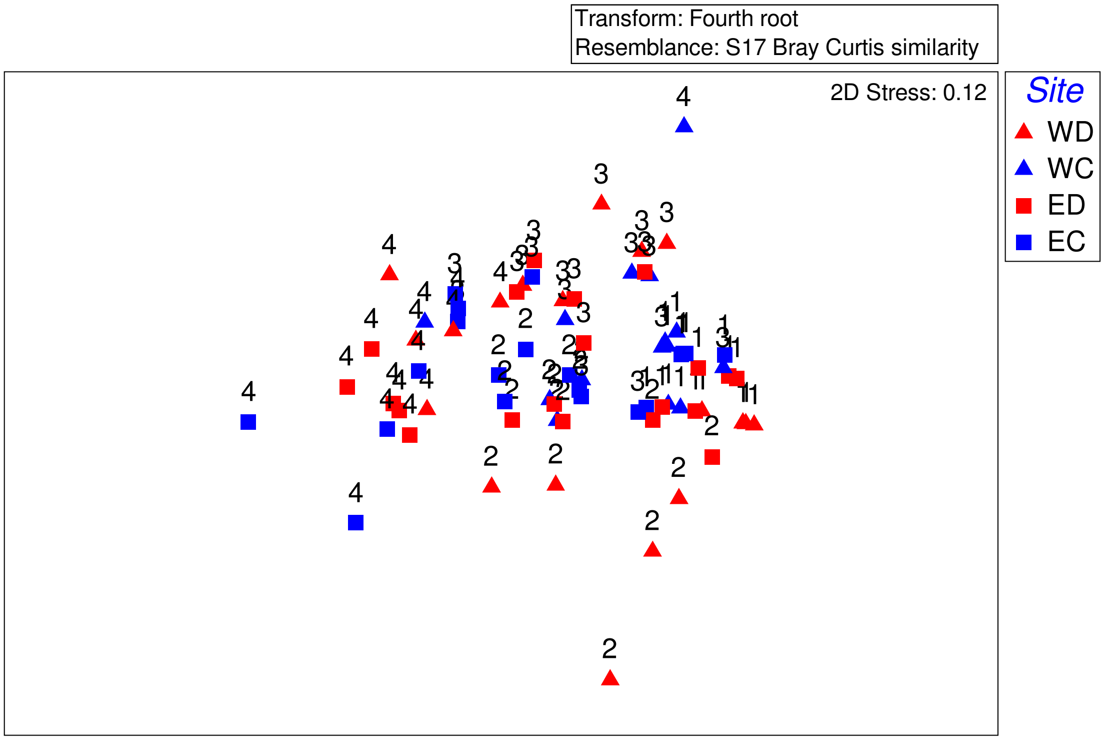

Figure 5.6.4. Del Mar Landing ASBS. Species measured by percent cover. All tidal zones (1-4) shown. WD and ED are discharge sites; WC and EC are control sites.

The above figure shows that discharge quadrats in zone 2 (upper-middle intertidal) clusters out nearer the bottom right of the graph, mostly away from the control sites from the same tidal zone.

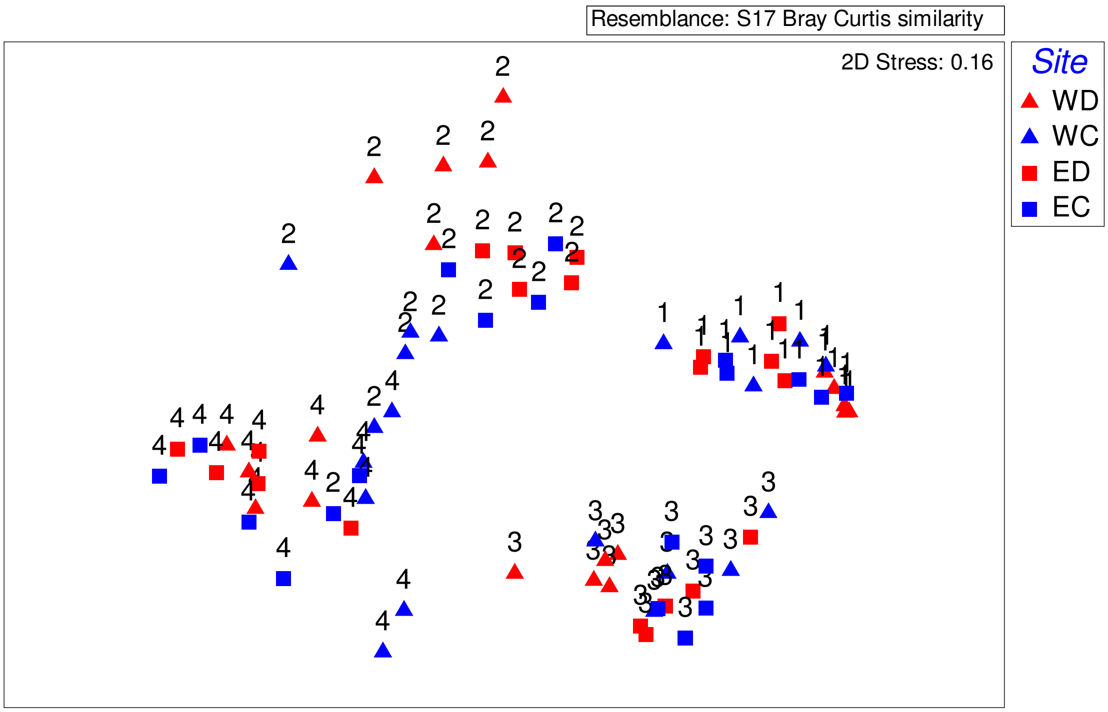

Figure 5.6.5. Del Mar Landing ASBS. Species measured by counts. All tidal zones (1-4) shown. WD and ED are discharge sites; WC and EC are control sites.

The above figure shows that tidal zones cluster together. However, note that the discharge quadrats (WD and ED) from the upper-middle tide zone tend to cluster separately at the top of the graph. While not as obvious, the discharge quadrats (WD and ED) from the low tide zone tend to clump together between two sets of control quadrats from the same tide zone.

5.6.4 - Duxbury Reef ASBS

There was one recent report available, prepared by Dr. Raimondi on July 17, 2008, for the County of Marin, Duxbury Reef (Alder Creek).

Dr. Raimondi used existing PISCO and MARINe data sets and new data in a primarily multivariate assessment of communities at a discharge site (Alder Creek) and reference areas. New data were collected using PISCO biodiversity protocols at sites arrayed in a gradient away from discharge.

Dr. Raimondi concluded that: "*There are clearly differences in the communities between Alder Creek and nearby sites. Part of this is due to differences in the geomorphology of the site, particularly the deep channel that separates the inshore from offshore reef. However, part of the difference also seems due to the presence of an input from the discharge and/or the creek that empties into the site. Based on the information collected during this survey and from the Coastal Biodiversity Surveys our assessment* *is that the differences seen at Alder creek are likely due to a combination of trampling (minor effects) and the geomorphological features (primarily fine sediments and freshwater) present at Alder Creek. Based on our surveys and reconnaissance, the effect of the input (natural or other) appears to be over a relatively small spatial scale, probably no larger than a few hundred meters along shore."*

5.6.5 - James V. Fitzgerald ASBS

5.6.5.1 <u>PISCO/MARINe (Raimondi 2006)</u>

As mentioned previously, Dr. Raimondi performed a data assessment for 8 of the 10 ASBS within the influence of Caltrans discharges. In his report (Data assessment for ASBS/Ocean Plan for Caltrans, March 12, 2006), Dr. Raimondi summarizes site characteristics and provides a brief ecological community analysis of established rocky intertidal monitoring stations. These established stations are either a PISCO or MARINe site and provides a continuum of data collected using either Community Dynamics Survey or Biodiversity Protocol. PISCO has also carried out Biodiversity surveys at Fitzgerald Marine Reserve.

James V. Fitzgerald is a gently sloping, long, bedrock reef of very low relief. The biodiversity survey (2002) found 96 species at this site, which is high for this region. Two species of special interest, owl limpets and surfgrass were found and, according to Dr. Raimondi, it is likely that abalone may also occur here. No invasive species were found in their surveys. The result of the community analysis showed that Fitzgerald Marine Reserve clustered out with a series of central coast sites, including Pigeon Point, Andrew Molera, Mill Creek, and Rancho Marino. The latter three sites are either reserves or de-facto reserves because of physical isolation. The species present gave no evidence of degradation. There are no extensive long-term data that could be used to detect change.

5.6.5.2 <u>Pillar Point Storm Water Outfall in the James V. Fitzgerald ASBS (Tenera 2007)</u>

In 2007, Tenera studied the rocky intertidal community at the US Air Force Pillar Point storm water outfall. This outfall at Pillar Point is in the southern section of the ASBS.

This report examined the Pillar Point watershed, land use, storm water discharge volumes, and the potential for water quality effect on the biota. Impacts from the main storm water outfall to the rocky intertidal habitat were quantitatively evaluated using a gradient transect method. Additionally, investigations of other relevant marine life habitats were qualitatively surveyed for potential storm water impacts. A previous study performed by Tenera in 2004 in the northern sector of the ASBS near San Vicente Creek was also evaluated in its potential relevance to storm water impacts on the intertidal life. Tenera also examined the previous State Water Board's Reconnaissance Survey performed in the 1970's (SWRCB 1979), comparing the qualitative findings of that report with the current data.

A quantitative marine survey was performed in July 2007 where the U.S. Air Force storm water outfall discharges into the James V. Fitzgerald ASBS. The primary study design was to compare the rocky bench closest to the outfall with a reference area further away from the outfall. The immediate discharge area is a 55 meters (60 yd) wide sand beach. The closest rocky habitat to the outfall is a low-lying intertidal bench rock platform that is approximately 45 degrees lateral to the initial trajectory line of outfall discharges, and is separated from the outfall by the sand beach.

Quadrats were sited along transects on the bench rock platform along a gradient distance away from the discharge. Sampling was done at increasing distances (sites) from the outfall and beach. A nearby low-lying bench rock platform, in a reference area with a sand beach backing the platform, was sampled in the same fashion for comparison. This design resulted in a cross shore approach along with the use of impact/reference areas along shore.

One limitation of the Tenera 2007 study is that the study was performed during the dry season, and it is possible that species may have recovered since the prior rain events of the previous wet season. The assessment of storm water discharge effects is limited from the study being a one-time survey of only 2 areas, and due to naturally occurring variation between sites. It is possible that a larger, more intensive sampling effort over a longer duration may detect possible storm water discharge effects. However, effects may still not be detected with additional studies without further investigation of species and their sensitivity to various constituents found in the runoff and ocean water.

Another limitation was related to the limited period covered by the survey. A one-time survey assumes that the reference area adequately represents baseline conditions and the species and patterns of abundances that would be present near the storm water outfall if the outfall were absent. While every effort was made to locate a reference area that was similar in habitat characteristics to the area sampled along the outfall transect, differences in community composition were still expected, due to the number of natural factors that can vary unpredictably over time and space and, therefore, affect the composition and spatial patterns of species abundances. Factors include wave impacts, microhabitat differences, sand scour, pre-emption of space by sand, sand burial, predation, grazing, and competition for space, to name a few.

The storm water outfall and reference transects were densely populated with a variety of species, characterized mainly by the algae and surfgrass. Invertebrates were less common. The relative scarcity of invertebrates was likely due to the abundant layer of sand covering the rocks. The influence of sand is likely year-round in the study area. The sand likely prevents many motile invertebrates from remaining firmly attached to rocks and the sand tends to smother rock boring and tube-dwelling invertebrates.

The bench rock platform nearest the Pillar Point storm water outfall and the reference platform are low-intertidal elevation platforms, and thus lack the higher elevations supporting species more characteristic of the upper-intertidal zone (e.g., rockweed communities). Species characterizing the bench rock platforms were surfgrass (*Phyllospadix torreyi*), oar kelp (*Laminaria sinclairii*), split kelp (*L. dentigera*), hollow-branch seaweed (*Gastroclonium subarticulatum,* previously *G. coulteri*), and iridescent seaweed (*Mazzaella splendens,* previously *Iridaea cordata*). All are obligate low-intertidal or low-intertidal/shallow-subtidal occurring species.

In general, Tenera found most of the species sampled to be more abundant on the storm water outfall transect than the reference transect. Analysis was primarily based on community level comparisons between impact and reference areas using multivariate techniques found in PRIMER software. This multivariate analysis of the community data did reveal that many of the differences in species abundances between transects were statistically significant. According to Tenera, the storm water outfall and reference areas were both densely populated with species indicative of a healthy marine community and characteristic of rocky habitats exposed to high wave action. There were no indications of stress to the marine community near the Pillar Point storm water outfall based on the presence of unusual species patterns.

Tenera's multivariate analysis revealed various species that were significantly different in abundance between transects. A variable abundance pattern was seen in the distribution and abundance of surfgrass (*Phyllospadix torreyi*) and oar kelp (*Laminaria sinclairii*). These two species can be common along sandy shores, and were abundant on both transects. However, where they were most abundant along the transects was different between transects. On the storm water outfall transect, surfgrass had low abundance in the sand beach-bench rock interface zone but abundant at distances further away from the outfall and sand beach. In contrast, surfgrass on the reference transect was most abundant in the sand beach-bench rock interface zone. While this may indicate that storm water can limit the abundance of surfgrass near the outfall, other factors may account for the relative lower abundance of surfgrass in the sand beach-bench rock interface zone near the outfall. Feather-boa kelp (*Egregia menziesii*) and oar kelp were relatively abundant in this zone near the outfall. Feather-boa kelp and oar kelp may have limited the potential amount of surfgrass that could have otherwise grown in that area. The differences in species abundances may have also been due to different spore and seed settlement opportunities between species and whether sand cover was a factor during the times of settlement.

While the sand beach was a large habitat type in the area, large amounts of sand also covered the bench rock platforms, entrapped at the bases of the algal branches and fronds. The algae emerging from the sand provides direct evidence that the rocks were at one time not covered by sand. The shifting sand in the area probably has a large effect in constantly altering species abundances and their distributions in the area. Any changes resulting from sand effects, such as scour and burial, could easily mask any potential effects from storm water discharges.

The State Water Board staff asked Dr. Raimondi (2008) to evaluate Tenera's report and conclusions. According to Dr. Raimondi, there is an inconsistency between the basis of the design and analysis and the conclusion. The goal of a design in the ASBS context should be to assess the possibility of impact due to discharge. This was the intent here. The conclusion of no evidence of impact, given that statistical results suggest differences between areas, suggests that the design was not adequate to test the implicit hypothesis.

Tenera also performed a qualitative survey in 2007 at the Pillar Point sector of the ASBS. The purpose of this survey was to supplement the findings of the gradient transect study performed on the bench rock platform near the main storm water outfall. This qualitative study includes the other marine life habitats in this area, including rock walls and outcroppings. Shore walk surveys were done to further characterize the marine community in the overall study region. It is important to note that, during the Tenera 2007 qualitative assessment, storm water was not discharging from the main outfall. The shore walk surveys of the Pillar Point storm water outfall area covered a shoreline distance of approximately 450 meters (492 yds) and documented a variety of species in habitats not sampled by the gradient transects. Observations were recorded and assessed for unusual patterns in species distributions in other areas that were readily apparent and could possibly be attributed to effects from storm water discharges.

All areas observed in the qualitative survey were populated by a variety of species indicative of a healthy, rocky intertidal marine community. Most of the differences between the general area of the storm water outfall transect and general area of the reference transect were in the zone where the sand beach transitions into rocky habitat. Various habitat areas, other than where the gradient transects were located, were specifically searched for sea lettuce (*Ulva* spp.) as an indication of freshwater and constituent influence. There were no areas of algal blooms that would possibly be indicative of a pollution or high nutrient influence.

Tenera stated that a discharge response can be found in the northern sector of the ASBS at the perennially flowing San Vicente Creek, where sea lettuce is found to be quite abundant, while none is found near the Pillar Point storm water outfall. The watershed of San Vicente Creek is also larger than that of the Pillar Point, with multiple land uses. The abundant sea lettuce at San Vicente Creek indicates that prolonged drainages from relatively large watersheds with multiple land uses are needed to elicit and sustain a discharge response. Discharges from the Pillar Point headland are much smaller and less frequent, and the areas drained are not used for ranching, farming, or residential living, as what occurs in the San Vicente Creek watershed. There may be a smaller likelihood that discharges from the Pillar Point storm water outfall would cause the same type of change seen at San Vicente Creek. Should such changes occur, however, they would be expected to be smaller in spatial scale and more temporary in nature.

5.6.6 - Año Nuevo ASBS

5.6.6.1 PISCO/MARINe (Raimondi 2006)

As mentioned previously, Dr. Raimondi performed a data assessment for 8 of the 10 ASBS within the influence of Caltrans discharges. In his report (Data assessment for ASBS/Ocean Plan for Caltrans, March 12, 2006), Dr. Raimondi summarizes site characteristics and provides a brief ecological community analysis of established rocky intertidal monitoring stations. These established stations are either a PISCO or MARINe site and provides a continuum of data collected using either Community Dynamics Survey or Biodiversity Protocol.

Año Nuevo is a long, gently sloping reef of moderate relief. It is comprised of sedimentary rock and sand. Año Nuevo is a UC Marine Reserve site co-administered by the State. The biodiversity surveys (2002) found 92 species at the site. In these surveys, one species of special interest was found, surfgrass, but both owl limpets and black abalone have been found in other surveys. Invasive species were not found at this site. Cluster analysis of the ASBS sites relative to a suite of reference sites in the central coast indicates some interesting patterns. Año Nuevo differs from all other sites in the region. Evaluation of the species lists and the site characteristics suggests that this is mainly due to geomorphology (mixed rock and sand). It is also possible that the site is affected directly and indirectly by the impacts of the large population of elephant seals that resides at Año Nuevo.

5.6.7 - Pacific Grove ASBS

Tenera performed "A Comparative Intertidal Study and User Survey, Point Pinos, California" (July 2003), which was submitted as part of the City of Pacific Grove's exception application. The purpose of the Point Pinos Survey was to investigate the effects of visitor use on the Point Pinos rocky shoreline located on the Monterey Peninsula, and just outside the western boundary of the Pacific Grove ASBS, and was not designed to survey the biological community at outfall locations, or the effects of discharges on the ASBS. In this report, site descriptions were compared to Point Pinos, which receives high levels of visitor use because of its scenic values and easy accessibility from roads, adjoining parking lots, and trails. One of the main attractions of Point Pinos is the rich, diverse marine life along the rocky shore. Tide pools are common in the area, and small sandy beaches also occur along the upper shore.

Five sites surveyed in the State Water Board 1979 Reconnaissance Survey Report (SWRCB 1979) were revisited in July 2002. One of the five sites was located at Point Pinos and the other four sites were situated along the shoreline between Point Pinos and Hopkins Marine Station. A species list was developed for each site by walking the area and noting all species encountered. All identifications were made in the field. In contrast, it was not clear in the original study if samples had been collected for laboratory identification. The tide level was slightly above MLLW (above the surf grass zone) during the 2002 survey. Two biologists worked separately in the search effort at each site and created a combined species list for each site. The combined search effort at each site was between 1-2 hours.

The Point Pinos report found it difficult to use the data from the State Water Board 1979 Reconnaissance Report (field survey in 1977) and current data to make direct comparisons over time, as the species list appeared to be affected by differences in the intensity of search effort, time spent at each site, tidal levels during the surveys, and detail to adequately characterize the sampling sites. It was found that the most common species were still present in all areas in both surveys, but there was uncertainty concerning the continued or past occurrences of less common species. Without the same sampling effort in both surveys, there was no assurance in whether a species was not present or simply overlooked.

The total number of algal and invertebrate species found at the Point Pinos site was similar between the 1977 and 2002 surveys. In contrast, more species were found at each of the four other sites in the 2002 survey compared to the 1977 survey, but all of the sites also had species that were unique to one or the other survey.

The appendices in the 1979 State Water Board Report contain other species lists. Tenera found that those lists could not be used for comparison with the current survey. The list of intertidal invertebrates for several areas in the State Water Board Report is based on the cumulative listings from 27 literature and museum references dating in the 1940s-1960s. The species were tabulated for large general areas (Point Pinos, Monterey Peninsula, Pacific Grove, Hopkins Marine Station). Because the collecting locations were not specified, the data were of limited use in comparing changes in faunal composition over time. Also, the number of species found in each area probably reflects the number of times each area was sampled. Tenera found, however, that Point Pinos was a popular study area between the 1940s and 1960s, as the species list for Point Pinos is the longest. Tenera concludes that, from their observations, overall diversity has not changed at the Point Pinos site since the survey in 1977.

Tenera found one conclusive difference, however, between the 1977 and 2002 surveys. This was a lack of sea palms (*Postelsia palmaeformis*) in the present survey, although they were not able to conclude whether its absence was due to visitor impacts or other causes. Although not listed as a species of special concern or of rare, endangered, or threatened status by DFG or the U.S. Fish and Wildlife Service, California Code of Regulations prohibit cutting or disturbing this species. Regardless, this species is illegally collected for consumption.

5.6.7.1 <u>Barry et al. (1995)</u>

A paper by J. P. Barry (Monterey Bay Aquarium Research Institute), C. H. Baxter (Monterey Bay Aquarium Research Institute and Hopkins Marine Station), R. D. Sagarin (Hopkins Marine Station), and S. E. Gilman (Hopkins Marine Station) was reviewed. Of 45 invertebrate species studied at the Hopkins Marine Station in the Pacific Grove ASBS, the abundances of 8 southern species increased and the abundances of 5 northern species decreased. Annual mean shoreline ocean temperatures at Pacific Grove have increased by 0.75° C over the past 60 years. This paper's conclusion was that changes in the invertebrate fauna in the rocky intertidal community between the period 1931 to 1933 and the period 1993 to 1994 indicate that species' ranges shifted northward, consistent with predictions of change associated with climate change (i.e., warming). However, State Water Board staff also reviewed other work by Schiel et al (2004), which found (for the area at Diablo Canyon) that changes in community structure were common and there was little support for the hypothesis of predictable directional changes in northern and southern species based on biogeographic models (i.e., there was no obvious connection to global warming).

The State Water Board staff asked Dr. Raimondi (2008) to evaluate Barry et al to determine if the data provided had any potential for use in the question of the effects of runoff on marine life. According to Dr. Raimondi, this paper did not provide any insight relevant to an assessment of runoff into ASBS.

5.6.8 - Carmel Bay ASBS

A report by Dr. Richard Ford, dated April 30, 2005, was reviewed. There were two parts to the report. Fieldwork was performed in southern California in the Irvine Coast ASBS, and subtidal survey data from other reports [not Dr. Ford's original data but rather field work by Dr. Michael Foster (Moss Landing Marine Lab)] in Carmel Bay were assessed. The connection between the Irvine Coast work and the assessment of dive survey data from the Carmel Bay study is that both ASBS were adjacent to golf courses. Dr. Ford's report concluded that runoff caused no discernable impact on marine life in the Carmel Bay ASBS.

The State Water Board staff asked Dr. Raimondi (2008) to evaluate this report regarding Carmel Bay ASBS. According to Raimondi, there is no direct support for Dr. Ford's conclusion. The design is inadequate for the determination of impact (or lack of impact) from golf course runoff in Carmel Bay.

5.6.8.1 PISCO/MARINe (Raimondi 2006)

In his report "Data assessment for ASBS/Ocean Plan for Caltrans, March 12, 2006", Dr. Raimondi summarizes site characteristics and provides a brief ecological community analysis of established rocky intertidal monitoring stations. Two MARINe/PISCO sites within the Carmel Bay ASBS are adjacent to Caltrans roadway drainages: Carmel Point and Stillwater Cove. Carmel Point is a long, gently sloping reef made up of bedrock and boulders. It is a high relief reef surrounded by bedrock, boulders, and sand. Dr. Raimondi has been following black abalone for the last two years at this site because it has a healthy abalone population, which is increasingly uncommon with the progression of withering disease. Dr. Raimondi does not do biodiversity or community dynamics surveys at this site.

Stillwater Cove is a gently sloping bedrock reef of intermediate length. It is a high relief reef surrounded by other bedrock reefs and sandy coves. Dr. Raimondi conducts biodiversity surveys (2001, 2005), abalone surveys (since 2001), and community dynamics surveys (since 2000) at this site. Ninety species were found at this site and species trends and abalone populations appear healthy. Three species of special interest have been found at this site: abalone, owl limpets, and surf grass. Sea palms are not found here because the site is protected from high wave energy. No invasive species have been found at this site. Based on cluster analysis, Stillwater Cove is similar to a site to the south, Point Sierra Nevada. These two sites are then most similar to Point Lobos, which makes sense given the proximity of Stillwater Cove to Point Lobos.

5.6.9 - Point Lobos ASBS

In his report "Data assessment for ASBS/Ocean Plan for Caltrans, March 12, 2006", Dr. Raimondi summarizes site characteristics and provides a brief ecological community analysis of established rocky intertidal monitoring stations. These established stations are either a PISCO or MARINe site and provides a continuum of data collected using either Community Dynamics Survey or Biodiversity Protocol.

Point Lobos is a marine reserve and one of the most protected sites along the central coast. Point Lobos is a gently sloping, long, bedrock reef that has high relief and which is topographically complex. The biodiversity surveys (2001, 2005) found 90 species at this site. In addition, community dynamic and abalone surveys have been performed at Point Lobos since 1999. Community trends and abalone populations appear healthy at this site. Three species of special interest have been found at Point Lobos: abalone, owl limpets, and surfgrass. According to Dr. Raimondi, it is very likely that sea palms may occur at this site at the more exposed locations. Based on cluster analysis, Point Lobos differs from all other sites along the central coast. Looking at the species list and site characteristics, the separation of Point Lobos seems to be due to its topographic complexity and high relief. Also, the species composition of this site is not suggestive of a degraded state.

5.6.10 - Julia Pfeiffer Burns ASBS

"Side-casting" is the movement of sediment down-gradient off of a road. Side-casting that result in sediment deposition into the ocean is considered a waste discharge regulated under the Ocean Plan and prohibited in ASBS.

A side-casting event was conducted by Caltrans after a landslide resulted from heavy rains in the winter of 1982-83; the landslide closed Highway 1 for almost 2 years. The natural portion of this slide deposited some material on the beach, but the majority of the slide was on the upper hillside and not into the ASBS. The road clearance work resulted in moving over 3 million cubic meters of soil onto the shore, burying large portions of the ASBS intertidal and subtidal habitat. The manipulation of the McWay landslide produced an extreme physical and ecological event, with severe ecological impacts. The manipulated slide material covered about 23,700 square meters of intertidal boulders, cobble, and gravel beach. The natural beach was completely buried under the side-cast slide material. The waterfall on McWay Creek once flowed into a rocky cove populated by diverse intertidal and subtidal marine life. Now that cove is buried by a sandy beach. The adjacent subtidal habitat was also buried out to about 20 meters water depth, burying natural rock pinnacles (originally in water depths of 20-25 meters) and fine sand habitat.

The subtidal slide material is more prone to movement by wave action than the previous subtidal fine sand habitat. In addition, none of the slide sediment above the high tide line had been adequately stabilized with terrestrial vegetation, and there has been further erosion of the slide material (257,000 cubic meters) below the highway and into the ASBS. Aside from the obvious effects of direct burial of the affected natural intertidal and subtidal communities, scouring by coarse sediments (sand scour), deposition of fine sediments, and increased turbidity are an ongoing result of the side-casting event.

Starting in 1985, the Benthic Lab at Moss Landing Marine Laboratory has investigated the movement of this sediment into the ocean and its resulting impacts on the near shore marine communities. Surveys were performed to assess biological and physical conditions in the slide affected areas, which include terrestrial, intertidal, and subtidal zones. Natural rocky habitats around the slide have been shown to be disturbed by sand scour, with the vertical pinnacle wall communities being radically modified. Barnacle (more tolerant of scour) cover is higher, and cover by sponges, tunicates, and anemones is lower than what would be found naturally. Barnacle recruitment has spread into the kelp forest, and impacts of fine sediment and turbidity affect under-story algae in the kelp forest (Oliver, 1998).

The Monterey Bay National Marine Sanctuary funded PISCO to assess effects of erosion and landslides along the Big Sur Coastline. It is clear, from that more recent work, that there were pronounced and long-lasting effects of the material deposition at the McWay slide (Raimondi, 2008).

In his report (Data assessment for ASBS/Ocean Plan for Caltrans, March 12, 2006), Dr. Raimondi summarizes site characteristics and provides a brief ecological community analysis of established rocky intertidal monitoring stations. These established stations are either a PISCO or MARINe site and provides a continuum of data collected using either Community Dynamics Survey or Biodiversity Protocol. Partington Point (also called Pardington Point) is a short, steep, bedrock reef of moderate relief. This reef is one of the characteristic steep reefs of the Big Sur coast that are unlike most other central California reefs (more like the reefs of the Gulf of the Farallones). Two species of special interest, abalone and owl limpets, are found at Partington Point. No invasive species have been found at this site. Species richness of the ASBS sites in the central coast region (Año Nuevo, Point Lobos, Julia Pfeiffer Burns at Partington Point, and Carmel Bay) ranges from 75-92 species. The lowest value, 75, was found at Partington Point, which is a very small reef. Still, this site is not atypical when compared to a suite of reference sites in the central coast. Based on cluster analysis, Partington Point is similar to another Big Sur site, Lucia, which has similar geomorphology.

5.6.11 - Laguna Point to Latigo Point ASBS

5.6.11.1 <u>PISCO/MARINe (Raimondi 2006)</u>

Dr. Raimondi performed a data assessment for 8 of the 10 ASBS within the influence of Caltrans discharges. In his report (Data assessment for ASBS/Ocean Plan for Caltrans, March 12, 2006), Dr. Raimondi summarizes site characteristics and provides a brief ecological community analysis of established rocky intertidal monitoring stations. These established stations are either a PISCO or MARINe site and provides a continuum of data collected using either Community Dynamics Survey or Biodiversity Protocol.

Old Stairs is a reef composed of bedrock, boulders, and sand. It is a relatively long, gently sloping reef of moderate relief. It is surrounded by sand and a few other bedrock reefs. Dr. Raimondi found 54 species at Old Stairs in their biodiversity survey (2001). Old Stairs is also a site that has been monitored using community dynamics surveys since 1994. One species of special interest, the owl limpet, is found at Old Stairs. Abalone has long been absent from this region. Surf grass is found nearby. No invasive species have been found at Old Stairs. In the community analysis with other nearby sites, Old Stairs groups out with Mussel Shoals in a group distinct from other southern California reefs. Species diversity and trends are typical for southern California and suggest anthropogenic impact (collection, trampling, and other more indirect effects). Number and size distributions of key species (like sea stars and owl limpets) are lower than would be expected in a protected area.

5.6.11.2 Summary of Biological Resources of the ASBS (Ambrose & Lee 2007)

The Ambrose & Lee 2007 report was performed for the City of Malibu and summarizes information from previous field studies conducted at the Laguna Point to Latigo Point ASBS; it also presents a summary of a collection of recent data from 1994 through 2006.

The biological community at Paradise Cove was selected by Ambrose and Lee as the place most representative of relatively undisturbed conditions within the ASBS. Paradise Cove can be compared to other southern California study sites using a statistical clustering technique. Dr. Raimondi had performed such comparisons among a set of MARINe sites sampled in southern California. In his analysis, the rocky intertidal near the community at Paradise Cove was reported to be most similar to the community at Alegria, a site in Santa Barbara County south of Point Conception that has little human disturbance. However, possible disturbance from storm water or other anthropogenic discharges effects are not part of the MARINe study site design or analysis. Other sites that clustered with Paradise Cove were Arroyo Hondo and Coal Oil Point in Santa Barbara County, and Mussel Shoals and Old Stairs in Ventura County. General observations by Ambrose and Lee suggest that Paradise Cove historically supported and continues to support a relatively rich, rocky intertidal community compared to other intertidal reefs in the ASBS.

Ambrose and Lee concluded that the lack of consistent, quantitative data for sandy beach communities makes it difficult to compare Paradise Cove (the selected “reference” site) to other areas within the ASBS. Most notably, there are considerable differences among different beaches. For example, in the 1970’s, Morin and Harrington (SWRCB 1979) reported higher diversity of macroinvertebrates on sandy beaches around Paradise Cove compared to Zuma Beach, which is up coast from (west of) Point Dume. Morin and Harrington attributed this to differences in physical factors, such as exposure and influence of beach wrack. Dugan et al (2003) also emphasized the influence of different physical factors and wrack. Since these differences still exist throughout the ASBS, Ambrose and Lee anticipated that there will still be significant differences in the sandy beach communities on the various beaches. When comparing Paradise Cove as a reference area with few discharge sites, the potential for impacts to the marine life, and the other selected research areas within the ASBS, Ambrose and Lee conclude that there is insufficient data to determine if there has been general degradation in the ASBS over the past 30 years, or whether certain sites have changed more than others. In addition, there is insufficient data to link discharges to the condition of the sandy beaches presented in this report.

Ambrose and Lee recommended that an intertidal marine life study be designed to encompass gradient transect sampling at the two representative storm water discharge sites (MUG 232 and MUG 430, SCCWRP discharge data ID points) and at the selected reference location. These discharge sites were selected to be representative of the City of Malibu's storm water flows. In addition, the reference location was selected at a site between MUG 375 and MUG 386. A transect survey would provide data which can then be analyzed for differences in species composition and abundance between sites; and further analyzed for differences in quadrats and their physical distance from the discharge source.

5.6.12 - Irvine Coast ASBS

5.6.12.1 <u>PISCO/MARINe (Raimondi 2006)</u>

Dr. Raimondi performed a data assessment for 8 of the 10 ASBS within the influence of Caltrans discharges. In his report (Data assessment for ASBS/Ocean Plan for Caltrans, March 12, 2006), Dr. Raimondi summarizes site characteristics and provides a brief ecological community analysis of established rocky intertidal monitoring stations. These established stations are either a PISCO or MARINe site and provides a continuum of data collected using either Community Dynamics Survey or Biodiversity Protocol.

This ASBS is co-located with Crystal Cove State Park. Other surveys have been done at this site including a number of projects from faculty and students at California State University, Fullerton. This ASBS, like most sites in Southern California, is heavily visited and there really is no expectation of areas not being impacted (Raimondi 2007).

The reef at Crystal Cove is composed of bedrock and boulders. It is a relatively long, gently sloping reef of low relief. It is surrounded by areas of bedrock, boulders, and sand. Dr. Raimondi found 114 species at this site in their biodiversity surveys (2001, 2003, 2004), which is a high number for this region. Community dynamics surveys have been conducted at this site since 1995. Two species of special interest are found at this site, owl limpets and surf grass. Abalone has long been absent from this region. The invasive species *Sargassum muticum* and *Caulacanthus ustulatus* are both found at Crystal Cove. In the community analysis with other nearby sites, Crystal Cove groups with Dana Point and Scripps (Dike Rock), suggesting its similarity to 2 relatively nearby sites. Species diversity suggests anthropogenic impact (extraction, trampling, and other more indirect effects). Number and particularly size distributions of key species (like sea stars and owl limpets) are lower than would be expected in a protected area.

5.6.12.2 MBC Applied Environmental Sciences (MBC 2004)

One report for the Crystal Cove Park site within the Irvine Coast ASBS, "Characterization of the Rocky Intertidal Crystal Cove State Park," was prepared for DPR by MBC Applied Environmental Sciences of Costa Mesa, CA (MBC 2004).

The study was designed to characterize two intertidal areas of Crystal Cove State Park, at Treasure Cove and Reef Point, during the spring and fall of 2003. This MBC study was not designed to address the question of the effects of runoff on ecosystem health. Still the results are valuable and are described below to explain the status of intertidal life in the Irvine Coast ASBS.

This study was designed to duplicate methods utilized previously in the area by Valencic in 1986. Like Valencic's previous survey, this 2004 study was designed to assess seasonal variation in the intertidal community of Crystal Cove during one year. This report compares the results of the spring and fall 2003 intertidal surveys at two sites in Crystal Cove State Park, and to a lesser extent compares these results to those of the 1986 survey and other work in the area. Four tidal communities were examined at each reef: low, mid, upper-intertidal, and mussel zones. Each tidal level was identified by characteristic species: the low zone was characterized by low algal turf and coralline algae, the mid zone by rockweed, the upper-intertidal zone by barnacles and littorine snails, and the last by mussel communities.

The study involved the use of rectangular quadrats sited along pre-established transect lines. The location of each quadrat was recorded as the transect line identification, the distance in meters along the transect, up coast or down coast direction, and perpendicular or parallel placement of the quadrat relative to the transect line. Quadrat locations were initially chosen in spring 2002 as representative of a tidal level/community in the area. Five replicate quadrats were selected for each tidal level at each reef site. A PVC frame with an inside diameter of 50cm x 75cm was placed on the sample site. At least two digital photographs were taken of each quadrat. In the laboratory, the photoquadrats were examined on a desktop computer monitor. Each photoquadrat picture was converted to Photoshop (PSD) file format, which allow an additional visual gridline layer to be added to each photo. The gridlines divided each photo into 10 equal sections.

Percent coverage and species identification for each quadrat were determined from a single photo, with the additional photos reviewed to assist with identification and to ensure that all species were noted. In several cases, two photos of the same quadrat were examined and analyzed independently as a quality check of methods. Identification was made to the lowest possible taxonomic level, with the exception of two similar, coexisting red algae species, *Gelidium* and *Pterocladia*, which were collectively identified as algal turf. Species were enumerated as percent cover.

Treasure Cove is located at the northern end of the park and has poor public access except during low tides. The upper rocky intertidal at Treasure Cove is characterized by relatively low-lying, flat bedrock which occasionally is covered or scoured by the coarse beach sands. The mid intertidal at Treasure Cove is characterized by bedrock, which extends seaward as exposed craggy ridges with fairly sharp relief and numerous channels and pools to the down coast side of the area; while more centrally, ridges are fewer and most of the mid-tidal-level fauna is found on bedrock and boulder outcroppings within numerous shallow pools. The low intertidal at Treasure Cove is typified by low relief, flat bedrock benches. Offshore of this area are large exposed and mussel covered bedrock outcrops that are accessible only on very low tides on calm days. The mussel sites at Treasure Cove are reoccupied plots established in 1986 on the flat top of the rocky point to the down coast side of the area.

Species richness generally increased in the Treasure Cove area between spring and fall 2003, except in the upper level plots that had one fewer species in fall. Total percent cover at Treasure Cove was also higher in the fall, even though percent cover of the lower level plots in fall was nearly 20% less than in spring. In total, 20 species covered 54% of the area in spring, and 24 species covered 56% of the available substrate in fall. While a core group of dominant species was found in the area during both seasons, the contribution of those species differed notably between seasons. Algal turf, the dominant species in the low and mid level plots and present at all levels in spring, was reduced considerably in the area by fall. Coralline alga, present in low abundance at the low and mid-levels in spring, replaced algal turf as the dominant species in the low and mid levels and was present at all levels in fall. Coralline alga and algal turf are generally found in very similar conditions at Crystal Cove, on fairly flat surfaces in the low intertidal or in areas with pooled water. The decline of algal turf throughout Treasure Cove, along with a reduction in total coverage by all species at the low-level plots, suggests that the algal turf decline was due to seasonal variations such as water and air temperature and day length, but not competition from other species. The increase in coralline alga in the Treasure Cove area in fall appears to be a result of increased availability of suitable habitat.

Reef Point is the southernmost rocky intertidal reef at Crystal Cove State Park. This area is near two pedestrian trails and is easily accessible to the public. The rocky intertidal at Reef Point is composed of three slightly separated rocky structures. The reef farthest down coast is a narrow, high relief rock ridge that runs offshore of the beach. Slightly up coast of this ridge is a relatively low relief flat, rocky bench. Continuing up coast is the main Reef Point structure, where sampling for this project was undertaken. Attempts to relocate the 1986 plots were unsuccessful, so all quadrats were located along the new transect lines. Exposed ridges support the upper level and mussel communities examined in this study. Farther offshore, the mid and low levels are characterized by a relatively flat area with exposed bedrock and boulders interspersed by shallow pools, channels, and sandy areas. Slightly offshore of the lower intertidal areas are larger, high relief rock structures, including several large offshore rocks. The intertidal area at Reef Point is exposed to waves from both the south and northwest. Sand movement in the area is greater than at Treasure Cove, and parts of the low relief areas, particularly on the up coast side of the reef, are subject to burial by sand.

Species richness was slightly higher in spring than in fall at Reef Point, although the low and mussel-level plots had slightly more species in fall. Overall percent cover was very similar between seasons, with a slight increase at all but the mid-level plots in fall. In total, 24 species covered 68% of the area in spring, and 22 species covered 69% of the available substrate in fall. The contribution by the dominant core species was found to be fairly similar during both seasons. Algal turf was somewhat reduced in the area in fall, but not as noticeably as at Treasure Cove. At the low intertidal quadrats, increase in percent cover of coralline alga in fall was about the same as the reduction in algal turf; while in the mid levels, increases in coralline alga, rockweed, and bare substrate were similar to the reduction in percent cover of algal turf. This may suggest that a local, possibly seasonal, reduction of algal turf allowed the expansion of other species.

In fall, several of the intertidal quadrats at Reef Point were partly inundated by sand. Although sand was also present in some plots in spring, it was not as prevalent as in fall. Some organisms were covered to an extent that could impair their survival. For this reason, percent cover of sand was noted for the fall Reef Point surveys. The amount of sand was highly variable and sand was noted in some quadrats at low-, mid- and upper-intertidal levels. Mussel plots on the bedrock ridges were above the level of sand inundation, even during the fall sampling. Coverage of sand ranged from relatively low at three low-intertidal plots to 100% cover at one upper intertidal photo-quadrat. Excluding the mussel level, sand cover averaged about 20% at Reef Point in fall.

Seasonal totals from both sites at Crystal Cove State Park suggest that the intertidal biota remains fairly consistent between seasons, with 27 species covering 61% of the available substrate in spring and 26 species covering 63% of the substrate in fall. However, specific tidal levels show notable differences between spring and fall. Percent cover at low level plots in the fall were reduced by about 10% from spring values, while species richness was higher. This is likely a result of the general reduction in algal turf with a resultant increase of availability of substrate as mentioned previously. At mid-level quadrats, a slight increase in percent cover in fall accompanied a slight decrease in species richness. Both cover and richness were very similar between seasons, making the mid-intertidal the most seasonally consistent level. In upper-intertidal quadrats, the level with the lowest total percent cover during both seasons, species richness decreased from 19 species in spring to 15 species in fall, while average percent cover increased by about 5% during that same period. The increase in percent cover at the upper level plots appears to be related to an increase in white acorn barnacles at Reef Point, and coralline alga at Treasure Cove. In the mussel-level plots, six more species were found in fall than in spring. On average, 10% more of the available substrate was covered in fall, with most of the additional cover accounted for by increases in California mussel. When results from both seasons are combined, Treasure Cove and Reef Point both were found to support 27 intertidal species, although cover of available substrate was about 13% higher at Reef Point. Cover at all levels was greater at Reef Point, particularly in the upper-intertidal, with about 30% more substrate covered than at Treasure Cove. This difference is likely related to scouring by coarse sand noted in the upper-intertidal at Treasure Cove. At Reef Point, the finer grained sand that inundates the site does not seem to scour the rock substrate clean as it does at Treasure Point.

Large and relatively well-protected tidal pools at Treasure Cove support populations of conspicuous, and occasionally numerous, large intertidal invertebrate species, including sea urchins (*Strongylocentrotus* spp), giant keyhole limpets (*Megathura crenulata*), California sea hares (*Aplysia californica*), and sea cucumbers (*Parastichopus* spp.), while hermit crabs and snails are common in the rocky pools. Difficult public access to the area helps protect these species from being harassed or taken by park visitors. However, the upper-intertidal level at Treasure Cove, the most depauperate of the quadrats surveyed during this study, are occasionally scoured by coarse sand, while the rocky substrate in the mid-tide level tends to be craggy with notable vertical relief. These physical characteristics differ from those found at the same tidal levels at Reef Point, and likely contribute to the differences between areas at those levels. The physical characteristics of the low-intertidal and mussel community plots at Treasure Cove are fairly similar to those at Reef Point, and, consequently, these levels are the most similar between the sites. At Reef Point, while the hard substrate is well populated, pools are generally sandy and smaller than at Treasure Cove, and with easy public access, large species are rare.

In 2003, species richness appeared to be lower than had been noted in previous studies in the Crystal Cove area; however, species composition and especially the dominant species were similar to those in previous surveys in the area (MBC 1971, Valencic 1986). In comparison to the results of the 1971 study, which included surveys at Reef

Point, species richness was notably lower. However, the earlier study conducted both in situ investigations and intertidal scrapings. Differences in sampling methods may account for the disparity in results. In the 1986 project, results were not well quantified for the intertidal survey, although Valencic's descriptions of the communities at both areas are similar to those found in the recent study. The low intertidal in the Valencic study seemed to be at a slightly lower tidal level than during the current study, judging by the presence of *Phyllospadix*, *Egregia*, and other fairly large plant species. Although occasionally found in the current 2003 field work, these species are much more common slightly lower in the intertidal than in areas surveyed in this survey, although observations outside of this study may suggest that presence of these larger plant species is seasonally variable at the low-tidal level.

Overall, Shannon-Wiener species diversity (H') for all surveys and tidal levels combined was 1.91, with the highest diversity (1.99) for results of the combined fall survey. Diversity was consistently lowest at the low-tidal level stations and tended to be highest at the upper-tidal level on most transects, although not notably higher than at mid or mussel quadrats. Overall, diversity with all tidal levels combined was generally similar to values found at mid, upper, or mussel zones.

The seven most abundant species (each of which covered 1% or more of the area during all surveys) together occupied 58% of the available intertidal substrate at Crystal Cove State Park. The remaining 25 species collectively occupied another 4% of available substrate. Algal turf (*Gelidium/Pterocladia* spp) was the most abundant taxa, covering an average of 26% of the available substrate during both seasons at the two sites. California mussel (*Mytilus californianus*) was the next most abundant species, accounting for about 11% of the total coverage in the quadrats, followed by the calcareous red coralline alga *Corallina* spp with 7% of the cover, the white acorn barnacle (*Balanus glandula*) and the tar-spot alga (*Ralfsia* spp.) with about 5% each and the aggregating anemone (*Anthopleura elegantissima*) and rockweed (*Silvetia compressa*) each covering about 2% of the total available substrate. Two taxa, algal turf and tar-spot alga, were the only species to occur in all tidal levels at both sites during spring and fall. Algal turf was more abundant at all levels during the spring surveys, while most other species were similarly abundant between seasons or were slightly more abundant in fall.

A dendrogram was constructed based on the percent cover for each species at each site. The 16 sites (two seasons, two locations, and four levels) fell into three groups based on community composition and abundance. Tidal level appeared to be the most important determining factor, with all low intertidal sites found in Group III and all mussel sites falling into Group II. Site location was the next most important factor, with all Reef Point upper quadrats and spring mid-level quadrats grouping with the mussel level in Group II, and both Treasure Cove upper quadrats and spring mid level falling into Group

III with the low- intertidal sites. Season appeared to be the least important factor. Group I, the most dissimilar from the other groups, contained only one site, the fall Treasure Cove mid level. Relative percent cover of the dominant alga species, algal turf and coralline alga, at the Group I site differed notably from that at any other site in the study area. Site clustering was strongly related to relative percent cover of California mussels at each site. At Group II sites, California mussel covered at least 3.5% of the available substrate, while at Group I and III sites California mussel was absent, or occurred only in low abundance (MBC 2004).

5.6.12.3 Ford et al. (2007)

This report was prepared for the Irvine Company in April 2007 by Richard F. Ford (San Diego State University and Hubbs-Sea World Research Institute), Barbara B. Hemmingsen (San Diego State University), Michael A. Shane (Hubbs-Sea World Research Institute), Eric Strecker (GeoSyntec Consultants, Inc.) (This report was referred to earlier in the context of Carmel Bay ASBS. However, here only the applicability of fieldwork performed in the Irvine Coast ASBS is considered.).

This was a comprehensive report that evaluated water quality, subtidal habitats, and the intertidal zone. For intertidal communities the goal was to conduct quantitative marine ecological studies of benthic invertebrates, algae, and surf grass epiphytes in the rocky intertidal zone at the best attainable reference site (Emerald Bay) and at sites influenced by runoff from Muddy and Los Trancos Canyons. In addition effort was made to compare and evaluate these together with the corresponding water quality information to assess similarities and differences among sites.

Using photoplots and on-site surveys, five species groups were sampled: (1) the *Anthopleura elegantissima* and associated species; (2) *Mytilus californianus* and associated species; (3) Anthopleura sola and associated species; (4) algal turf species; and (5) barnacles (Balanus glandula, Chthamalus dalli and C. fissus). The major conclusion was that there is no evidence of impacts related to discharge.

State Water Board staff requested Dr. Raimondi to review the Ford et al work as it relates to Irvine Coast ASBS. According to Dr. Raimondi (2008), this was a very difficult report to assess. In Dr. Raimondi’s opinion, the authors did not rigorously test the hypothesis that reference and control sites differed in their biological communities. They did test whether there were long or short-term trends in species numbers (cover, abundance, etc.) that differed between reference and impact locations. The underlying basis of the long-term hypothesis was not supported. Here the idea was that evidence of an impact would be manifest in a trend at the impact sites relative to the reference site. This could indicate increasing degradation at the site. An alternative is that the community at the impact site(s) is in steady state, yet still degraded. In such a situation, no trend would occur. In addition, there was no assessment of the community. Such assessments are often more sensitive than species-specific assessments. Finally, this design rests on the adequacy of the reference site. In southern California, the selection of a reference site is difficult and an alternative approach involving a series of possible reference sites could have provided a more robust context for the results. Despite the stated short comings, Dr. Raimondi stated that the Ford et al study was otherwise of very good quality.

5.6.13 - La Jolla ASBS

As part of their exception application, the City of San Diego included four recent reports that pertain to the La Jolla ASBS. Two of these reports were “Ghost Forest in the Sea: The Use of Marine Protected Areas to Restore Biodiversity to Kelp Forest Ecosystems in Southern California” (Parnell et al. 2005a) and “Effectiveness of a Small Marine Reserve in Southern California” (Parnell et al. 2005b).

Recent subtidal habitat surveys, such as the “Effectiveness of a Small Marine Reserve in Southern California“ (Parnell et al. 2005b), provides new data not otherwise performed since the Kobayashi ASBS Reconnaissance Surveys (Kobayashi et al. 1979) which surveyed the conspicuous species in the kelp-forest, submarine canyon, and boulder-reef habitats of the San Diego-La Jolla Ecological Reserve. The Kobayashi surveys did not provide detailed baseline data necessary for a temporal comparison, but this Parnell et al report conducted inside/outside comparisons among similar microhabitats that were discriminated quantitatively. This ensured that inside/outside comparisons were conducted between similar habitats, increasing the likelihood that differences were due to the protection within the Reserve.

This work by Parnell was not designed to address the question of the effects of runoff on subtidal ecosystem health. Still the results are valuable and are described below to explain the status of subtidal life in the La Jolla ASBS.

The kelp habitat in the reserve is characterized by reefs, sharp vertical relief, crevices and overhangs, and moderate levels of sand. The entire La Jolla kelp forest was divided into squares of 250 meters on each side; surveys were conducted using band transects placed randomly within a grid. At least two transects were conducted within each square. Habitat parameters included depth measurements and estimates of sharp vertical relief within 1 meter of the transect line at every 1 meter interval mark, substrate type (sand, bedrock, rock, cobble), and algae every 0.5 interval mark, and the presence/absence of major benthic features (ledges, crevices, overhangs) along 5 meter sections. Sixteen transects were conducted within the single grid box located in the kelp habitat within the reserve. The algal species that distinguished this habitat from other areas within the kelp bed were *Egregia menziesii, Eisenia arborea, Cystoseira osmundacea, Desmerestia spp*., and turf-forming red algae.

For kelp habitat, inside/outside density comparisons revealed significantly higher densities of male and female sheephead, rock scallops and red urchins inside the reserve. Densities of lobsters were nearly significantly greater inside the reserve. Of the fishes, only male sheephead displayed size differences between the reserve habitat and similar habitat outside. Overall, Parnell found the results to indicate that the reserves provide protection only for species that are strictly residential or sessile. Parnell found that historical comparisons of densities in the kelp habitat inside and outside the reserve indicate alarming declines in many fished species inside the reserve: lobsters, green abalone, pink abalone, octopus, kelp bass, and scorpionfish (*Scorpaena guttata*), whose mean densities have sharply declined.

In the submarine canyon habitat, vermilion rockfish and male sheephead appear to be protected well. Both species were observed in significantly higher abundances in the La Jolla branch of the La Jolla underwater canyon located inside the reserve, than the Scripps branch of the canyon located outside. No size data are available; however, they are probably the only populations of large individuals of these species remaining in the La Jolla area.

The surveys in the boulder-reef habitat were specifically targeted at green abalone for logistical reasons. However, Parnell commonly observed several very large lobsters in the northeastern shallows of the reserve. Individuals of this size outside the reserve are very rarely observed; therefore the reserve may be protecting some resident lobsters. Further evidence of this is the observation that lobster traps are still common at the western margin of the reserve late in the lobster season.

Parnell counted 33 species of invertebrates and 27 species of fish in the band transects. Of these, only the species currently or historically targeted for commercial or recreational harvest were included in the inside/outside comparison.

Inside/outside reserve comparisons were only possible for seven species of animals. These comprised of kelp bass, barred sand bass, male and female sheephead, red urchins, spiny lobster *Panulirus interruptus*, rock scallop *Crassedoma giganteum,* and pink abalone *Halliotis corrugata*. There were not enough individuals of other target species to conduct statistical comparisons. The results indicate that individual species' comparisons were significant ($\alpha = 0.05$) for red urchins, rock scallops, and male and female sheephead, whose densities were all higher in the reserve. Adult sea urchin populations were significantly larger inside the reserve. Smoothed size-frequency distributions of red and purple urchins show differences that probably reflect fishing pressure on red urchins outside the reserve.

In general, the results of the inside/outside comparisons and the comparisons with historical data yielded four general conclusions: (1) The Reserve at the La Jolla ASBS appears to protect only a few harvested species, those that are sessile or highly residential, suggesting that the reserve is too small; (2) Comparisons with historical data indicate that most harvested species in the reserve, even some species for which reserve effects were observed, have declined seriously since 1979; (3) Green abalone in the boulder-reef habitat, red urchins in the kelp habitat, and vermilion rockfish and sheephead in the canyon habitat displayed large individuals in higher densities inside the reserve than outside; and (4) Historical data are important in determining reserve effectiveness when baseline date are lacking because they provide a historical perspective with which to gauge inside/outside comparisons.

5.6.14 - San Nicolas Island & Begg Rock ASBS

One report was available, the Biological Survey Report prepared by Merkel & Associates (April 2007), for the Navy's exception application for (SNI. Quantitative intertidal and subtidal biological surveys were performed at representative discharge sites and at two reference locations. This report also includes biological survey work previously performed by other researchers and provides a comprehensive assessment of the various subtidal and intertidal "eco-regions" of SNI.

Sampling stations were determined by conducting a reconnaissance of each location and selected based on several criteria including representation of the general area, access, unexploded ordinance (UXO) avoidance, operational safety, proximity to observed or expected runoff, proximity to sensitive wildlife, and whether or not there is a habitat area of sufficient size to sample.

Two metrics were derived from these surveys: (1) number of taxa and (2) abundance or percent cover. Since there were no benchmarks available for the metrics, comparisons were made to reference conditions within an associated island eco-region. Based on historical data, these community measurements are highly variable. Merkel and Associates considered differences of 50% in the number of taxa or abundance/cover between any two sites to be in the realm of natural variation. If a metric measured at a station was lower by 50% or more than the associated reference station, then that metric was flagged. When one or both metrics at a station were flagged, the biologist considered substrate data, historical data if available, looked at results of the receiving water and sediment measurements for causal relationships, and used best professional judgment to determine if intertidal or subtidal habitats required additional evaluation. State Water Board staff disagrees with this approach using the 50% criteria. A difference of 50% is an inadequate measure of differences between impact and reference sites; not supported by peer reviewed literature.

Graphs were prepared for species or taxonomic groups that were relatively abundant, and in some instances, species were placed into taxonomic groups for graphing purposes. Summary tables were prepared for species or taxonomic groups that were not relatively abundant or common. In addition, a species list was developed from this and previous surveys.

Results indicated a high degree of biological variability in the intertidal and subtidal zones around SNI, possibly due to differences in substrate type and coverage such as cobble, boulder, bedrock, or sand. Generally, different substrate supported different assemblages of organisms and at some locations the presence of competitive dominants led to biological interactions. According to Merkel and Associates all marine habitats surveyed at SNI had diverse, healthy communities; variability amongst communities was attributed to natural variability and they believed there was no indication of direct impacts associated with Navy activities. The metrics used to determine potential impacts to beneficial uses further indicated biological variability within an island eco-region, supporting the need to have multiple reference locations. According to Merkel and Associates, the biological data, in combination with water and sediment chemistry, and toxicity, provided a weight of evidence that Navy discharges do not compromise protection of ocean waters for beneficial uses.

Long-term trends in giant kelp forest populations have been studied at SNI. For a National Park Service study, six benthic study sites (10–12 m deep) have been sampled semiannually since 1980, and they have concluded that at Dutch Harbor giant kelp populations fluctuate on a cyclical pattern and sea urchin grazing is not significant; on the west end of SNI sea urchin grazing heavily influences giant kelp populations, which may lead to a higher turn over rate with more frequent recruitment pulses.

Based on decades of sampling kelp forests within the Channel Islands, the National Park Service suggested annual sampling for Channel Island sites for a minimum of 10 years, with an initial, consistent annual sampling program necessary to provide an adequate baseline to describe perturbations.

Subtidal Survey Methods: At each subtidal sample station, a diving biologist using SCUBA determined the distribution and abundance of subtidal invertebrates and algae at the -40 feet (-12.19 m) MLLW isobath. A 25-meter long transect tape was established at each isobath. Kelp abundance was counted in 10, randomly placed 5-meter long by 2-meter wide band transects (10m2). Observations included the number of kelp plants in each band transect, the number of stipes at a height of one meter above the bottom, and the size of the individual plants. Four size categories were measured: newly recruited kelp plants (minimum size 2-10 cm), juveniles (10-40 cm in length), subadult (between 40 cm and 2 m), and adults (greater than 2 m in length).

Biologists documented the abundance of key indicator plant and invertebrate species in 10, randomly placed 1-meter by 1-meter quadrats (1 m^2). Biologists also quantified substrate type (sand, rock, cobble) and algal cover using a point contact method with 20 points sampled within the 1m^2 quadrat. Target species/assemblages were surveyed at each subtidal sampling location. These were common subtidal organisms present during previous Navy surveys performed in 1998. Other species of interest were also noted. Formal fish transects were not conducted, but all fish species observed were recorded to document presence and relative qualitative abundance (e.g., abundant, common, rare).

Intertidal Spatial Assessment Methods: At each sample station, marine biologists recorded the abundance and/or percent cover of organisms at each of three tidal elevations (+5, +3, and 0 ft MLLW) using a 0.25m^2 quadrat following methods used for previous Navy surveys at SNI in 1998. A 10-meter long transect tape was established at each tidal elevation, and four randomly placed quadrats along the transect line were sampled at each of the three tidal elevations. Two biologists were assigned to each quadrat to record abundance and/or percent cover (for invertebrates, algae, and substrate) for several target species that were determined to be key species in the previous Navy marine resources inventory in 1998. Abundance was quantified by counting total individuals within each 0.25m^2 quadrat and percent cover was measured using the point contact method at 20 points within each 0.25m^2 quadrat.

Several algal species were grouped into taxonomic categories to allow efficient field sampling and comparison with past studies. All species in the genus *Corallina* were grouped into the group coralline algae, red turf included low-lying red algae (e.g., *Gelidium* spp.), red foliose was made up of leafy erect red algae (e.g., *Pterocladia* spp.), Ralfsiaceae included all encrusting brown algae in the Ralfsiaceae family (e.g., algae that resemble “black tar”), and other browns included brown algae such as *Dictyota* spp., *Dictyopterus* spp., *Zonaria* spp., *Halydris* spp., *Colpomenia* spp., *Leathesia* spp., *Scytosiphon* spp., *Fucus gardneri, Selvetia compressa,* and *Pelvetiopsis limitata.*

A total of six sites were chosen for sampling around SNI. They include four sites that are representative of areas that receive discharges associated with distinct Navy operational activities such as airfield, water desalination, and rocket launch operations. The total also included two locations chosen to represent areas that receive storm water runoff not associated with Navy activities, and thereby are considered a reference condition. Because there are insufficient historical data to assess how reference conditions might vary around the island, two reference locations were chosen to represent potential differences that might occur on either side of the island. The sampling locations are:

Corral Beach and **Dutch Harbor** were selected reference locations. Corral Beach is located between Blue Whale Cove and Tranquility Beach and was chosen as a reference location to account for potential spatial variability. The general area consists of rocky bluffs, with relatively small pocket beaches. The intertidal area ranged from vertical rocky bluffs to cobble, with surge channels. The intertidal sampling location was located in the vicinity of an ephemeral stream/drainage, and consisted of bedrock at all tidal levels. The subtidal zone consisted mostly of boulders and bedrock with moderate relief of up to 2.5 meters. Patches of sand were common in deeper areas or in pockets between rocky outcroppings. Water and sediment samples were collected outside the surf zone directly offshore of the drainage. Intertidal sampling was conducted on the rocky platform west of drainage, and subtidal sampling was conducted directly offshore of the drainage. Dutch Harbor, located on the south-central portion of SNI, consists of a rocky headlands separated by sandy beaches, and was chosen as a reference location to account for potential spatial variability. The intertidal area consists of rocky intertidal platforms separated by sandy beach, and the subtidal area consists of bedrock with moderate to high relief of up to 3 meters, separated by sand patches. Water and sediment samples were collected outside the surf zone directly offshore of the headland. Intertidal sampling was conducted on the rocky platform east of the headland, and subtidal sampling was conducted directly offshore of the headland. One notable observation included the presence of black abalone (*Haliotis cracherodii*) within some of the intertidal ledges.

Coast Guard Beach is an area of point source brine discharge from desalination operations. Coast Guard Beach is located on the eastern portion of the island, and was requested by the State Water Board to be sampled. The area is predominantly sandy beach habitat, with the exception of a riprap jetty that extends approximately 250 feet (77 m) into the ocean. The subtidal habitat is also primarily sandy substrate, although west of the jetty at an approximate depth of 25 feet (8 m), scattered low-relief rocky substrate is present. The brine discharge area is located on the back beach, east of the jetty. Water and sediment samples were collected outside the surf zone directly offshore of the brine discharge area. Subtidal sampling was conducted west of the jetty in the area of low-relief rocky substrate. For a large portion of the year, the sandy beach serves as a nursery and breeding area for northern elephant seals and California sea lions. Strong southerly currents (i.e., running from north to south) are common in this area, and were experienced while sampling.

At Coast Guard Beach, nine species or taxonomic groups were flagged for the subtidal habitat for exceeding the 50% difference criteria, and included: *Macrocystis, Pterygophora, Laminaria, Parastichopus, Pisaster*, urchins, sponges, ectoprocts, and ascidians. The total number of species was within the 50% criteria. According to Merkel and Associates, there was no apparent impact to beneficial use based on these metrics as they can be explained by natural variability, competitive interaction (biotic), substrate variability, exposure, and species mobility.

For the intertidal analysis, species abundance or percent cover and number of taxa from Coast Guard Beach were compared to Corral Beach and Dutch Harbor. Sixteen species or taxonomic groups were flagged for the intertidal habitat at Coast Guard Beach for exceeding the 50% difference criteria, and the total number of species also exceeded the 50% criteria, which was expected considering that the intertidal habitat at Coast Guard Beach consisted of sandy substrate and that all of the indicator organisms were primarily those found on firm or rocky substrate. According to Merkel and Associates, there was no apparent impact to beneficial use based on these metrics as they can be explained by substrate variability.

Daytona Beach, located in the southeast portion of the island, is representative of a storm water runoff area associated with barge landing operations. A large pier, used to load and unload barges, is located along a sandy stretch of beach. The intertidal area is sandy beach, as well as the habitat adjacent to the pier. However, mature giant kelp forests are located offshore, both east and west of the pier. Water and sediment samples were collected outside the surf zone adjacent to the pier, while subtidal sampling was conducted in the kelp forest east of the pier. For a large portion of the year, the sandy beach serves as a nursery and breeding area for northern elephant seals and California sea lions.

At Daytona Beach, four species or taxonomic groups were flagged for the subtidal habitat for exceeding the 50% difference criteria, and included: *Pterygophora*, red turf algae, ectoprocts, and ascidians. The total number of species was within the 50% criteria. According to Merkel and Associates, there was no apparent impact to beneficial use based on these metrics as they can be explained by natural variability, competitive interaction (biotic), substrate variability, and exposure.

For the intertidal analysis, species abundance or percent cover and number of taxa from Daytona Beach were compared to Corral Beach and Dutch Harbor. Similar to Coast Guard Beach, 16 species or taxonomic groups were flagged for the intertidal habitat at Daytona Beach for exceeding the 50% difference criteria, and the total number of species also exceeded the 50% criteria, which was expected considering that the intertidal habitat at Daytona Beach consisted of sandy substrate and that all of the indicator organisms were primarily those found on firm or rocky substrate. According to Merkel and Associates there was no apparent impact to beneficial use based on these metrics as they can be explained by substrate variability.

Tranquility Beach is located on the northern portion of the island, and is representative of a storm water runoff area associated with the residential area (Nick Town). Nick

Town is located on a mesa above Tranquility Beach, with a ravine that may potentially transport storm water from Nick Town to near shore receiving waters. The majority of the intertidal area is comprised of sandy beach, with rocky intertidal platforms on the east and west ends of the beach. An expansive giant kelp forest is located offshore of Tranquility Beach, with the substrate consisting of a mixture of bedrock with high relief (4 meters in some places) and large boulders with interspersed patches of sand. Water and sediment samples were collected outside the surf zone directly offshore of the ravine. Intertidal sampling was conducted on the rocky platform west of ravine, and subtidal sampling was conducted directly offshore and to the north of the ravine.

At Tranquility Beach, five taxonomic groups were flagged for the subtidal habitat for exceeding the 50% difference criteria, and included: *Laminaria*, red turf algae, *Parastichopus, Pisaster*, and ectoprocts. The total number of species was within the 50% criteria. According to Merkel and Associates, there was no apparent impact to beneficial use based on these metrics as they can be explained by natural variability, competitive interaction (biotic), substrate variability, exposure, and species mobility.

For the intertidal analysis, species abundance or percent cover and number of taxa from Tranquility Beach were compared to Corral Beach and Dutch Harbor. Eight species or taxonomic groups were flagged for the intertidal habitat at Tranquility Beach for exceeding the 50% difference criteria, and included: encrusting coralline algae, turf and geniculate coralline algae, *Sargassum*, littorine snails, mussels, chitons, turban snails, and urchins. The total number of species was within the 50% criteria of the reference locations. According to Merkel and Associates, there was no apparent impact to beneficial use based on these metrics as they can be explained by natural variability, substrate variability, exposure, and species mobility.

Blue Whale Cove is located on the northern portion of SNI and is representative of storm water runoff associated with rocket launch operations. Rocket launch platforms are located on a mesa above Blue Whale Cove, with a ravine that may potentially transport storm water from the platforms to near shore receiving waters. Similar to Tranquility Beach, the majority of the intertidal area in Blue Whale Cove is sandy beach, with rocky intertidal platforms on the east and west ends of the beach. An expansive giant kelp forest is located offshore of Blue Whale Cove, with the substrate consisting of a mixture of bedrock with high relief (4 meters in some places) and large boulders with interspersed patches of sand. Water and sediment samples were collected outside the surf zone directly offshore of the ravine. Intertidal sampling was conducted on the rocky platform west of the ravine, and subtidal sampling was conducted directly offshore and to the north of the ravine.

At Blue Whale Cove, eight species or taxonomic groups were flagged for the subtidal habitat for exceeding the 50% difference criteria, and included: *Laminaria*, red turf algae, coralline turf, *Pisaster*, urchins, sponges, ectoprocts, and ascidians. The total number of species was within the 50% criteria. According to Merkel and Associates, there was no apparent impact to beneficial use based on these metrics as they can be explained by natural variability, competitive interaction (biotic), substrate variability, exposure, and species mobility.

For the intertidal analysis, species abundance or percent cover and number of taxa from Blue Whale Cove were compared to Corral Beach and Dutch Harbor. Ten species or taxonomic groups were flagged for the intertidal habitat at Blue Whale Cove for exceeding the 50% difference criteria, and included: geniculate and encrusting coralline algae, *Sargassum*, green algae, limpets, littorine snails, mussels, chitons, turban urchins, and anemones. The total number of species was within the 50% criteria. According to Merkel and Associates, there was no apparent impact to beneficial use based on these metrics as they can be explained by natural variability, substrate variability, exposure, and species mobility.

At the request of State Water Board staff, Dr. Raimondi performed a statistical analysis of the SNI intertidal data set described above. In that assessment, he used Bray-Curtis ordination (PRIMER software) to compare community structure at reference and impact locations. Dr. Raimondi expressed concern about the choice of reference sites (rocky reefs). Using the design and data from Merkel and Associates, there is evidence that discharge locations are different from selected reference locations based on comparison of community composition. This is based on data for both the species that were counted (p=0.001) and for those sampled by estimating percent cover (p=0.039).

Limpets, anemones, and the purple sea urchin (*Strongylocentrotus purpuratus*) contribute the greatest differences between the reference and impact sites. All three of these, as well as mussels, the black turban snail *Tegula funebralis*, bladder chain kelp *Sargassum agardhianum,* chitons, and littorine snails were more abundant at the reference sites (Table 5.6.7.). Of those taxa with contribution to the differences, only barnacles were more abundant at the discharge sites.

Table 5.6.7. Counts, intertidal invertebrates and algae (*Sargassum agardhianum*), and their contribution to differences between the reference sites and the discharge (impact) sites

	Group Reference	Group Impact	
Species	Av.Abund	Av.Abund	Contrib%
Limpets	2.64	1.49	23.09
Anemones	0.51	0.5	13.21
Strongylocentrotus purpuratus	0.72	0	11.66
Mussels	1.01	0.15	8.7
Tegula funebralis	0.47	0.18	8.48
Sargassum agardhianum	0.23	0.04	7.43
Chitons	0.54	0.15	7.37
Barnalces	0.96	1.53	6.69
Littorina spp	0.94	0.38	5.25

Erect coralline red algae (*Corallina*) and red algal turf contributed the greatest differences between the reference and impact sites (Table 5.6.8.). Both erect and encrusting coralline red algae and the surf grass *Phyllospadix* were more abundant at reference sites. *Chaetomorpha*, a filamentous green algae, had a relatively high average abundance at the discharge sites and was virtually absent at the reference sites. Green algae are often a preferred food item for intertidal grazers and, therefore, are often not abundant. It is possible that eutrophication causes filamentous green algae to be more productive and, therefore, more abundant, exceeding grazing rates.

Table 5.6.8. Percent cover, intertidal vascular plant (*Phyllospadix*) and algal taxa, and their contribution to differences between the reference sites and the impact sites (Group 2)

	Group Reference	Group Impact	
Species	**Av.Abund**	**Av.Abund**	**Contrib%**
C_Coralline Algae	25	6.46	26.72
Red Turf	3	4.67	21.61
C_Phyllospadix	11.25	10	13.10
C_Chaetomorpha sp.	0	12.08	11.07
Other Browns	0.38	0.46	7.40
C_Encrusting Coralline Algae	6.04	1.04	7.06
Ralfsiaceae	0.21	0.46	6.64

For species sampled by counts and those sampled by percent cover, 1 of 3 tidal height zones differed between outfall and undisturbed sites, although the differences in the other 2 of 3 zones were close to significant.

The following figures provide a graphic representation of the Bray-Curtis multivariate results provided by Dr. Raimondi. Each symbol represents a quadrat sample result.

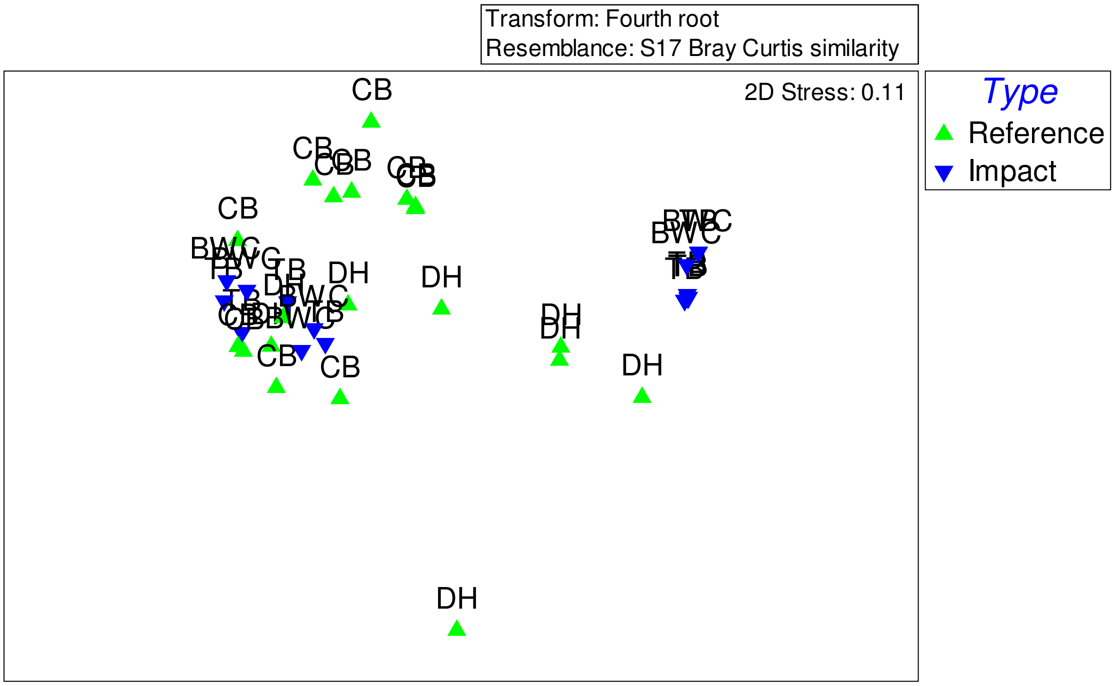

Figure 5.6.6. San Nicolas Island ASBS. All tidal zones combined, species measured by counts. The green pyramid symbols are for Dutch Harbor (DH) and Corral Beach (CB) reference sites. The blue inverted pyramid symbols are for discharge sites.

In the above graph representing a multivariate cluster assessment of data for intertidal species measured by counts, many of the reference sites cluster in the center. While there is some overlap with discharge sites on the left side of the graph, there is a cluster of only discharge sites on the right side.

In the following graph representing a multivariate cluster assessment of data for intertidal species measured by percent cover, there is a tight cluster of reference sites in the upper left and a few reference sites loosely clustered in the bottom center. The discharge sites are clustered in the center left and lower left, and also loosely clustered and scattered along an axis in the upper center and upper right.

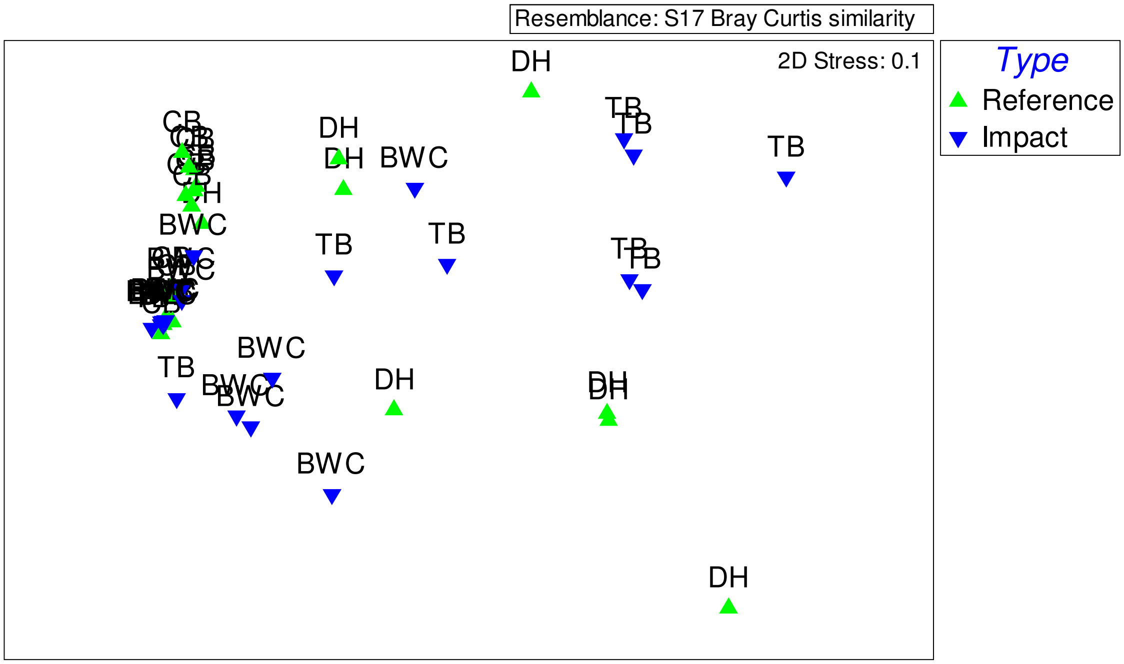

Figure 5.6.7. San Nicolas Island ASBS. All tidal zones combined, species measured by percent cover. The green pyramid symbols are for Dutch Harbor (DH) and Corral Beach (CB) reference sites. The blue inverted pyramid symbols are for discharge sites.

5.6.15 - San Clemente Island ASBS

One report was available, the Naval Auxiliary Landing Field, San Clemente Island Area of Special Biological Significance Biological Survey Report (Merkel & Associates February 2007). The report provides a comprehensive assessment of the various subtidal and intertidal “eco-regions” of SCI, including significant data of the status of surrounding kelp forests. Their report also includes previous biological surveys performed at SCI.

Several marine biological surveys have been conducted at SCI to either meet permit conditions (focused) or to assess the biological communities around the island. The focused surveys were aimed at documenting potential effects of the SCI wastewater treatment plant outfall on marine biota. These surveys included both intertidal and subtidal surveys in the vicinity of the Wilson Cove sewage point source outfall. According to Merkel and Associates, results of the focused surveys suggested that very localized impacts to marine biota occurred in the intertidal zone directly in the vicinity of the outfall, but there were no apparent effects 15 meters (50 ft) beyond the outfall or in the subtidal zone.

Previous island-wide surveys were conducted to document and compare the habitat around SCI with other Channel Islands. The island-wide surveys were all subtidal, kelp forest surveys, and results indicated that the subtidal communities at SCI were diverse and healthy in comparison to the other southern Channel Islands (e.g., Santa Catalina, Santa Barbara, Anacapa, and Santa Cruz Islands), and similar to SNI. Fish, algae, and invertebrates displayed a high degree of diversity, and most noted species were observed from juveniles to aging adults. SCI's relative remoteness, limited anchorages, and unpredictable operational closures likely play a significant role in reducing fishing pressure and subsequent impacts to the associated marine communities. According to Merkel and Associates, no visible impacts from Navy operations were observed on the underwater communities at visited sites.

The island-wide surveys delineated four island eco-regions around the island. Although the number of sites sampled within each island eco-region was too low to describe significant differences between island eco-regions, some notable trends in habitat classification were apparent. First, the only two sites classified as developing kelp forests were located on the east shore, where bottom substrate and oceanographic conditions possibly limited perennial kelp forests from forming. As expected, the north and west island eco-regions were dominated by mature kelp forests and sand bottom with sub-canopy brown algae. These mature kelp forests supported dense stands of understory algae unlike the Pyramid and east island eco-regions, which were dominated by encrusting invertebrates on the hard substrate. Dense understory algae were most typically present where high flow, nutrient rich oceanic water was consistently available, as in the north and west shore eco-regions of SCI. The Pyramid eco-region had a southeast aspect and typically experiences less wind and swell than other exposures throughout the island.

Methodologies from previous surveys were reviewed to assist in the development of methods to meet the State Water Board request. Due to logistical constraints, including access to portions of the island, potential weather concerns, diver safety and bottom time limitations, and the distance between potential sampling locations, the methods were developed to provide the best information to satisfy the request by the State Water Board and also to make comparisons with previous survey data.

Results indicated a high degree of biological variability in the intertidal and subtidal zones within an island eco-region, primarily due to differences in substrate type and coverage (e.g., cobble, boulder, bedrock, sand). Generally, different substrate supported different assemblages of organisms, and at some locations the presence of competitive dominants (e.g., mature giant kelp forest) led to biological interactions. According to Merkel and Associates, all marine habitats surveyed at SCI had diverse, healthy communities. Variability amongst communities was attributed to normal variability and there was no indication of direct impacts associated with Navy activities. The metrics used to determine potential impacts to beneficial uses further indicated biological variability within an island eco-region, supporting the need to have multiple reference locations.

Two metrics were derived from these surveys: (1) number of taxa, and (2) abundance or percent cover. There were no benchmarks available for these metrics so they can only be compared to reference conditions. In the case of SCI, the comparisons were made to reference conditions within an associated ecoregion. Based on historical data, these community measurements are highly variable. According to Merkel and Associates, differences of 50% in the number of taxa or abundance/cover between any two sites would be considered in the realm of natural variation. Therefore, if a metric measured at a station was lower by 50% or more than the associated reference station, then that metric was flagged. When one or both metrics at a station were flagged, the biologist considered substrate data, historical data if available, looked at results of the receiving water and sediment measurements for causal relationships, and used best professional judgment to determine if intertidal or subtidal habitats required additional evaluation. Again, State Water Board staff disagrees with the adequacy of a 50% criterion in determining differences between impact and reference sites.

Graphs were prepared for species or taxonomic groups that were relatively abundant and, in some instances, species were placed into taxonomic groups for graphing purposes (e.g., red turf and red foliose algae were grouped into a red turf algal taxonomic group). Summary tables were prepared for species or taxonomic groups that were not relatively abundant or common. In addition, a comprehensive species list was developed from this survey, and previous surveys.

Subtidal Survey Methods: At each sample station, a diving biologist using SCUBA determined the distribution and abundance of subtidal invertebrates and algae at two isobaths (-12 and –40 ft MLLW). A 25-meter long transect tape was established at each isobath. Kelp (i.e., large brown algae) abundance was counted in 10, randomly placed 5-meter-long by 2-meter-wide band transects ($10m^2$). Observations included the number of kelp plants in each band transect, the number of stipes at a height of one meter above the bottom, and the size of the individual plants. Four size categories were measured: newly recruited kelp plants (minimum size 2-10 cm), juveniles (10-40 cm in length), subadult (between 40 cm and 2 m), and adults (greater than 2 m in length). The characteristic color and wavy pattern of the blades allowed biologists to readily identify even relatively small *Macrocystis* plants.

Biologists documented the abundance of key indicator plant and invertebrate species in 10 randomly placed 1-meter by 1-meter quadrats ($1m^2$). Biologists also quantified substrate type (sand, rock, cobble) and algal cover using a point contact method with 20 points sampled within the $1m^2$ quadrat. A list of target species/assemblages that were surveyed at each subtidal sampling location is provided. These were common subtidal organisms present during previous Navy surveys. Other species of interest were also noted. Formal fish transects were not conducted, but all fish species observed were recorded to document presence and relative qualitative abundance (e.g., abundant, common, rare).

Intertidal Survey Methods: At each sample station, marine biologists recorded the abundance and/or percent cover of organisms at each of three tidal elevations (+5, +3, and 0 ft MLLW) using a 0.25m² quadrat following methods used for previous surveys at SCI. A 10-meter long transect tape was established at each tidal elevation, and four randomly placed quadrats along the transect line were sampled at each of the three tidal elevations. Two biologists were assigned to each quadrat to record abundance and/or percent cover (for invertebrates, algae, and substrate) for several target species that were determined to be key species in the previous marine resources inventory. Abundance was quantified by counting total individuals within each 0.25m² quadrat and percent cover was measured using the point contact method at 20 points within each 0.25m² quadrat. A list was composed of target intertidal species/assemblages that were surveyed at each intertidal sampling location. These species are common intertidal organisms and are considered to be representative organisms that were present during previous surveys. Other species of interest and substrate type (rock, cobble, sand) were also noted. Cobble was defined as small, moveable rock generally less than 12 inches in diameter.

Several algal species were grouped into taxonomic categories to allow efficient field sampling and comparison with past studies. All species in the genus *Corallina* were grouped into the group coralline algae, red turf included low-lying red algae (e.g., *Gelidium* spp.), red foliose was made up of leafy erect red algae (e.g., *Pterocladia* spp.), Ralfsiaceae included all encrusting brown algae in the Ralfsiaceae family (e.g., algae that resemble "black tar"), and other browns included brown algae such as *Dictyota* spp., *Dictyopterus* spp., *Zonaria* spp., *Halydris* spp., *Colpomenia* spp., *Leathesia* spp., and *Scytosiphon* spp.

A total of 10 locations were chosen for biological sampling around SCI. These included five locations that were representative of areas with discharges associated with distinct Navy operational activities. The total also included five locations chosen to represent areas that receive natural storm water runoff not associated with Navy activities, and thereby considered a reference condition. The five reference locations were chosen because historical data indicated that there are four eco-regions around the island that result in different reference conditions. The 10 sampling locations and survey results, grouped by island eco-region, are:

Castle Rock (CR) was chosen as a reference location for the north eco-region and is located approximately 0.5 miles (0.8 km) west of Bird Rock. A rocky bluff backed the intertidal area, with patches of cobble at higher tidal levels, leading to bed rock at lower tidal levels. An expansive kelp forest was present offshore with extensive surf grass beds present near shore. The substrate in this area consisted of a mixture of bedrock with moderate relief (2 meters in some places) and large boulders with interspersed patches of sand.

Northwest Harbor (NW) is located in the north eco-region, and was an area requested to be sampled by the State Water Board since in-water Basic Underwater Demolition/SEALS (BUD/S) training occurs in near shore waters. In-water ordinance detonation (explosives) training occurs directly offshore of BUD/S Camp on sandy subtidal habitat in water ranging from 10 to 15 feet (3 to 4.5 m) deep. The area boasts a wide variety of different marine habitats, including sandy beach, rocky intertidal habitat composed of boulders and cobble, and also formational rock along the western shoreline, sandy subtidal habitat, and a diverse rocky subtidal habitat. The cove is somewhat protected by prevailing northwesterly winds and swell, by a small island (Bird Rock) located offshore that provides a roosting area for a variety of sea birds and marine mammals. An extensive giant kelp forest was present both within the cove and further offshore. The ASBS sampling location was situated east of the sandy beach, along the boulder and cobble intertidal area, on a rocky headland between BUDS Camp and Graduation Beach. The subtidal sampling locations were situated directly offshore of the intertidal locations.

Five species or taxonomic groups were flagged for the intertidal habitat at NH for exceeding the 50% difference criteria, and included: coralline algae, *Sargassum*, green algae, barnacles, and mussels. The total number of species was within the 50% criteria, which was almost expected as the comparisons are among organisms or groups of organisms that were previously reported to be common species at SCI. According to Merkel and Associates, there was no apparent impact to beneficial use based on these metrics as they can be explained by natural variability, competitive interaction (biotic), substrate variability (the substrate at NH was predominantly boulder, while CR was bedrock), and exposure (NH is more protected than CR).

Four species or taxonomic groups were flagged for the subtidal habitat at NH for exceeding the 50% difference criteria, and included: *Cystoseira*, *Phyllospadix*, crustose coralline algae, and urchins. The total number of species was within the 50% criteria. According to Merkel and Associates, there was no apparent impact to beneficial use based on these metrics as they can be explained by natural variability, competitive interaction (biotic), substrate variability, exposure, and species mobility.

East Airfield (EA) is located in the north eco-region and east of the runway, and is representative of a storm water runoff area associated with airfield operations. The site was situated below a steep rocky bluff, with two distinct geological formations, and a small pocket beach that extended into the subtidal zone. The intertidal area was heterogeneous with rocky outcroppings separated by sand at lower tidal levels, small benches with tide pools at mid-tidal levels, and irregular and steep upper tidal level. A very narrow band of rocky substrate that supported giant kelp was present near shore, with sandy subtidal habitat present further offshore. A more extensive kelp forest was present down coast of this site.

Three species or taxonomic groups were flagged for the intertidal habitat at EA for exceeding the 50% difference criteria, and included: coralline algae, *Sargassum*, green algae, and limpets. The total number of species was within the 50% criteria. According to Merkel and Associates there was no apparent impact to beneficial use based on these metrics as they can be explained by natural variability (e.g., green algae tend to be ephemeral species), competitive interaction (biotic), and substrate variability (the substrate at EA was predominantly bedrock outcropping with sand patches, while CR was bedrock).

Twelve species or taxonomic groups were flagged for the subtidal habitat at EA for exceeding the 50% difference criteria, and included: *Laminaria*, *Cystoseira*, *Sargassum*, *Phyllospadix*, *Dictyota*, red turf algae, crustose coralline algae, and all of the invertebrates. The total number of species was within the 50% criteria. According to Merkel and Associates, there was no apparent impact to beneficial use based on these metrics as they can be explained by natural variability, competitive interaction (biotic), substrate variability (the 40-ft isobath at EA was all sand, while CR was bedrock with high relief), exposure (EA is more protected than Castle Rock), and species mobility.

Eel Point (EP) is within the west eco-region. This region tends to be characterized as having a wide shelf of mostly bedrock with expansive kelp forests. It is also exposed to large swell for the entire year. The EP site was located within the cove south of Eel Point, and was chosen as a duplicate reference location for this eco-region to account for potential spatial variability. The intertidal area within the cove ranged from vertical rocky bluffs to cobble. The sampling location was located south of the point in the vicinity of an ephemeral stream/drainage, with boulder and cobble present at higher tidal levels, and bedrock at lower tidal levels. The subtidal zone consisted mostly of bedrock with moderate relief of up to about 2.5 meters. Patches of sand were common in deeper areas or in pockets between rocky outcroppings.

Lost Point (LP) is within the west eco-region, and was also chosen as a reference location for this eco-region. The LP site was located within the cove south of Lost Point. The intertidal area within the cove ranged from vertical rocky bluffs to cobble. The sampling location was located south of the point in the vicinity of an ephemeral stream/drainage, with boulder and cobble present at higher tidal levels, and bedrock at lower tidal levels. The subtidal zone consisted mostly of bedrock with moderate and high relief of up to 4 meters. Small patches of sand were common in deeper areas or in pockets between rocky outcroppings.

West Airfield (WA) is located on the very north section of the west eco-region. This site is located in West Cove, and is representative of a storm water runoff area associated with airfield operations. West Cove is a protected cove relative to the other sites within this region, with a small sandy beach bordered by a steep rocky intertidal area to the north, and relatively flatter intertidal bench to the south, where intertidal sampling was conducted. Sand extends into the subtidal zone providing a clear path for entrance into West Cove. Mid- to high-relief rock and bedrock were present to the north and south, which supported a dense giant kelp forest.

Twelve species or taxonomic groups were flagged for the subtidal habitat at NH for exceeding the 50% difference criteria, and included: *Laminaria*, *Cystoseira*, *Sargassum*, *Phyllospadix*, *Dictyota*, red turf algae, crustose coralline algae, and all of the invertebrates. The total number of species was within the 50% criteria. According to Merkel and Associates, there was no apparent impact to beneficial use based on these metrics as they can be explained by natural variability, competitive interaction (biotic), substrate variability (the 40-ft isobath at EA was all sand, while CR was bedrock with high relief), exposure (EA is more protected than CR), and species mobility.

One taxonomic group was flagged for the subtidal habitat at WA for exceeding the 50% difference criteria, and included: crustose coralline algae. The total number of species was within the 50% criteria. According to Merkel and Associates, there was no apparent impact to beneficial use based on these metrics as they can be explained by natural variability, competitive interaction (biotic), substrate variability (the 40-ft isobath at EA was all sand, while CR was bedrock with high relief), exposure (EA is more protected than CR), and species mobility.

Stone Station or East Reference (REF) is located in the east eco-region, and was chosen as a reference location for this eco-region. Similar to other locations within this region, the island drops off very rapidly with steep depth contours in the subtidal zone. The sampling area was located in the vicinity of an ephemeral stream/drainage, with large boulders and cobble present in the intertidal and subtidal zones. A narrow, but dense stand of giant kelp was present in the subtidal zone.

Naval Ordnance Test Station (**NOTS) Pier** (NT) is located in the east eco-region, and was an area requested to be sampled by the State Water Board since the area is used to stage testing operations and is a potential source of runoff. The east side of the island drops off very rapidly and, as a result, there are not large expansive stands of giant kelp as along the west shore, but rather relatively narrow bands that parallel the coast. The intertidal zone was predominantly cobble and boulder, which also extended into the subtidal zone. The subtidal zone consisted mostly of very large (often several meters in size) boulders with small patches of sand. Adjacent to the boulder habitat were large expanses of sandy subtidal habitat that supported isolated beds of eelgrass.

Five subtidal species or taxonomic groups were flagged for the subtidal habitat at NOTS Pier for exceeding the 50% difference criteria, and included: *Pterygophora*, *Laminaria*, *Cystoseira*, *Dictyota*, and red turf algae. The total number of species was within the 50% criteria. According to Merkel and Associates, there was no apparent impact to beneficial use based on these metrics as they can be explained by natural variability (e.g., *Pterygophora* was relatively uncommon at NT), competitive interaction (biotic), and substrate variability (the 40-ft isobath at reference location had a high percentage of sand compared to the NOTS location).

Intertidal species abundance or percent cover and number of taxa were compared to a reference location (Stone Station). Three species or taxonomic groups were flagged for the intertidal habitat at NOTS Pier for exceeding the 50% difference criteria, and included encrusting coralline algae, *Eisenia*, and littorine snails. The total number of species was within the 50% criteria. According to Merkel and Associates, there was no apparent impact to beneficial use based on these metrics as they can be explained by natural variability, competitive interaction (biotic), and substrate variability (the substrate at the reference location was predominantly cobble), and species mobility.

Sun Point (SP) was chosen as a reference location for the Pyramid eco-region. Unlike many of the other locations, SP area has a large sandy beach, with large expanses of sandy subtidal habitat offshore. Relatively small, but dense stands of giant kelp were only present on patch reefs located offshore. The intertidal and shallow subtidal sampling locations were located east of an ephemeral stream/drainage. The intertidal zone consisted of a relatively low relief bedrock bench, while the shallow subtidal zone consisted of moderate to high-relief bedrock with sand. The deeper subtidal sampling location was located further offshore, and consisted of bedrock and cobble with moderate amounts of sand.

Horse Beach Cove (HB), in the Shore Bombardment Area (SHOBA), is representative of an area that has an active bombing range, and is within the Pyramid eco-region. The sampling location was along the western shore of HB, an area that was predominantly irregular bedrock in the intertidal and shallow subtidal zones. Deeper subtidal areas consisted of lower relief bedrock and boulder interspersed with sand. Sandy habitat was more common in the deeper depths, towards the center of the bay.

The location sampled in the Pyramid eco-region included Horse Beach. Species abundance or percent cover and number of taxa were compared to a reference location (Sun Point). Four species or taxonomic groups were flagged for the intertidal habitat at

HB for exceeding the 50% difference criteria, and included barnacles, the colonial snail *Serpulorbis*, littorine snails, and mussels. The total number of species was within the 50% criteria. According to Merkel and Associates, there was no apparent impact to beneficial use based on these metrics as they can be explained by competitive interaction (the intertidal zone at Horse Beach had a high cover of turf algal species which may affect the distribution of invertebrates), substrate variability (the substrate at the reference location was predominantly a bedrock bench compared to a irregular bedrock platform with tidepools), and species mobility.

Six subtidal species or taxonomic groups were flagged for the subtidal habitat at Horse Beach for exceeding the 50% difference criteria, and included *Phyllospadix*, *Dictyota*, red turf algae, sponges, ectoprocts, and ascidians page. The total number of species was within the 50% criteria. According to Merkel and Associates there was no apparent impact to beneficial use based on these metrics as they can be explained by natural variability, competitive interaction (biotic), and substrate variability (the 40-ft isobath at Horse Beach location had a high percentage of sand compared to the Sun Point [reference] location).

As mentioned previously, State Water Board staff disagree with the use of a 50% criteria as an adequate measure of differences between impact and reference sites. Also, the conclusions provided by Merkel and Associates, that there was no apparent impact to beneficial use and that all of the variability observed was due to natural variability, seemed to rely heavily on subjectivity/best professional judgment when a more objective statistical approach should have been employed. Multivariate cluster assessments (such as Bray-Curtis) would be a better way to determine differences between discharge and reference sites, as was performed by Dr. Raimondi for SNI and other ASBS data above.

At the request of State Water Board staff, Dr. Raimondi performed a statistical analysis of the SCI intertidal data set described above. In that assessment, he used Bray-Curtis ordination (PRIMER software) to compare community structure at reference and impact locations. Using the design (selected reference stations and low replication) and resulting data from Merkel and Associates he found no statistical evidence that discharge locations are different from selected reference locations based on comparison of community composition.

However, Dr. Raimondi expressed an important concern about the choice of reference sites (rocky reefs). In addition, he did not support the use of a 50% difference between sites as a criteria evaluating effects of ASBS discharges.

Natural spatial variability in such environments is high. Merkel and Associates had collected limited data for each zone at each location, characterizing the community by only 80 points for species cover and by counts in a 1 meter square quadrat area. Dr. Raimondi stated that the power of the design used by Merkel and Associates is likely to be low. He went on to state that proper estimation of the effect of discharges in the presence of such high natural variability is made much more rigorous by increasing the sample replication.

5.6.16 - Exception Application Biological Surveys - State Water Board Staff Conclusions

There was a great deal of information provided in the exception applications regarding fish, invertebrate and primary producers in ASBS. These studies provided valuable information concerning the status of marine life in ASBS. However, not all of the studies provided were designed to answer questions concerning the effects of anthropogenic runoff on intertidal or subtidal communities in ASBS. Even those studies that were designed to provide information about the effects of runoff had very different survey site designs, survey methods, and data assessment procedures.

Based on a review of the above information, functional biological communities are found in all ASBS with anthropogenic runoff influences. There is adequate evidence to allow an exception to the Ocean Plan for storm water and nonpoint source discharges, as long as they are properly controlled. The adoption of Special Protections will only reduce pollution and improve habitat, thereby allowing for improved and sustained protection for marine aquatic life.

While functioning biological communities do persist at ASBS, some of the initial data indicates that there were some differences identified between those ASBS survey sites influenced by runoff and survey "reference" sites. While impacts may not be overtly conspicuous, there may be some effects from anthropogenic runoff. For three out of four data sets tested by Dr. Raimondi using Bray-Curtis multivariate analysis, there was a difference (p value significance levels < 5%) in community composition between runoff sites vs. reference sites with no direct waste discharges. Still, these differences are not conclusive because of the inconsistencies and inadequacies of survey designs. There is probably not enough reliable data yet to say that it is definitely the runoff causing differences, or if it is due to some other coincidental perturbation. Additional biological monitoring must be performed in order to insure protection of marine aquatic life. Further staff conclusions regarding future biological monitoring are as follows:

- A rigorous regional approach, with statewide consistency, should be developed for the next round of surveys to adequately quantify the effects of discharges on marine life.

- The reference areas the applicants/consultants picked may have been chosen better than they were. This can be improved by having the reference sites selected with the advice of a team of experts.

- There would be much more power to assess community differences and impacts, or if any differences are due to natural variability, if there are adequate replication and more reference sites.

- Community composition should be compared between discharge and reference sites using statistically robust techniques such as multivariate cluster analysis.

- Ideally, the results of this rigorous and comprehensive sampling effort will yield an index of community health in relation to waste discharges, and possibly the identification of less comprehensive cost-effective biological indicators for future use.

5.6.17 Southern California Bight 08 Regional Biological Monitoring

A well-planned approach to biological investigations is required to adequately address the question of runoff impacts. Toward this end State Water Board staff supports of a regional approach to monitoring, with statewide comparability, including biological monitoring, relying on expert scientists to design and review biological monitoring efforts and to develop objective, statistically sound data assessments.

In part to overcome the limitations addressed by Raimondi in 2009, a regional ASBS biological monitoring program was implemented in southern California as part of the Bight 08 ASBS monitoring program. Twenty one rocky intertidal sites were quantitatively sampled for habitat quality, invertebrate and algal abundance and composition by Raimondi's UC Santa Cruz Coastal Biodiversity research team. The monitoring question focused on differences between reference and ASBS discharge sites. Preliminary results indicated that: 1) there were no significant differences in macro-invertebrate or algal species richness based on geographic grouping or type of site (discharge vs. reference); 2) there were large geographic differences in algal and sessile invertebrate species composition, likely reflecting natural biogeography, but no statistically significant differences between reference sites and ASBS discharge sites; and 3) there were large geographic differences in mobile invertebrate species composition, once again reflecting natural biogeography, but no statistically significant differences between reference sites and ASBS discharge sites. However, the answers differed when sessile and mobile species were jointly considered. Not only were geographic differences observed, but differences were also observed at two discharge sites relative to reference condition[7] (Figure 5.6.8.). The two discharge sites different from reference condition (i.e., outside of the confidence ellipse) are located at the La

[7] Report to the State Water Resources Control Board, Summation of Findings, Natural Water Quality Committee, 2006-2009, September 1, 2010.

Jolla ASBS and the Laguna Point to Latigo Point ASBS. While these sites are both discharge sites and also different from reference, it is still unknown as to what role the discharges and other anthropogenic influences may have causing these differences.

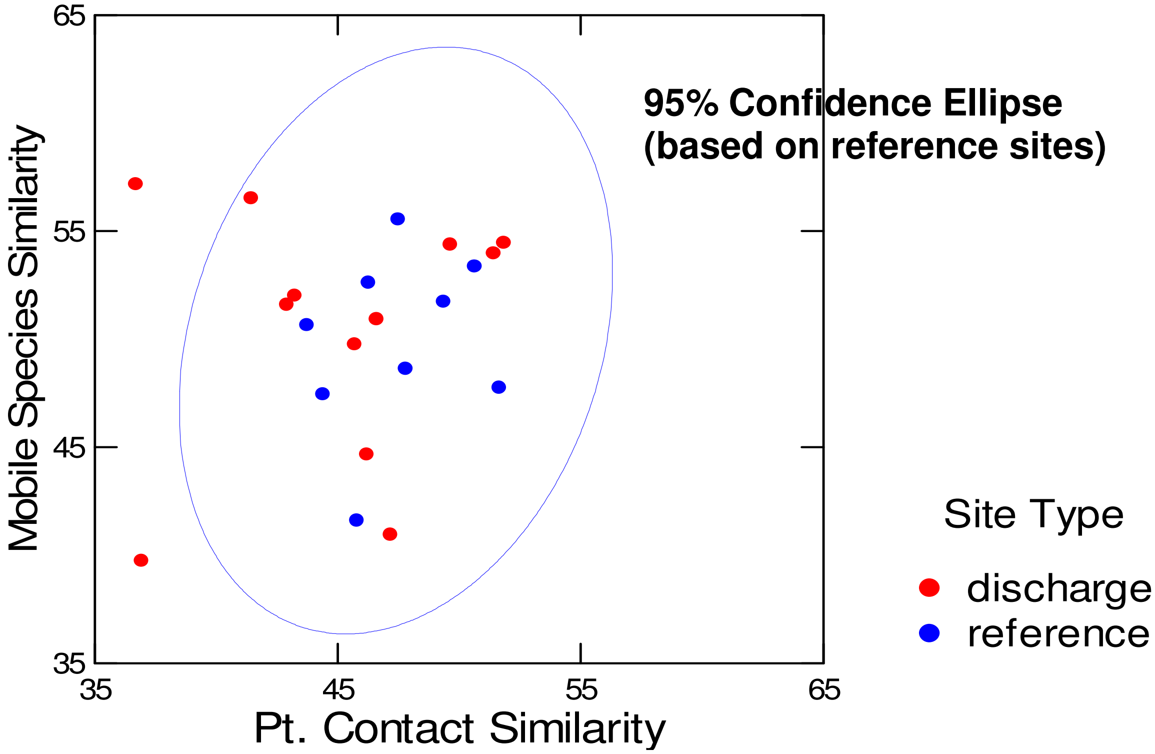

Figure 5.6.8. Similarity of Community Indices and Confidence Ellipse. Source: Pete Raimondi (UC Santa Cruz)

Because of the value of biological information, ASBS stakeholders in southern California supported monitoring of 70 subtidal rocky reef sites. Quantitative sampling for habitat quality, vertebrate, invertebrate and algal abundance and composition was coordinated by Dr. Dan Pondella at Occidental College with collaborators at UC Santa Barbara and San Diego State University. Similar to the intertidal monitoring, the monitoring question focused on differences between reference and ASBS discharge sites. Data analysis for the subtidal rocky reefs has not progressed as far as the intertidal monitoring. Initial data examination has identified clear differences in community composition based on habitat characteristics (i.e., rock relief), but large differences in biological community characteristics between ASBS and reference sites have yet to be determined.

While more work is needed to further investigate the relationship between biological condition and water quality impacts, it demonstrates the importance and value of biological data. and the ASBS Natural Water Quality Committee has suggested to the State Water Board that the above data is sufficient to warrant further investigation. [8]

5.7. BASELINE DISCHARGE INFORMATION

The SCCWRP 2003 Final Report on Discharges into State Water Quality Protection Areas found 391 municipal or industrial storm drains, 1,012 small storm drains, 224 nonpoint sources, and 66 seeps or springs that may have been influenced by nonpoint source wastes. SCCWRP also found 637 naturally occurring intermittent (gullies) or perennial streams. Since the SCCWRP survey, State Water Board staff has identified another 96 drainages, most of which are storm water or nonpoint source discharge sites. There are 473 runoff discharges into ASBS exceeding 18 inches in diameter or width; 315 of those discharges exceeded 36 inches in diameter or width. Other types of discharges occur in many of the ASBS not associated in terms of an end of pipe discharge, but include many high-threat nonpoint sources as well, e.g. marina and boating operations.

5.7.1 - Caltrans – Multiple ASBS

As part of their assessment of highway discharges to 10 of the ASBS, Caltrans evaluated 186 Caltrans maintained highway discharges to ASBS. Of those 186, 83 discharges were immediately into an ASBS and 103 were either attenuated through natural vegetation (65) or are discharged to ASBS via streams (38) along the coast just prior to draining into an ASBS. Direct discharges that are attenuated by natural vegetation and soil would likely not reach the ASBS surface waters as frequently as those direct discharges that drain immediately into an ASBS (e.g., a storm drain outfall into the intertidal zone). Discharges into streams in near proximity to an ASBS (e.g., from a highway bridge along the coast) may be diluted by watershed runoff. Storm water discharges associated with highway runoff have the potential to be considered of a higher threat depending on specific highway and watershed conditions. It should be noted that run-on occurs upstream of and into some of these highway drains, and some of these highway discharges drain across parks and beaches as well. Therefore, highway discharges are also discussed below for specific ASBS.

5.7.2 - State Parks – Multiple ASBS

California Department of Parks and Recreation discharges are primarily related to storm water runoff and non-point source discharges from roadside parking or pull-out areas in 11 ASBS. Many of the storm drain related discharges are co-located with Caltrans storm water conveyances.

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[8] Report to the State Water Resources Control Board, Summation of Findings, Natural Water Quality Committee, 2006-2009, September 1, 2010.

5.7.3 - Redwoods National Park

Although Redwood National Park facilities are some of the most remote in the State, this ASBS is impacted by 303d listed water bodies, primarily for sediment and temperature. There are 39 storm drains in the ASBS that include storm water runoff from highway facilities (contribution from Caltrans, see above) and beach access parking lots.

5.7.4 - Trinidad Head, Trinidad Rancheria

The mooring field is occupied by commercial and recreational fishing boats from May through October. Staff is not aware of any live-in occupation of boats. State Water Board staff is concerned that release of metals by corrosion-protective “zincs” and bottom paint (copper) could damage the kelp beds. Commercial fishing and crabbing boats within the mooring field and on the pier continue to routinely use bleach and detergents to clean gear and boats (See Fish and Game Warden enforcement citation, April 2008). These marina and boating activities are considered to be high threat.

Land based sources at Trinidad include a storm drain system, the pier, boat haul out ramp, and parking lot, and seepage from the coastal bluff. The main Trinidad storm drain is adjacent to the HSU Telonicher Marine Lab waste seawater outfall (the HSU discharge is not included in this exception).

5.7.5 - King Range, Shelter Cove

The County of Humboldt and the Humboldt Bay Harbor Recreation and Conservation District higher threat discharges at Shelter Cove include point and non-point source discharges. Point source discharges include storm drains conveying residential and road runoff directly into the shoreline. Recreation boaters park their vehicles directly on the beach utilizing the concrete boat launch; these types of nonpoint source discharges likely carry fuel, oil, and grease. The recreational and commercial fishing industry is served by a fish cleaning facility immediately adjacent to the shoreline. The highly concentrated fish wastes are ground up and then discharged directly back into the ocean via a suspended pipe into the intertidal zone. This highly concentrated waste is considered to be of high threat.

5.7.6 - Del Mar Landing

TSRA properties have three main storm drains carrying residential and road runoff into the ASBS. These are considered to be of higher threat discharge due to the nature of their size, and direct discharge into the intertidal zone.

5.7.7 - Point Reyes Headlands

Point Reyes National Seashore has seven storm drain and nonpoint source discharges considered to be of lower threat. These discharges are primarily associated with the runoff and related contaminants from the lighthouse visitor center and recreational facilities. While outside the ASBS, nonpoint source discharges from historical dairies may introduce pollutants to Drake's Bay, which in turn may reach the ASBS.

5.7.8 - Duxbury Reef

The County of Marin's discharges to this ASBS are primarily sources from residences, parking lots, and road runoff, and may include nutrients, bacteria, or pathogen contamination from septic seepage (seeps are mentioned as a potential pollutant source but are not included in the exception). There are five storm drains and nonpoint sources considered to be of medium threat. One naturally occurring drainage, Agate Creek, may pose a higher threat.

5.7.9 - James V. Fitzgerald

The County of San Mateo and the Department of the Air Force convey point and nonpoint discharges including residential and road runoff. This ASBS has 19 municipal, military, or transportation related higher threat discharges. California State Parks and Caltrans have discharges impacting this resource as well.

5.7.10 - Pacific Grove

The City of Monterey and the City of Pacific Grove discharge to this ASBS and, combined, have 44 municipal storm drains greater than 0.25 meters carrying residential and road runoff into the ASBS. These are the discharges that are considered to be of a higher threat due to the nature of the impervious surface area of the watershed and amount of roads parallel to the intertidal zone and shoreline.

5.7.11 - Carmel Bay

The Carmel Bay ASBS has 33 storm drains greater than 0.5 meters in diameter discharging directly into the ASBS. Applicants are the County of Monterey, the Pebble Beach Company, the City of Carmel-by-the-Sea, Caltrans, and State Parks. In addition to the larger storm drains, there are 135 smaller storm drains, 0.2 meters to 0.3 meters in size. These discharges are considered to be a considerable threat due to the very nature of the source and size of the discharges; golf course runoff carries with it pesticides, herbicides, rodenticides, and fertilizers; and residential and road runoff carries oils, grease, and metals. Copper is used as an adjuvant in many herbicides, pesticides, and fertilizers, and is also carried in the runoff.

5.7.12 - San Nicolas Island

Although SNI may be considered small, remote, and relatively undeveloped, this Naval facility has 10 industrial storm drains that are considered to be of higher threat. Military operations include missile launches and tracking. There is also an airfield and an active waterfront.

5.7.13 - Laguna Point to Latigo Point

Residential runoff, highway runoff, recreational facilities, and septic leach fields located on the beaches are considered to be high threat in this ASBS. There are 120 municipal storm drains discharging directly to the ocean. The applicants are the City of Malibu, the County of Los Angeles, Caltrans, and State Parks.

5.7.14 - Robert E. Badham

The City of Newport Beach is the primary applicant in this ASBS. Urban runoff in the heavily developed watershed is conveyed via three storm drains greater than 1.0m and three storm drains 0.2m to 0.33m in diameter. These discharges are considered to be of higher threat due to the nature of the constituents in urban runoff.

5.7.15 - Irvine Coast

Urban, highway, golf course, and recreational facilities are the primary sources of high threat discharges to this ASBS. There are 16 storm drains greater than 0.5 meters in diameter. Applicants include the City of Newport Beach on behalf of the Pelican Point Homeowners Association, Irvine Company, Caltrans, and State Parks.

5.7.16 - Heisler Park

Urban runoff, trash, sediment, and untreated storm water runoff are considered to be of high threat to this ASBS. There are three storm drains greater than 0.5m in diameter owned and maintained by the City of Laguna Beach.

5.7.17 - La Jolla

The City of San Diego is the applicant of 14 storm drains larger that 0.5m in diameter, and 156 other storm drains considered being of higher threat to this ASBS.

5.7.18 - San Clemente Island

Military operations at this remote ASBS and the related runoff associated with these activities are considered to be of high threat. Storm water and nonpoint sources include 16 industrial storm drains with potential sources of industrial and military related activities. The island has an airfield drained by storm drains and an active waterfront. Training exercises include live fire, shore bombardment, and ordinance detonation at specific locations, specifically the SHOBA and BUD/S areas. A sink draining into the ocean is located at the NOTS pier.

5.7.19 - Southeast Santa Catalina Island

Connolly-Pacific Company owns and operates a quarry located on the Southeast Santa Catalina Island. This is an industrial facility mining aggregate material from the hillside using the shot method. Explosives are drilled into the hillside and then detonated to release the rock. Material is then transported to the separator plant for sorting. The product is then stockpiled and subsequently loaded onto barges for delivery to the mainland. Quarry operations include petroleum storage tanks, maintenance and equipment yard, and stockpiled aggregate.

5.7.20 - Northwest and Western Santa Catalina Island

SCICO owns 1,530 acres (6.19 km^2) in the Two Harbors area of this ASBS and is the main center of population of the west end of the island. In addition to providing dock facilities for the mainland cruise boats, there is an estimated 720 moorings and anchorage, where private boats can be accommodated. Services and marine related facilities include automotive, fuel facilities, sewer pump out, barge ramps, and wastewater reclamation plant.

Additional smaller anchorages and moorings are located throughout other small island coves. The largest of the group, Fourth of July Cove, contains approximately 200 anchoring and 42 moorings with supporting marina and pier facilities leased and operated by the Fourth of July Yacht Club. Nonpoint source discharges associated with marina and boating operations are considered high threat.

Recreational activities (e.g., camping) also take place at these two ASBS. The Catalina Conservancy manages camping facilities at the Western Santa Catalina Island ASBS. Roads to the recreational sites are coated with road oil and occasionally are eroded. Some of that road oil may pollute the ASBS.

Table 5.7.1. Higher Threat Waste Discharges for Storm Water and Nonpoint Source Discharges. General Exception Applicants

ASBS No.	ASBS Name	Regional Water Board	No. of Higher Threat Discharges	Sources of Threats
1	Jughandle Cove	1	1 (Caltrans bridge)	Highway runoff

ASBS No.	ASBS Name	Regional Water Board	No. of Higher Threat Discharges	Sources of Threats
2	Del Mar Landing	1	3 storm drains	Residential and road runoff
3	Gerstle Cove	1	1 storm drain, and boat ramp area	Recreational facility, parking lot and boat ramp runoff
5	Saunders Reef	1	6 storm drains	Highway and parking runoff
6*	Trinidad Head	1	5 storm drainages and nonpoint sources, 1 waste seawater outfall	Pier and mooring field; boat cleaning; urban runoff
7	King Range, specifically in the immediate vicinity of Shelter Cove	1	9 storm drainages, 1 fish cleaning station, 1 boat ramp	Fish cleaning point source; launch ramp and marine operations; residential and road runoff,
8*	Redwood National Park	1	39 storm drainages	Highway parking lot and campground runoff
9*	James V. Fitzgerald	2	19 municipal, military or transportation storm drains	Sewage collection and pumping facility - sewage spills; residential, parking and highway runoff
11	Duxbury Reef	2	5 storm drains and nonpoint sources medium threat	Residential parking lot and road runoff;
15	Año Nuevo	3	14 storm drainages and nonpoint sources	Agriculture runoff and highway runoff
16	Point Lobos	3	16 storm drainages and nonpoint sources	Parking lot and boat launch, recreational facility and road runoff
18	Julia Pfeiffer Burns	3	38 storm drainages > 0.25m	Highway runoff and legacy sedimentation
19	Pacific Grove	3	44 municipal storm drains > 0.25m	urban runoff
20	Salmon Creek Coast	3	22 storm drainages > 0.25m	Highway and rural residential runoff
21	San Nicolas Island & Begg Rock	4	10 storm drains	Military operations and industrial runoff
23	San Clemente Island	4	16 storm drains	Military operations and industrial runoff
24	Laguna Point to Latigo Point	4	120 municipal storms drains	Residential runoff; highway runoff; recreational facilities and septic leach fields on beach
25	Northwest Santa Catalina Island	4	26 storm drains and nonpoint source discharges	Residential commercial and road runoff; pier and mooring facilities
26	Western Santa Catalina Island	4	3 nonpoint sources	Boating, camping, and road runoff
28	Southeast Santa Catalina Island	4	2 storm drainages/nonpoint sources	Quarry operations and barge landing
29	La Jolla	9	14 storm drains >0.5 m, plus 156 storm drains 0.2 -0.5 m	Urban runoff
30	Heisler Park	9	3 storm drains >0.5 m, plus 2 other large storm drains of undetermined size	Urban runoff, sediment, trash, irrigation runoff and untreated storm water runoff

ASBS No.	ASBS Name	Regional Water Board	No. of Higher Threat Discharges	Sources of Threats
32	Robert E. Badham	8	3 storm drains ≥ 1.0 m, 3 storm drains 0.2 – 0.33 m	Urban runoff
33	Irvine Coast	8 and 9	16 storm drains > 0.5 m	Urban and highway runoff, golf course and recreational facilities
34	Carmel Bay	3	33 storm drains ≥ 0.5m, 135 storm drains 0.2 – 0.3m, plus golf course nonpoint source runoff	Golf course runoff, urban, and highway runoff recreational facilities

* Please note all highlighted ASBS are affected by 303 (d) listed water bodies. For additional information regarding these ASBS, see ASBS by 303 (d) Listed Waterbodies excel spreadsheet posted at http://www.waterboards.ca.gov/water_issues/programs/grants_loans/asbs/index.shtml.

5.7.21 - Waste Discharge Prevention and Treatment

As part of their exception applications, applicants submitted information regarding their pollution prevention and control efforts. Included in this section are summaries of those efforts, Best Management Practices (BMPs) or other controls, or treatment that applicants have described in their exception applications.

5.7.21.1 Department of Transportation - Caltrans

The Caltrans Statewide Storm Water Management Plan (SWMP) identifies permanent and temporary BMPs that have been approved for statewide application. The BMPs fall into four categories; Design Pollution Prevention BMPs, which include permanent soil stabilization systems; Treatment BMPs, which include permanent treatment devices and facilities; Construction Site BMPs, including temporary soil stabilization and sediment control, non-storm water management, and waste management; and Maintenance BMPs, includes litter pickup, toxic controls, street sweeping, etc.

Treatment BMPs may include biofiltration: strips/Swales, Infiltration Devices, Detention Devices, Traction Sand Traps, Dry Weather Flow Diversion, Gross Solids Removal Devices (GSRDs), Media Filters, Multi-Chamber Treatment Train, Wet Basins, and Non-structural maintenance BMPs (Caltrans Storm Water Quality Handbook, Maintenance Staff Guide (CTSW-RT-02-057[1]), May 2003).

Throughout their project planning and design process, Caltrans considers Design Pollution Prevention and Construction Site BMPs for every project. Descriptions, appropriate applications, siting criteria, and design factors for the approved Design Pollution Prevention and Treatment BMPs are listed in the Caltrans Storm Water Quality Handbooks Project Planning and Design Guide.

5.7.21.2 California Department of Parks and Recreation

At Crystal Cove (Irvine Coast ASBS), State Parks has worked under a Water Quality Action Plan for the Irvine Coast ASBS according to the requirements of a Cease and Desist Order (Santa Ana Regional Water Board CDO R8-2000-87). This order involved septic systems associated with the Historic District and Reef Point Parking Lot management in Crystal Cove State Park, as well as the operation of the Newport Coast Development and the Pacific Coast Highway Drainage tributary to the park. The Reef Point Parking Lot plan includes a vacuuming program twice per month (June-October), and once per month (November-May), a trash removal protocol, which includes litter removal from all parking areas daily, inspection, and removal of litter from culverts, drainages, and other areas. As part of their erosion control efforts, a vegetation management program is ongoing, implementing coastal sage scrub revegetation both within natural drainages and on the bluff top. Dry weather flow management efforts include routine maintenance of the public shower area to prevent unnecessary use of fresh water.

Additionally, the Crystal Cove State Park has worked to fulfill the requirements of the El Morro Cease and Desist Order (San Diego Regional Water Board CDO R9-2003-0285 and R9-2003-0228, rescinded September 12, 2007 R902007-0109). These requirements included quarterly monitoring and reporting to the Regional Water Board and final inspection (December 2006).

At Salt Point Park (Gerstle Cove ASBS), a fish cleaning facility is located at the Salt Point parking lot and visitors' area, near the restroom facilities. There is no discharge to surface waters from the Fish Cleaning Station.

In other State Park units adjacent to ASBS, current treatment processes, pollution control, and BMPs include toilet facilities, both permanent and portable, throughout the park units. Trash receptacles and scheduled trash pick-up are a part of each State Park unit's operation. Department-wide educational activities regarding BMPs are continual. Public presentations at park units continue to attempt to educate the public about damage that can occur if litter is not disposed of correctly. Other issues are discussed such as chemical impacts (e.g., oil and grease). The use of pesticides in park units is supervised by licensed applicators. Recycling programs and collection facilities are located in most park units.

5.7.21.3 Humboldt County Department of Public Works

New homes and businesses in the lower Shelter Cove area of the King Range ASBS are required to connect to the existing sewer system. This requirement is being implemented through the Coastal Development Permit process administered by the Humboldt County Planning Division. Construction BMPs for erosion and sediment control are required for construction in Shelter Cove. This is also implemented through the Coastal Development Permits issued by the Humboldt County Planning Division. Inspections during construction are performed by the Humboldt County Planning and Building Division.

Development in Shelter Cove is regulated by the Local Coastal Program land use designations and zoning ordinances, and the Coastal Development Permit process. The land use designations, zoning, and permitting processes regulate parcel size, allowable uses, housing density, commercial development, and sewer and septic development in Shelter Cove. The sanitary wastewater treatment plant is operated by the Shelter Cove Resort Improvement District (SCRID) and is covered under an existing exception (Resolution No. 83-81). SCRID treats the wastewater and a portion is recycled to irrigate the golf course on the airstrip.

Land along the ocean bluffs has been acquired by the Bureau of Land Management to be kept relatively undeveloped.

Humboldt County plans to coordinate with the Shelter Cove Resort Improvement District to develop policies and projects to protect and improve local water quality, such as drainage improvements, storm water treatment BMPs, and water quality testing.

5.7.21.4 Department of the Air Force

The Air Force has several pollution prevention plans in place at their Pillar Point facility at James V. Fitzgerald ASBS. Current BMPs include: a Spill Prevention Control and Countermeasure Plan; an Integrated Natural Resources Management Plan; an Annual Wastewater Inventory; a Wet Weather Preparedness Plan (scheduled for 2006 implementation); and parking lot, building, and drainage system repair and maintenance. Structural BMPs include double-walled above ground storage tanks and storm water runoff energy dissipaters.

5.7.21.5 The Sea Ranch Association

At present, there are no treatment processes, pollution controls, or management practices for waters entering the storm drains. Dry weather flows into the storm drain system are effectively non existent since natural drainage patterns were minimally disrupted and private lots do not drain to a comprehensive storm water collection system, as found in most modern subdivisions. The opportunity for pollutants or toxic substances to enter the drainages to the Del Mar Landing ASBS may be limited by several factors, including the above drainage practices and storm drain system. Another factor is land use in the watershed area draining to the ASBS, which is limited to residential and natural common areas.

5.7.21.6 Marin County Department of Public Works

Marin County municipalities have been actively managing storm water runoff since the early 1990s through their Storm Water Pollution Prevention Program (MCSTOPPP). This storm water management plan details the BMPs being implemented to reduce the impact of road maintenance activities on watercourses in the County, including drainages to the Duxbury Reef ASBS. The performance standards outline BMPs for the following Phase II storm water program elements: Municipal maintenance, Illicit discharge controls, New Development and Construction controls, Industrial and Commercial Discharges, and Public Information and Participation.

Street sweeping occurs on a semi-annual basis on County maintained roads. The County Parks Department is exploring an agreement with County road maintenance staff to sweep the Agate Beach Parking Lot in the fall. Ditch cleaning occurs in the summer and during the winter on an as-needed basis to maintain flow.

5.7.21.7 City of Trinidad

Although septic system discharges are not covered under the exception, it is worth noting that the City of Trinidad is in the process of implementing an On-site Wastewater Treatment System (OWTS) management program. The program is supported by grants from the U.S. EPA and State Water Board. The overall goal of this program is to eliminate the potential contamination of ground and surface waters by maintaining the proper function of all the septic systems and avoiding any septic failure in the City potentially affecting Trinidad Head ASBS.

5.7.21.8 Point Reyes National Seashore

Point Reyes National Seashore (PRNS) implements a General Management Plan (GMP), which includes the three ASBS within their jurisdiction. These are classified in this GMP as: Wilderness Subzone Bird Rock and Double Point ASBS; Marine Reserve Subzone Point Reyes Headlands Reserve; and Biotic Sensitivity Subzone Duxbury Reef Reserve and Extension.

The PRNS Water Resources Stewardship Report (WRSR) is used to support park staff in identifying strategies to meet park desired conditions, and to develop indicators that may be used to measure success. Also, their Coastal Watershed Assessment documents available information and highlight to park managers where more monitoring, or implementation to improve conditions, is necessary.

5.7.21.9 City of San Diego

Current treatment processes, pollution controls, and/or BMPs throughout the La Jolla ASBS City-wide practices, such as street sweeping, storm drain cleaning, and education/outreach efforts, are implemented in the ASBS watershed. Five of the City's 17 ASBS discharge points are currently outfitted with low-flow diversion devices, and additional diversions are planned. The City is currently planning specific ASBS water quality strategies in conjunction with Coastkeeper and SIO as part of the Prop 50 and "Consolidated Grant" grant program.

5.7.21.10 City of Newport Beach

The City is employing three tactics to reduce the discharge of pollutants to the Robert E. Badham ASBS which include: avoidance transport of pollutants (transport prevention), minimize sources of pollutants (source control), and mitigate (treatment control).

5.7.21.11 City of Laguna Beach, Heisler Park ASBS

At the Heisler Park ASBS, the City of Laguna Beach has several pollution prevention measures and water quality management plans in place. The City plans to increase infiltration of storm water through land development requirements and implementation of Municipal Storm Water Permit Standard Urban Storm Water Mitigation Plan (SUSMP) requirements. Additional efforts include a city ordinance ban on smoking at public beaches and trash and grease control measures. Source control measures include street sweeping, pet waste management, pesticide management, illicit discharges, and commercial inspections. Treatment control management measures include dry weather diversion of municipal storm drains that discharge directly to the ASBS, storm water filtering of municipal storm drains that discharge directly to the ASBS, and implementation of BMPs under the NPDES Municipal Separate Storm Sewer Systems (MS4) Permit Programs.

Dry weather flow efforts include implementation of water conservation methods and implementation of effective enforcement Management Measures. The City has made water conservation mandatory within the Heisler Park ASBS drainage area and is enforcing over irrigation issues within the watershed.

The City of Laguna Beach has completed improvements to the sewer system by cleaning and televising the lines, and repairing defects to the lines in all high priority areas.

5.7.21.12 City of Malibu

Within the Laguna to Latigo ASBS, the City of Malibu waste discharge prevention and treatment activities include, but are not limited to, city ordinances, onsite wastewater treatment systems, illicit connection/illicit discharge elimination program, planning and construction of new development and redevelopment projects, street maintenance, public information through Malibu Current Quarterly Environmental News and other sources, and the Ocean Friendly Garden Program.

5.8. PESTICIDE APPLICATIONS IN ASBS

Table 5.8.1 (below) provides information taken from exception applications related to pesticide applications.

Table 5.8.1. Pesticides Applied by Applicants

ASBS	Applicant	Pesticide/Herbicide Use
2	Sea Ranch Association	Pesticides and Herbicides not used within the drainage study area
6	Trinidad Rancheria,	None used
	Trinidad City	None used
	Dept. of Parks and Rec.	Use of pesticides in park units is supervised by licensed applicators.
7	Humboldt County- Public Works Dept.	no information provided
	Dept. of Parks and Rec.	Use of pesticides in park units is supervised by licensed applicators.
8	U.S. Dept. of the Interior-redwood National State Parks	no information provided
	Dept. of Parks and Rec.	Use of pesticides in park units is supervised by licensed applicators.
	Dept. of Transportation (Del Norte County)	Garlon 4: 32 oz/acre; Pathfinder: 32 oz/acre; Roundup Pro: 64 oz/acre
9	Dept. of the Air Force	Stopped use in 2002
	Dept. of Parks and Rec	Use of pesticides in park units is supervised by licensed applicators.
	County of San Mateo	None used on land that drains into the ASBS
11	Marin County- Dept. of Public Works	unknown, personal/private property use only
11,12	Point Reyes National Seashore	Integrated Pest Management (IPM)
19	Pacific Grove City- Public Works Dept.	Pesticides and Herbicides used: Fusalade II; 0.4 to

ASBS	Applicant	Pesticide/Herbicide Use
		0.6 ounce/1000 sq. ft
		Roundup pro; 1.6 % sol'n, spot spray 1.6 gallon/100 gal water
		Pendulum; 40 lb bag per 1/5 acre, 100 to 200 lb/ acre
		Turflon Ester; 1/2 to 1 quart/acre
		Garlon 4; 1 to 8 quarts/acre
		Surflan; 1.5 to 8 quarts/acre
		Rodeo; 3/4 to 1.5 % sol'n, spot spray
		Pro Spreader Activator; Non-ionic surfactant, 2-8 ounces/100 gal water
21	U.S. Dept. of the Navy	Herbicides and pesticides used /year at SNI (in gallons)
		Roundup: 8 gallons Garlon: 6 gallons
		Termador: 0.5 (diluted) Suspend: 0.75 (diluted)
23	U.S. Dept. of the Navy	Herbicides used in 2005 (gallons): Roundup, 45; Garlon, 15
		Previously used herbicides: Rodeo, Pathfinder
24	Los Angeles County- Dept. of Public Works	no information provided
	Malibu City-Public Works	no information provided
	Dept. of Transportation	Endurance: 32 oz/acre
		Manage: 1 oz/acre
		Oust: 2 oz/acre
		Pathfinder: 128 oz/acre
		Pro-Spreader: 4 oz/acre
		Reward: 64 oz/acre
		Roundup Pro: 96 oz/acre; 128 oz/acre
		Telar: 1 oz/acre
		Transline: 8 oz/acre
		Fusilade II T&O: 24 oz/acre
		Gallery 75DF: 16 oz/acre
		Embark 2-S: 64 oz/acre
		Dimension Ultra 40WP: 24 oz/acre
		Montar: 224 oz/acre
	Dept. of Parks and Rec.	Use of pesticides in park units is supervised by licensed applicators.
25	Santa Catalina Island Company	None used
28	Connolly Pacific Company	no information provided
29	San Diego City	Rodeo and Roundup applied on an as-needed, ad hoc basis

ASBS	Applicant	Pesticide/Herbicide Use
		Rodeo and Roundup applied prior to street resurfacing
30	Laguna Beach City	Fertilizers: Turf Supreme, Gro Power Plus, Grow More
		Pesticides/Herbicides: Roundup Pro, Fusilade II, Metaldyhyde 7.5,

5.8.1 – Exception Application Water Chemistry Data

Applicants applying for an exception to the Ocean Plan supplied sampling data from various waterbody types. This data, along with pertinent data from other sources (e.g., data from other storm water discharges already operating under an exception or samples collected by State Water Board staff) were assessed. Data for Ammonia (NH_3), Arsenic (As), Cadmium (Cd), Chromium (Cr), Copper (Cu), Lead (Pb), Mercury (Hg), Nickel (Ni), Selenium (Se), Silver (Ag), Zinc (Zn), and Polynuclear Aromatic Hydrocarbons (PAH) are provided in Appendix 2 for discharges, receiving water, ocean waters away from discharges (i.e., background) and coastal streams draining in to ASBS. These data may be compared to the objectives for metals and ammonia in the California Ocean Plan Table B, shown in Table 5.8.2 (below). The Ocean Plan Table B 30 day average objective for PAHs is 0.0088 µg/L. In addition, a separate PAH, fluoranthene, has an individual 30 day average objective of 15 µg/L. However, the PAH objectives are provided in the Ocean Plan for human health (bioaccumulation/seafood consumption) and not for marine aquatic life protection.

Table 5.8.2. California Ocean Plan Table B Objectives

Constituent	Inst. Max.	Daily Max.	6 Mo. Median
Arsenic	80 µg/L	32 ug/L	8 ug/L
Cadmium	10 µg/L	4 ug/L	1 ug/L
Chromium	20 µg/L	8 ug/L	2 ug/L
Copper	30 µg/L	12 ug/L	3 ug/L
Lead	20 µg/L	8 ug/L	2 ug/L
Mercury	0.4 µg/L	0.16 ug/L	0.04 ug/L
Nickel	50 µg/L	20 ug/L	5 ug/L
Selenium	150 µg/L	60 ug/L	15 ug/L
Silver	7 µg/L	2.8 ug/L	0.7 ug/L
Zinc	200 µg/L	80 ug/L	20 ug/L
NH_3N	6,000 µg/L	2400 ug/L	600 ug/L

Ammonia nitrogen concentrations in receiving water and discharges ranged from 0.01 to190 mg/L (10 to 190,000 µg/L), with a median of 0.2 mg/L (200 µg/L). The highest concentration was from storm runoff from a roof at the Monterey Bay Aquarium (which is not addressed as a party in this exception but has applied for an individual exception.)

This high concentration may be due to gull and other bird droppings. The next highest concentration was 81.9 mg/L (81,900 µg/L) at the Pillar Point Air Force Base, which is a facility to be covered under this exception.

Table 5.8.3 provides the number of samples for copper, lead, nickel, zinc, and PAH for each sample category. It is important to note that while most of the data represented grab samples, a few data points represent composite sampling.

Table 5.8.3. Number of Samples Collected by Category and Constituent

Constituent	Waterbody Category	Number (n)
Copper	*Stream*	16
	Ocean Background Water	9
	Discharges	154
	Ocean Receiving Water	58
Lead	*Stream*	15
	Ocean Background Water	9
	Discharges	144
	Ocean Receiving Water	61
Nickel	*Stream*	15
	Ocean Background Water	9
	Discharges	128
	Ocean Receiving Water	58
Zinc	*Stream*	15
	Ocean Background Water	9
	Discharges	143
	Ocean Receiving Water	58
PAH	*Stream*	12
	Ocean Background Water	10
	Discharges	43
	Ocean Receiving Water	23

The data was assessed using SYSTAT software. Non-detects in the data set were converted to the numeric values of the detection limits in order to perform the statistical analysis. Generally, most of the baseline data was not normally distributed and exhibited high variability for most constituents and categories.

The following figure displays the data distributions for copper, lead, nickel, and zinc.

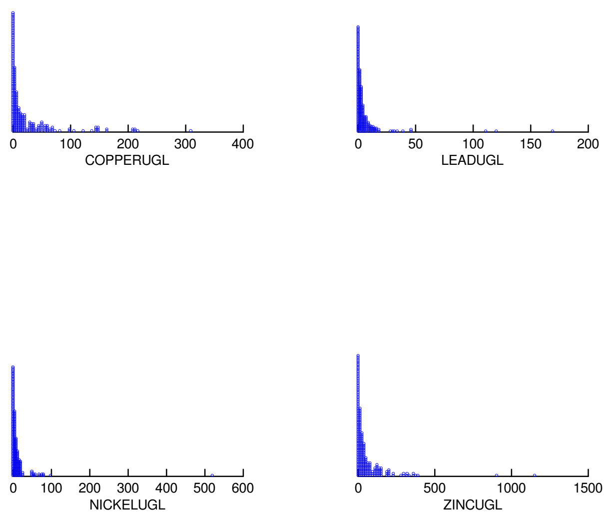

Figure 5.8.1. Data Distributions for Copper, Lead, Nickel, and Zinc.

Based on the skewed nature of the data, a log transformation was performed and "box and whiskers" graphs are provided below to present the data.

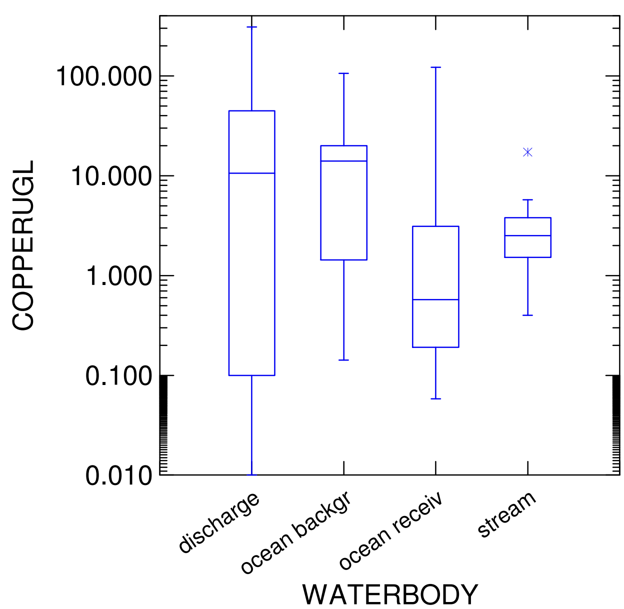

Figure 5.8.2. Copper

The median copper concentration for discharges was 10.6 μg/L and the maximum concentration was 309 μg/L. Seventy-five percent (75%) of the discharge results for copper were below 44.7 μg/L.

Ocean receiving water had a median value of 0.57 μg/L and the maximum concentration was 122 μg/L. Seventy-five percent (75%) of the copper results in the samples were below 3.1 μg/L and 90% are below 26.81 μg/L. The Ocean Plan six-month median is 3.0 μg/L for copper, and the instantaneous maximum is 30 μg/L.

Although based on only nine samples, copper data for ocean waters away from the discharge ("background") was elevated and variable. The median copper concentration in background waters was 14.0 μg/L. This indicates the possibility that ASBS waters may have elevated copper concentrations from sources other than direct discharges such as developed watersheds, even those outside of the ASBS boundaries. Streams draining to ASBS had a median copper concentration of 2.5 μg/L, which is lower than the median copper level in discharges.

Copper is a common constituent in urban runoff and is leached from anti-fouling coatings on vessel hulls. Copper at high levels (above the Ocean Plan standards) is toxic to critical life stages of marine life including the brown alga *Macrocystis pyrifera,* and echinoderms. According to a review by Saiz (1996) the mean no effects concentration (NOEC) for giant kelp gametophyte growth is 16.7 μg/L, and for sea urchin fertilization it is 9.1 μg/L (see Table 5.8.4.).

Table 5.8.4. Data derived from a Comparison of Critical Life Stage Bioassays Performed by Several Different Laboratories

Test Species	Mean NOEC μg/L	st. dev.
Giant Kelp (*Macrocystis pyrifera* gametophyte growth)	16.7	3.4
Giant Kelp (*Macrocystis pyrifera* gametophyte fertilization)	36.2	14.7
Sand Dollar (*Dendraster excentricus* fertilization	11.6	3.4
Purple Sea Urchin *Strongylocentrotus purpuratus* fertilization)	9.1	4.0

In abalone, copper accumulates in the gill, digestive gland, and foot muscle. The gill is the primary site of copper accumulation and toxicity, while the foot and adductor muscles are secondarily impacted. Mucus accumulation or cytological damage at the gill from the accumulation of copper inhibits sufficient oxygen delivery to the muscles. Since their survival is dependent on adherence to rock surfaces, a reduction of muscle function could be fatal. In addition, abalone exposed to copper may develop asphyxial hypoxia (Viant, Walton, TenBrook, Tjeerdema 2001). Giant kelp, abalone, and echinoderms are present in ASBS.

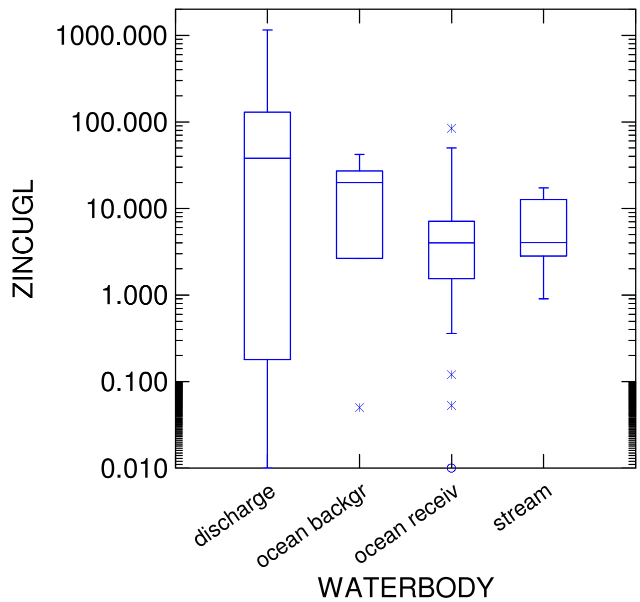

Figure 5.8.3. Zinc

Zinc is another common constituent in urban runoff and is also discharged from vessel hulls (zinc sacrificial anodes). Zinc concentrations were higher in discharges than in the other categories. The median zinc concentration for discharges was 38.0 µg/L and the maximum concentration was 1,150 µg/L. Seventy-five percent (75%) of the discharge results for zinc in the discharges category were below 129.75 µg/L.

Ocean receiving water had a median concentration value of 4.009 µg/L and the maximum concentration was 84.2 µg/L. Seventy-five percent (75%) of the zinc results in the samples were below 7.1 µg/L and 90% were below 30.62 µg/L. The Ocean Plan six-month median is 20 µg/L and the instantaneous maximum is 200 µg/L.

Although based on only nine samples, zinc data for background waters were somewhat elevated. The median zinc concentration in background waters was 20.0 µg/L and the maximum concentration was 42 µg/L. This again indicates the possibility that ASBS waters may have elevated zinc concentrations from sources other than direct discharges. Streams draining into ASBS had a median zinc concentration of 4.046 µg/L, which is lower than the median zinc level in discharges.

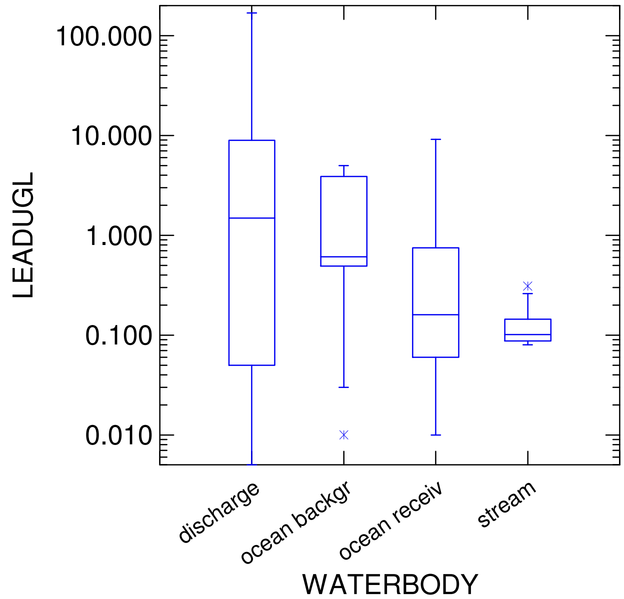

Figure 5.8.4. Lead

Lead concentrations were again higher in discharges category. The median lead concentration for discharges was 1.495 µg/L and the maximum concentration was 169 µg/L. Seventy-five percent (75%) of the discharge results for lead in discharges were below 8.95 µg/L.

Ocean receiving water had a median concentration value of 0.16 µg/L and the maximum concentration was 9.14 µg/L. Seventy-five percent (75%) of the lead results in samples were below 0.751 µg/L and 90% were below 5.0 µg/L. The Ocean Plan six-month median is 2 µg/L and the instantaneous maximum is 20 µg/L.

Although based on only nine samples, lead data for background waters were slightly elevated. The median lead concentration in background waters was 0.607 µg/L and the maximum concentration was 5.0 µg/L. This again indicates the possibility that ASBS waters may have elevated lead concentrations from sources other than direct discharges, such as developed watersheds, even those outside of the ASBS boundaries. Streams draining into ASBS had a median lead concentration of 0.101 µg/L, which is lower than the median lead level in discharges.

One source of lead toxicity found in the environment is anthropogenic activity, including old plumbing found in houses built before 1986. However, even new homes that claim to have “lead-free” plumbing may still contain up to eight percent lead (EPA, 2006). Lead may also be found naturally in the environment. Lead binds to sediment particles in aquatic environments and does not accumulate in fish, but does in some shellfish and mussels (EPA, 2006).

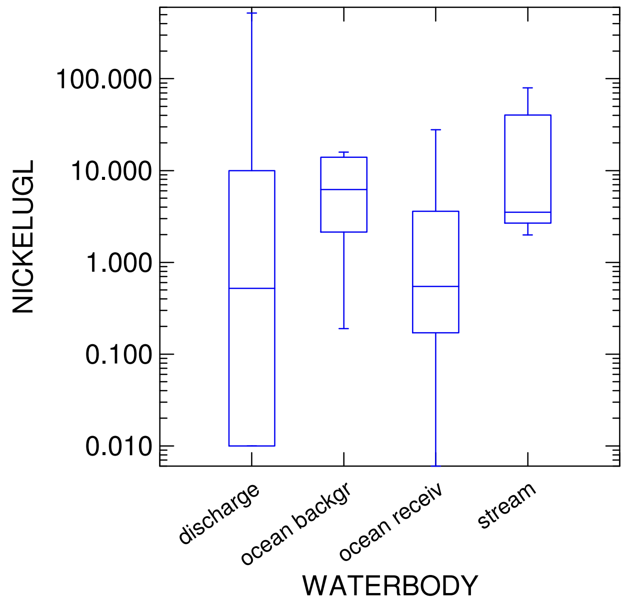

Figure 5.8.5. Nickel

Nickel concentrations were again higher in the discharges category. The median nickel concentration for discharges was 0.52 µg/L, but the maximum concentration was 520 µg/L. Still, 75% of the discharge results for nickel in discharges were below 9.94 µg/L.

Ocean receiving water had a median concentration value of 0.547 µg/L and the maximum concentration was 27.9 µg/L. Seventy-five percent (75%) of the nickel results in samples were below 3.6 µg/L and 90% were below 14.26 µg/L. The Ocean Plan six-month median is 5 µg/L and the instantaneous maximum is 50 µg/L.

Although based on only nine samples, nickel data for background waters were slightly elevated. The median nickel concentration in background waters was 6.2 µg/L and the maximum concentration was 15.9 µg/L. This again indicates the possibility that ASBS waters may have elevated nickel concentrations from sources other than direct discharges, such as developed watersheds, even those outside of the ASBS boundaries.

Streams draining into ASBS had a median nickel concentration of 3.5 µg/L, which is higher than the median nickel level in discharges. Therefore, some component of the nickel in the discharges may be from natural geologic sources.

Nickel has adverse effects on aquatic life such as bacteria, protozoans, mollusks, crustaceans, echinoderms, fishes, amphibians, etc. (Eisler, 1998). Nickel is sometimes found in anthropogenic discharges from mining, industrial, and urban areas. Natural sources of nickel primarily stem from certain minerals (e.g., chalcopyrite, pyrrhotite, pentlandite, garnierite, niccolite, zaratite, and millerite) (EPA nickel, 2006).

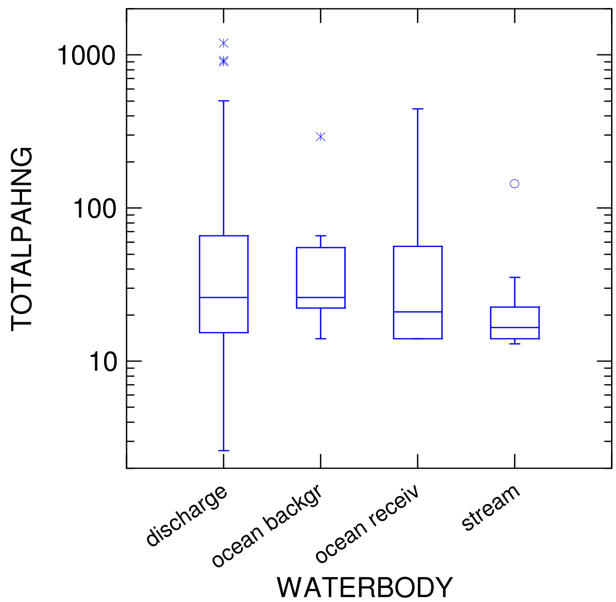

Figure 5.8.6. Ocean Plan PAH

For purposes of recording and assessing PAH data, fluoranthene was combined with the other Ocean Plan PAH compounds. Median and 75th percentile PAH values for discharges, receiving water, and background waters were all somewhat similar. Streams had a similar median level, but a lower 75th percentile value. The discharge PAH concentrations displayed the most variability, with many outliers. Maximum values were much higher for discharges. (It should be noted that the City of San Diego's PAH data was not included in the graph because their Method Detection Limit was measured in micrograms per liter rather than nanograms per liter, thus making all reported levels "Non-Detect" without actual reported levels.)

PAHs may be found in crude oil and petroleum products, and also as a result from the combustion of hydrocarbons. PAHs are known constituents in storm water discharges. The sealcoat found on the surfaces of asphalt, especially parking lots, are a huge source of PAHs found in the environment (USGS PAHs, 2007). The sealcoat can flake off from cars driving on it and then be washed away by rain or erosion into natural bodies of water. Other sources of PAHs include dyes, plastics, and pesticides (EPA PAHs, 2006). PAHs can also bind to sediments in aquatic environments; this leads to problems in these ecosystems that include: inhibited reproduction, delayed emergence, sediment avoidance, and mortality in aquatic invertebrates (USGS PAHs, 2007).

Based on the available results, 11 ASBS did not have metal concentrations in receiving water or discharges above the instantaneous maximum objectives. However, seven did have receiving water or discharge levels above the instantaneous maximum objectives. At the Heisler Park ASBS, the City of Laguna Beach reported elevated levels of copper at a storm drain flow (high reading of 36 µg/L). At the La Jolla ASBS, the City of San Diego reported five elevated levels of copper (high reading of 81.2 µg/L) in storm drain samples taken. At Laguna Point to Latigo Point, the County of Los Angeles reported elevated levels of chromium at four locations (high reading of 97 µg/L) and copper at four locations (high reading of 81.2 µg/L) in storm drain samples taken.

The City of Pacific Grove and Hopkins Marine Laboratory reported elevated levels of zinc at one location (high reading of 201µg/L), copper at two locations (high reading of 69.2 µg/L), mercury at one storm drain was 0.72 µg/L. (While mercury was elevated, the sampling procedures might not have been adequate to avoid sample contamination. Therefore, the mercury results may or may not be relevant, but are reported anyway.)

At SCI, the Department of Defense, US Navy, reported elevated levels of arsenic at two locations (high reading of 87 µg/L), chromium at seven locations (high reading of 1,010 µg/L), copper at fifteen locations (high reading of 309 µg/L), lead at six locations (high reading of 169 µg/L), nickel at five locations (high reading of 520 µg/L), zinc at six locations (high reading of 1150 µg/L), and mercury at one location (high reading of 0.6 µg/L) in storm drain samples taken. (Again, while reported here, there is some question regarding the adequacy of sampling techniques for mercury.)

At Northwest Santa Catalina Island, the Santa Catalina Island Company reported elevated levels of chromium at two locations with a high reading of 43.8 µg/L in storm water runoff. At Southeast Santa Catalina Island, the Connelly-Pacific Company reported elevated levels of copper at three locations (high reading of 40.5 µg/L), and nickel at one location (high reading of 54.00 µg/L) in storm water runoff.

Sea otters and other marine wildlife inhabit certain ASBS. Recently sea otters, which inhabit the ASBS along the Central Coast, have been affected by disease and contaminants. Disease is responsible for roughly 40 percent of the deaths; a rate that is relatively high when compared to disease-caused deaths in other wild predators (USGS 1999). The most frequent infectious disease identified has been toxoplasmosis. *Toxoplasma gondii*, a protozoan disease spread by cat feces, causes inflammation of the brain. Other disease-causing agents have also been identified. The sources of *T. gondii* are terrestrial and may be linked to wastewater treatment plant discharges and/or storm water discharges (SWRCB 2006). Coliform and *Enterococcus* bacteria provide an indication of the presence of fecal contamination, and some part of that fecal contamination may be from domestic animals. For some ASBS, discharge samples were analyzed for indicator bacteria (fecal coliform, total coliform, and enterococci). For fecal coliform, there was a minimum concentration of 1.1 MPN/100 mL, a median of 1,600 MPN/100 mL, and a maximum of 72,699 MPN/100 mL. For total coliform, there was a minimum concentration of 1.1 MPN/100 mL, a median of 4,673 MPN/100 mL, and a maximum of 160,000 MPN/100 mL. For enterococci, there was a minimum concentration of 1.1 MPN/100 mL, a median of 1,702 MPN/100 mL, and a maximum of 92,080 MPN/100 mL.

5.8.2 – Exception Application Toxicity Data

Toxicity tests evaluate the biological response of organisms to the effluent and measure the acceptability of waters for supporting a healthy marine biota. Acute aquatic toxicity tests result in endpoint referred to as a “lethal dose 50” (LC50). The LC50 is the dose that produces mortality in 50% of the test organisms. A high LC50 value indicates low acute toxicity and a low LC50 indicates high toxicity. “Toxicity Units Acute” (TUa) are inverses of the LC50s and are calculated by dividing 100 by the LC50 resulting from a 96-hour toxicity test. High TUa values indicate high toxicity. The Ocean Plan daily maximum objective is 0.3 TUa for acute toxicity.

Samples at various ASBS were measured for acute toxicity in storm water runoff. Eleven samples of storm water runoff were tested for acute toxicity to fish, and many exhibited acute toxic at only moderate levels at or below 1.0 TUa; the most toxic was at the James V. Fitzgerald ASBS with a TUa for two discharge samples of 1.0. Most storm water runoff was not acutely toxic to crustaceans (mysids). However, eight out of 18 samples did exhibit moderate levels of acute toxicity to mysids. The highest acute toxicity to mysids was found in two samples from the City of Pacific Grove runoff discharges into Pacific Grove ASBS, with both samples having a TUa of 1.0.

Thirty six (36) samples of ocean receiving water near storm runoff were also measured for acute toxicity to fish and/or mysids. Half of these samples exhibited no acute toxicity, with the other half exhibiting only slight or moderate acute toxicity. Of these receiving water samples the most toxic of these were at La Jolla ASBS, where two samples had an LC50 for mysids of >75% (95% survival in 65% concentration, 1.33 TUa). One sample of ocean background water offshore of the La Jolla ASBS also displayed slight acute toxicity, with an LC50 for mysids of >75% (1.33 TUa).

Regarding chronic toxicity, the “No Observed Effect Level” (NOEL) is the highest concentration of effluent or receiving water that causes no observable adverse effects on the test organisms in a critical life stage bioassay. NOELs of 100 percent indicate that there was no observed toxicity; NOELs less than 100 percent indicate increasing toxicity with decreasing percent concentration. “Toxicity Units Chronic” (TUc) are inverses of the NOELs and are calculated by dividing 100 by the NOEL resulting from a critical life stage toxicity test. High TUc values indicate high chronic toxicity. The Ocean Plan daily maximum objective is 1.0 TUc for chronic toxicity. The results of chronic toxicity tests on critical life stages of marine life are more sensitive than acute toxicity results and are therefore more informative for purposes of evaluating ASBS discharges.

Samples at various ASBS were tested for chronic toxicity in storm water runoff. Only one (1) of the 35 runoff samples exhibited slight chronic toxicity to fish. However, invertebrates and kelp displayed more sensitivity to runoff samples. Twenty one (21) out of 29 samples exhibited chronic toxicity to giant kelp greater than the Ocean Plan objective of 1.0 TUc, with the highest values of ≥16 TUc at Trinidad Head, Carmel Bay, Laguna Point to Latigo Point, and La Jolla ASBS. Twelve (12) out of 15 samples exhibited some chronic toxicity to mysids greater than the Ocean Plan objective of 1.0 Tuc, with the highest chronic toxicity (>16 TUc) at Heisler Park ASBS. Twelve (12) out of 12 samples exhibited chronic toxicity to sea urchins greater than the Ocean Plan objective of 1.0 TUc, with seven samples exhibiting the highest chronic toxicity of 32.0 TUc. Mollusks appeared to have sensitivity to runoff, with five (5) out of six (6) runoff samples tested with bivalves having TUc > 1.0 and the two (2) samples of runoff tested with abalone both had TUc > 1.0, (2.0 and 4.0, TUc, both Carmel Bay ASBS).
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Thirty nine (39) samples at various ASBS were also tested for chronic toxicity to various species in ocean receiving water. Only two (2) 0out of 38 samples exhibited chronic toxicity to fish greater than the Ocean Plan objective of 1.0 TUc, with the highest chronic toxicity (4.0TUc) at Northwest Santa Catalina Island ASBS at the Isthmus Cove. Ten (10) out of 33 samples exhibited chronic toxicity to giant kelp greater than the Ocean Plan objective of 1.0 TUc, with the highest values of 8.0 TUc at Carmel Bay ASBS (Stillwater Cove Pier) and 16.0 TUc at La Jolla ASBS. Only two (2) out of nine (9) samples exhibited slight chronic toxicity to mysids just above the Ocean Plan objective of 1.0 Tuc. Five (5) out of eleven (11) samples exhibited chronic toxicity to sea urchin fertilization greater than the Ocean Plan objective of 1.0 TUc; notably two samples, at Northwest Santa Catalina Island ASBS at Isthmus Cove were very toxic with ≥16.0 TUc. Two (2) out of nine (9) receiving water samples tested with bivalves had TUc > 1.0, and none of the two samples of receiving water tested with abalone exhibited chronic toxicity.

5.8.3 - ASBS Application Water Quality Data – Staff Conclusions

It is clear that ASBS discharges generally contain some concentrations of anthropogenic waste. However, it appears that a majority of the ASBS waste discharges exhibited metal concentrations below instantaneous maximum objectives, and a majority of ASBS receiving waters had concentrations of ocean plan metals below the six-month median objective for the protection of marine aquatic life. While most of the discharge samples exhibited chronic toxicity to marine life, the majority of the receiving water samples met the daily maximum chronic toxicity objective. Based on its review of the above baseline chemistry and toxicity data, there is ample evidence to support an Ocean Plan exception for nonpoint source and storm water discharges, but only if such discharges are properly controlled to better maintain natural water quality in ASBS.

Still, a number of discharges had elevated metals and PAH concentrations, and exhibited toxicity, and a few receiving water samples were in violation of Ocean Plan objectives. The testing described above generally had very little replication. This indicates that current waste concentrations are temporally and/or spatially variable. In other words, a given waste discharge may meet objectives at least some of the time, but not necessarily all of the time; some other waste discharges definitely do not have adequate BMPs to prevent violation of objectives all of the time, as displayed by some of the minority samples described above. Therefore, BMPs should be designed and implemented to insure maintenance of natural water quality in ASBS receiving water during design storms. The adoption of Special Protections will reduce wastes in discharges to achieve and maintain natural water quality in ASBS. In addition, discharges and receiving water must be adequately monitored to insure compliance with the Special Protections, based on the range of natural water quality conditions at approved reference stations.

The background (away from the direct discharges) ocean water quality data indicated a majority of samples exhibited concentrations of certain metals above the Ocean Plan six month medians. This may be due to the small sample size, but some of the results may be inaccurate due to inadequate methods. Another possibility is that these elevated levels are real and represent pollution from indirect and possibly distant watershed sources. It is important to remember that these “background” ocean water samples were not approved reference sites (SCCWRP 2010) and therefore do not represent “natural water quality. ”Should post-exception sampling indicate that some ASBS have background water quality at levels above natural water quality, then further assessment should be performed to identify and control the sources where feasible.

As noted above there was a large variance in the data set. Some part of these large data ranges may represent true variability in the environment. However, staff believes that there was also a fair amount of inconsistency in the applicants’ sampling and analysis methodology, which may have contributed somewhat to the variance of the exception application results as well. Regional monitoring programs, with consistent methodology and statewide compatibility, were therefore employed to improve data quality and utility.

5.8.4 - ASBS Regional Monitoring

As described above, a better approach for future ASBS monitoring would be to take a collaborative and coordinated regional approach. Therefore, staff requested the Southern California Coastal Water Research Project to assist, with stakeholder participation, in developing a scientifically sound regional monitoring approach. The goal of this monitoring program is to answer three questions:

- What is the range of natural water quality at reference locations?
- How does water quality along ASBS coastline compare to the natural water quality at reference locations?
- How does the extent of natural quality compare among ASBS with or without discharges?

It was agreed that the regional programs would focus on ASBS ocean water quality. Marine samples would also be collected at reference watershed conditions to answer question number one. Reference conditions were determined as follows:

- At the mouth of a watershed with limited anthropogenic influences and with no offshore discharges in the vicinity.
- Limited anthropogenic influence is defined as a minimum of 95% open space. Preferably, the few anthropogenic sources in a reference watershed will be well attenuated (e.g., natural space buffers between a highway and the high tide line).
- There should be no 303(d) listed waterbodies either in the reference watershed or in the coastal zone.

In the 2007-2008 winter season, a pilot study (SCCWRP 2009) was performed on potential reference sites. Table 5.8.5 provides average results and data ranges for all potential reference site samples:

Table 5.8.5. Statewide Pilot Study Potential Reference Sites Average Results and Data Ranges for All Samples Winter Season 2007-2008

Constituent	Units	All Sites n = 8
TSS	mg/L	40.8 (2.3 - 180)
Ammonia	mg/L	0.02 (ND - 0.04)
Nitrate	mg/L	0.02 (ND - 0.06)
Nitrite	mg/L	0.005 (ND - 0.01)
Phosphorus	mg/L	0.19 (ND - 1.13)
Chromium	µg/L	0.87 (0.1 - 3.17)
Copper	µg/L	0.86 (ND - 2.76)
Lead	µg/L	0.98 (ND - 4.65)
Nickel	µg/L	1.53 (ND - 4.58)
Zinc	µg/L	2.13 (ND - 9.37)
Total PAH	µg/L	0.081 (0.001 - 0.444)
Total DDT	µg/L	ND
Total PCB	µg/L	ND
Toxicity Assay	% fertilization	96.8 (92 - 99)

It is clear from the above information (Table 5.8.5.) that the mean values for ammonia and metals were below Ocean Plan six-month medians objectives. The only constituents with maximum values slightly above the six month medians were chromium and lead; in the case of chromium the objective is based on hexavalent chromium, and the chromium value presented above was for total chromium. PAHs were present but are known to be naturally present in watersheds and submarine geological features. Most importantly there were no detectable levels of the synthetic pollutants DDT and PCB in the samples. Although there was a small sample size, and this work only represents one winter season, this first year pilot study may give us a good picture of nearshore ocean natural water quality.

Not all of the eight samples were collected when surface stream runoff entered ocean waters. However when comparing samples with surface drainage influence and with samples when no drainage was occurring, the average values for metals and PAH was slightly higher when there was no drainage. This indicates a likelihood that stream runoff provides some reduction of metal and PAH concentration due to natural dilution.

Table 5.8.6. Statewide Pilot Study Potential Reference Sites Regional Comparison of Potential Reference Stations

Constituent	Units	North Coast n = 1	Central Coast n = 2	South Coast n = 2
TSS	mg/L	12.3	5.35 (2.3 - 8.4)	34.5 (21.7 - 47.2)
Ammonia	mg/L	0.03	0.02 (ND - 0.04)	0.015 (ND - 0.03)
Nitrate	mg/L	0.06	0.01	0.005 (ND - 0.01)
Nitrite	mg/L	0.01	ND	0.005 (ND - 0.01)
Phosphorus	mg/L	ND	ND	0.016 (ND - 0.032)
Chromium	µg/L	1.12	0.11 (0.1 - 0.12)	0.76 (0.6 - 0.92)
Copper	µg/L	1.07	0.31 (ND - 0.62)	0.91 (0.28 - 1.54)
Lead	µg/L	0.15	0.20 (ND - 0.39)	1.11 (0.51 - 1.71)
Nickel	µg/L	1.56	0.66 (ND - 1.31)	1.88 (0.53 - 3.23)
Zinc	µg/L	ND	0.77 (0.1 - 1.45)	2.56 (2.44 - 2.69)
Total PAH	µg/L	0.003	0.003 (0.001 - 0.004)	0.018 (0.012 - 0.024)
Total DDT	µg/L	ND	ND	ND
Total PCB	µg/L	ND	ND	ND
Toxicity Assay	% fertilization	98	96.5 (96 - 97)	95.5 (92 - 99)

One concern voiced by stakeholders is that there may be differences in natural water quality in different regions of the state. Table 5.8.6. represents a regional comparison of the potential reference station results. There were only slight differences between regions with regard to individual constituents, but there are no clear trends overall. This may be due to the small sample size, so additional work should be performed regionally.

The State Water Board funded a statewide monitoring program during the winter of 2008-09 to assess water quality in ASBS near and far from direct discharges. Over 100 chemical constituents and toxicity were measured from 62 sites using a probabilistic study design; roughly half of sites were sampled in the ocean directly in front of a direct discharge into an ASBS and the other half were located in the ocean greater than 500 m from a direct discharge. Sample sites greater than 500 m from direct discharges may be influenced by other watershed drainages either into or outside of the ASBS, and therefore may represent background but not necessarily natural conditions. Samples at each site were collected less than 24 hr before rainfall and again less than 24 hr after rainfall. Ocean receiving water sites were sampled at most mainland ASBS in California.

The statewide survey illustrated generally good chemical water quality in mainland ASBS sites (Table 5.8.6). None of the constituents exceeded the instantaneous maximum objective in the California Ocean Plan. Seven constituents did not exceed the Ocean Plan's six month median or 30 day average (depending on the specific constituent) including strictly synthetic anthropogenic chemicals such as DDTs or PCBs.

Six constituents (arsenic, cadmium, copper, lead, nickel and zinc) exceeded the six month median but only for relatively small (< 15%) portions of mainland ASBS shoreline. Many of these constituents are common in urban stormwater, but also have natural sources. The lack of excessive chemical contamination in ASBS receiving waters was supported by infrequent (<5% of ASBS shoreline) chronic toxicity to a California endemic species (the purple sea urchin, *Strongylocentrotus purpuratus*).

There were two constituents, chromium and polycyclic aromatic hydrocarbons (PAHs), that exceeded Ocean Plan objectives over relatively large proportions of ASBS shoreline. Chromium exceeded objectives over 50% of ASBS mainland shoreline miles and PAHs exceeded objectives over 87% (Table 5.8.7.). The extent of Ocean Plan exceedence for these two constituents was similar near and far from discharges following storm events, and exceedances of the standards was similar between pre-storm and post-storm conditions near discharges. [9]

Both chromium and PAHs have natural and anthropogenic sources. The chromium objective is based on the more toxic form, hexavalent chromium, but total chromium was analyzed for the statewide probabilistic study. Chromium is a natural product of erosion including that from metamorphic rock, and there is no reason to believe that natural rock erosion products contain significant hexavalent chromium. Also, as mentioned previously, there are natural sources of PAHs (including hydrocarbon seeps, wildfires and plants) and direct atmospheric is another possible source. Furthermore, the objective for PAH is based on human health through bioaccumulation in seafood, and not on the protection of marine aquatic life. Since exceedences were similar between pre-storm and post-storm conditions near discharges, the sources of elevated PAHs may not only be storm related, and may include coastal and beach sediment.

[9] Report to the State Water Resources Control Board, Summation of Findings, Natural Water Quality Committee, 2006-2009, September 1, 2010.

Table 5.8.7. Statewide Probabilistic Study Percent of ASBS shoreline that exceeded State Water Board Ocean Plan objectives following storm events.

	Ocean Plan Objective	% Shoreline Greater Than OP Objective: All ASBS	<500 m from Discharge	>500 m from Discharge
Ammonia-N[1]	0.6 mg/L	--	--	--
Arsenic[1]	8 ug/L	1.6	2.7	--
Cadmium[1]	1 ug/L	2.1	3.6	--
Chromium[1]	2 ug/L	50	61	35
Copper[1]	3 ug/L	6.9	4.8	9.8
Lead[1]	2 ug/L	4.8	--	11.5
Nickel[1]	5 ug/L	15	24	3
Silver[1]	0.7 ug/L	--	--	--
Zinc[1]	20 ug/L	3.8	6.5	--
HCH-lindanes[2]	8.0 ng/L	--	--	--
Chlordane[2]	0.023 ng/L	--	--	--
DDTs[2]	0.17 ng/L	--	--	--
Dieldrin[2]	0.04 ng/L	--	--	--
PAHs[2]	8.8 ng/L	87	85	89
PCBs[2]	0.019 ng/L	--	--	--

[1] 6-month median
[2] 30-day average

A collaborative ASBS effort was formed between several exception applicants, the State and Regional Water Boards, and SCCWRP in southern California as part of the Southern California Bight regional monitoring program (Bight'08). This study identified and sampled reference sites to measure natural water quality. Stakeholders agreed on reference site criteria that avoided anthropogenic sources by sampling in the surf zone at the mouth of streams located in watersheds having less than 90 % development. Reference site concentrations were then compared to concentrations measured near ASBS direct discharges. Similar to the statewide probabilistic survey described above, Bight'08 focused on wet weather.

Regional reference results had generally low concentrations of Ocean Plan constituents (Table 5.8.8) and a lack of chronic toxicity to sea urchin fertilization. Results were somewhat similar to the pilot reference study for most constituents, with the exception of total suspended solids (which was much higher in the Bight 08 study); this difference was likely due to the larger number of samples and different storm conditions in Bight 08. In the Bight 08 monitoring study, following storms, mean reference site concentrations for six out of eight Ocean Plan metals were at or below the six month median objective, with cadmium and lead having mean concentrations only slightly higher (less than 1.0 ug/L greater) than the objective. The maximum concentration for reference sites exceeded Ocean Plan objectives for seven metals (cadmium, chromium, copper, lead, nickel, silver and zinc). Maximum concentrations for four of these metals (cadmium, chromium, lead and silver) exceeded the daily maximum following storms, but none exceeded the instantaneous maximum. The mean concentration for PAHs at reference sites was also greater than the 30 day average objective. [10]

Table 5.8.8. Southern California Bight Study Minimum, maximum, median, and mean (± 95% confidence interval) of post-storm chemical concentrations at reference sites in the southern California Bight during 2009.

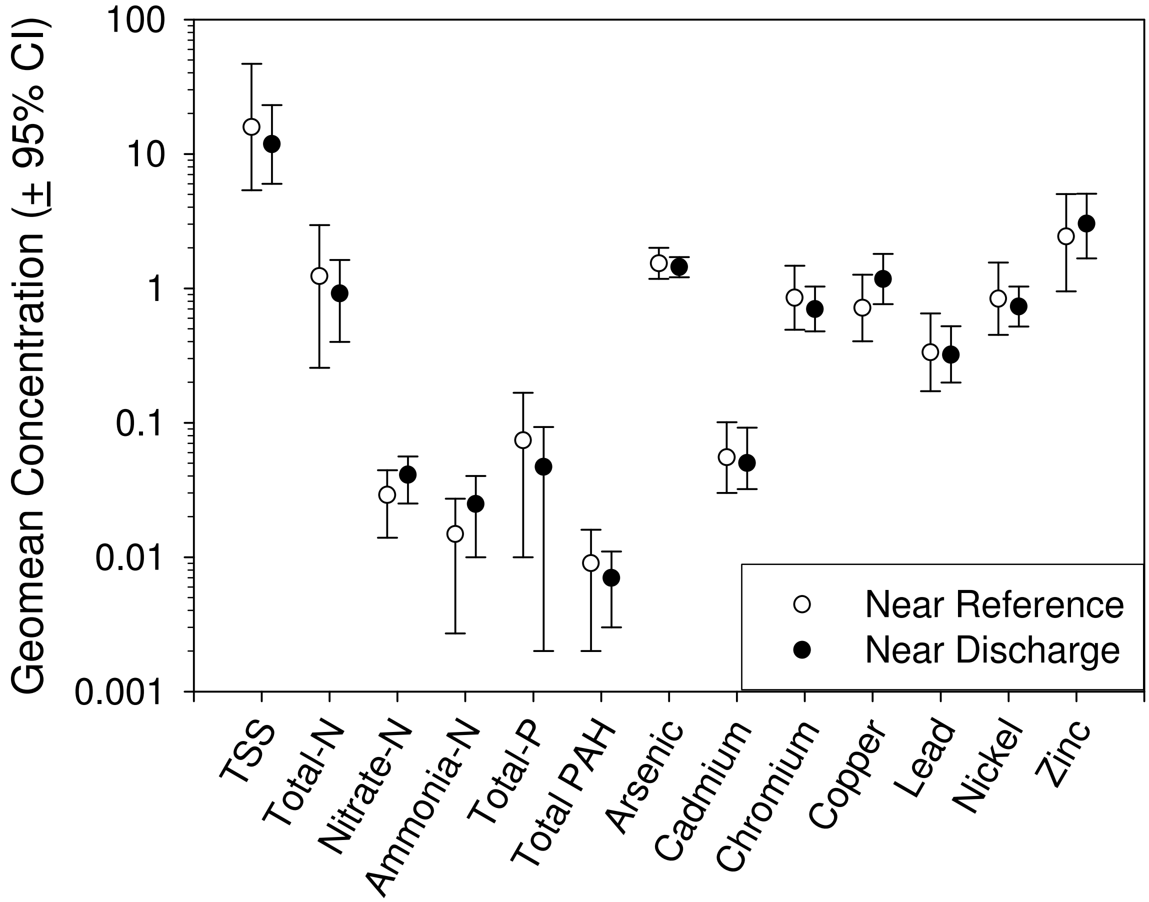
Parameter	Reference Site Concentrations							Ocean Plan Objective
	Units	%ND	Min	Median	Max	Mean	(±)95% CI	
TSS	mg/L	8	Nd	7.7	1692	140	171	-
Ammonia-N	mg/L	64	Nd	nd	0.05	0.01	0.01	0.6
Nitrate-N	mg/L	24	Nd	0.04	0.10	0.05	0.01	-
Nitrite-N	mg/L	88	Nd	nd	0.010	0.002	0.002	-
Total-P	mg/L	44	nd	0.05	0.59	0.08	0.05	-
Total-N	mg/L	65	nd	nd	7.0	0.9	0.7	-
Arsenic	ug/L	0	0.5	1.5	5.0	1.8	0.4	8
Cadmium	ug/L	4	nd	1.5	4.5	1.8	0.5	1
Chromium	ug/L	0	0.2	0.5	16.9	1.9	1.4	2
Copper	ug/L	0	0.05	0.5	6.1	1.1	0.6	3
Lead	ug/L	0	0.1	0.6	9.5	2.4	1.2	2
Nickel	ug/L	0	0.2	0.5	19	2.0	1.8	5
Silver	ug/L	76	nd	nd	6.0	0.7	0.8	0.7
Zinc	ug/L	24	nd	3.3	29	5.2	2.6	20
Total PAH	ng/L	16	nd	6.5	318	22	24	8.8

nd = not detected
95% CI = confidence interval
- = no objectives exist for this parameter

The results for ASBS discharge sites as a whole were generally similar to reference sites (Figure 5.8.7.) Mean concentrations at ASBS discharge sites following storm events were not significantly different from mean reference site concentrations for all constituents; however many for copper results at discharge sites were above the maximum reference site concentrations. In addition there were individual direct discharges with concentrations of certain other constituents that exceeded reference concentrations. For comparing discharge sites to a measure of natural water quality, a threshold level equivalent to the 85th percentile of the reference site post-storm concentrations was used. This 85th percentile level was chosen to represent natural water quality to eliminate uncertainty associated with outliers, thereby being protective of water quality.

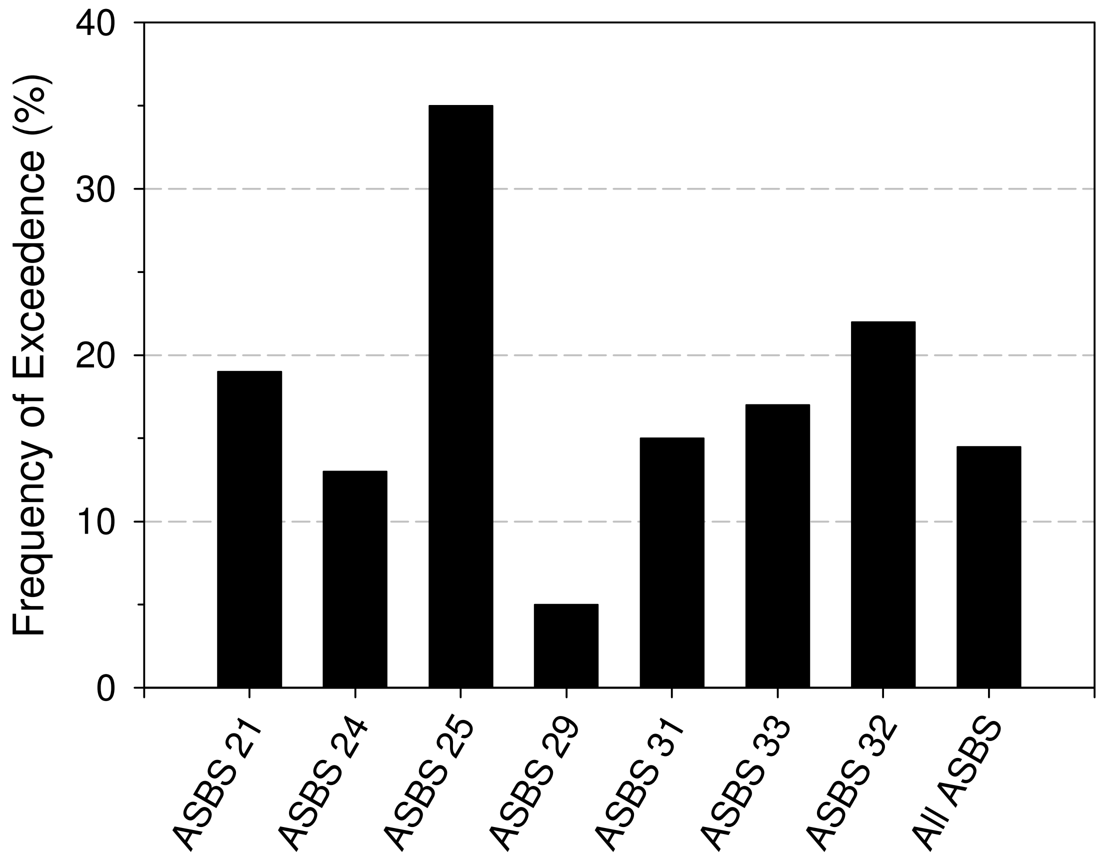
[10] Report to the State Water Resources Control Board, Summation of Findings, Natural Water Quality Committee, 2006-2009, September 1, 2010.

Figure 5.8.7. Southern California Bight Study Comparison of geometric mean (± 95% confidence interval) concentrations in ambient near-shore receiving waters following storm events at reference drainage and ASBS discharge sites. Total suspended solids (TSS) and nutrients in mg/L; Total Polycyclic Aromatic Hydrocarbons (Total PAHs) and total trace metals in µg/L



Exceedences of natural water quality were relatively infrequent at ASBS discharge sites (Figure 5.8.8.). Seven out of eight ASBS in southern California having exceedence rates of less than 25% for all constituents; Northwest Santa Catalina Island ASBS (ASBS 25) had the highest exceedence rate of 35%.

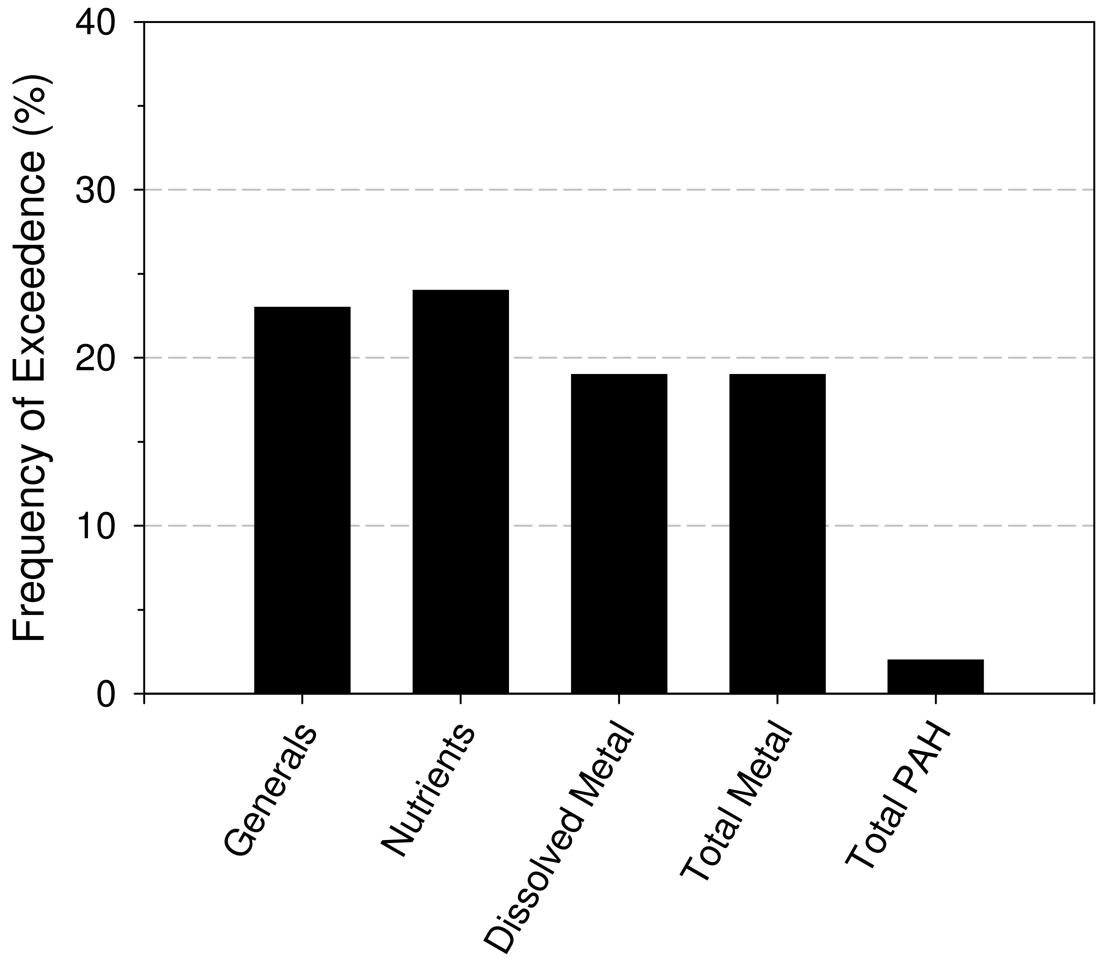
Figure 5.8.8. Frequency of natural water quality exceedences for all parameters during all storm events at each Area of Special Biological Significance (ASBS) in southern California



Where natural water quality was exceeded, general constituents (e.g. total suspended solids), nutrients and trace metals were the most frequent groups to exceed (Figure 5.8.9.). Total and dissolved metals had the same exceedence rate of 19% over the natural water quality thresholds identified in this study. PAHs exceeded the natural water quality threshold in only 2% of the samples. [11]

[11] Final Draft Report , Defining Natural Water Quality In Southern California's Areas Of Special Biological Significance, Kenneth Schiff, Brenda Luk, Dominic Gregorio, and Steve Gruber, 2010

Figure 5.8.9. Frequency of natural water quality exceedences by parameter group for all storm events and all Areas of Special Biological Significance (ASBS) in southern California



Regional and statewide monitoring in ASBS to date has proven very successful in providing scientific evidence of water quality conditions and indications of locations and certain constituents that require additional focus. The Bight'08 study represents the first comprehensive effort to determine natural water quality characteristics in the nearshore following storm events. The Natural Water Quality Committee stated that the Bight'08 program has provided sufficient information for the State Water Board to move forward, but prudent management should seek additional information. For example, Bight'08 quantified intra-annual (storm-to-storm) variability, but lacked inter-annual known to produce natural alterations in ocean water quality. Similarly, additional reference sites in central and northern California are necessary to quantify regional variability. However, in some instances, the reference site approach may be problematic, such as cases of widespread anthropogenic influence (i.e., PAHs and TCDDs) or where distant sources impinge on reference site water quality. (i.e., transport of large stormwater plumes from outside the ASBS). All of these causes of natural variability, and impacts from unanticipated anthropogenic contributions, should be investigated. Therefore staff recommends that where possible the regional approach to ASBS monitoring be designed and implemented to provide comparable and consistent information to manage ASBS discharges.

5.8.5 - Bioaccumulation

As part of their monitoring program for their ASBS exception and NPDES Permit, Scripps Institution of Oceanography (SIO), who performed a bioaccumulation study in receiving waters. This monitoring, which used both transplanted mussels and resident sand crabs, occurred in the vicinity of localized reference and ASBS discharge sites in the San Diego-Scripps ASBS and the La Jolla ASBS. SIO results indicated that:

1) most organic constituents were present at statistically nonsignificant levels relative to a reference sites during the study period;
2) certain pollutants were elevated in transplanted mussels near the SIO pier in the San Diego-Scripps ASBS (Cr, Ni, Fe, and Mn) and at the south end of the adjoining La Jolla ASBS (As) where the City of San Diego storm outfalls are located relative to other sites within the study area;
3) certain pollutants were elevated in transplanted mussels near the SIO pier (Cr and Ni) relative to historical statewide Mussel Watch results; and
4) large relative variability in tissue concentrations from sand crabs due to age/reproductive status precluded an assessment of spatial scale gradients and an evaluation of potential effects. [12]

Statewide mussel watch monitoring is an important tool in assessing bioaccumulation and water quality. Data collected by the National Ocean and Atmospheric Administration (NOAA) National Status and Trends (NS&T), and by the State Water Board Mussel Watch Program (SMWP) are provided below to assess spatial distributions and temporal trends in chemical contamination in or near certain ASBS.

5.8.5.1 <u>State Mussel Watch Program Data</u>

The SMWP was initiated in 1977 by the State Water Board to provide a uniform statewide approach to the detection and evaluation of toxic substances in California coastal waters, bays, harbors, and estuaries. The SMWP conducted a monitoring program using transplanted bivalve (*Mytilus californianus*) for trace elements and organic contaminants. The tissue samples were analyzed for the presence of trace elements and legacy pesticides.

An Elevated Data Level (EDL) is defined for the purposes of the SMWP as that concentration of a toxic substance in mussels or clams that equals or exceeds a specified percentile (such as 85 or 95 percent) of all measurements of the toxic substance in the same species and exposure condition (resident or transplant). Historical information on SMWP sites at ASBS are provided in Appendix 3)

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[12] Report to the State Water Resources Control Board, Summation of Findings, Natural Water Quality Committee, 2006-2009, September 1, 2010.

The SMWP program has suffered from a lack of funding since 2000. The Department of Fish and Game at Moss Landing Laboratories collected and analyzed mussel samples since 2001 from a limited list of sites. Only 18 sites are currently being monitored for the Water Boards by the California Department of Fish and Game. SMWP primary targets areas with known or suspected impaired water quality. For this report, data from the following sites in or near ASBS have been reviewed: Pacific Grove ASBS, James V. Fitzgerald ASBS, Bodega Head (near but not within the ASBS), and Trinidad Head ASBS.

The available data for trace elements and organic constituents from 2001 to 2005 were reviewed and compared to the EDL 85 and EDL 95. Most trace elements were present at low concentration in all ASBS. However none of the elements exceeded the EDL 85 or EDL 95 in transplanted mussels at any of the ASBS during 2001-2005 sampling periods.

Certain synthetic chlorinated hydrocarbon compounds were elevated at some ASBS sites. Pesticide compounds including cis-chlordane, trans-chlordane, total chlordane, heptachlor epoxide, and dieldrine exceeded the EDL 85 in Trinidad Head, James V. Fitzgerald and Pacific Grove ASBS, and at Bodega Head, during one or more sampling events in 2001 to 2004. Data from James V. Fitzgerald and Pacific Grove ASBS also show exceedences of the EDL 95 for DDD, DDE, and PCB 1254.

Appendix 3 provides State Mussel Watch data at or near ASBS from 2001 to 2005.

5.8.5.2 <u>NOAA NS&T Mussel Watch Program Data</u>

To characterize the spatial distributions and trends in contaminant levels in the coastal ocean, NOAA NS&T Program was formed in 1986. The NOAA NS&T Mussel Watch Program measures the presence of concentrations of a broad suite of trace metals and organic chemicals in resident bivalves. The NS&T Mussel Watch Program is national in scale and the sampling sites are representative of a large area.

The NOAA NS&T Program analyzes bivalve tissue samples from the mussels *M. edulis and M. californianus* for trace metals, synthetic organic constituents, and histopathology. The NOAA NS&T sampling is conducted every two years.

There are several pre-2007 historical sites in the NOAA NS&T data base that are in or near ASBS. These were:

- Klamath River Flint Rock Head (Redwood National Park ASBS)
- Point Delgada Shelter Cove (King Range ASBS)

- Bodega Head (near Bodega ASBS)
- Farallon Islands East Landing (Farallon Islands ASBS)
- Pacific Grove Lovers Point (Pacific Grove ASBS)
- San Miguel Island Otter Harbor (San Miguel, Santa Rosa and Santa Cruz Islands ASBS)
- Santa Cruz Island Fraser Point (San Miguel, Santa Rosa and Santa Cruz Islands ASBS)
- Point Dume (Laguna Point to Latigo Point ASBS)
- Catalina Island Bird Rock (NW Santa Catalina Island ASBS)
- Newport Beach West Jetty (near Robert Badham ASBS)
- La Jolla (near the La Jolla ASBS).

Beginning in 2007, SCCWRP and the State Water Board entered into a partnership with the NOAA Status and Trends Mussel Watch Program. SCCWRP agreed to sample in southern California and the State Water Board staff agreed to sample in central and northern California. Samples are sent to NOAA contracted laboratories for analysis at no cost to the State. In exchange for providing sampling at existing NOAA sites several additional sampling sites were sampled and analyzed, many at ASBS. During the sampling period 2007-2009 the following sites were added in or near ASBS:

- Sea Ranch (near Del Mar Landing ASBS)
- Gerstle Cove (Gerstle Cove ASBS)
- Duxbury Reef (Duxbury Reef ASBS)
- Point Reyes (near Point Reyes Headlands ASBS)
- Ano Nuevo (Ano Nuevo ASBS)
- Partington Point (Julia Pfeiffer Burns ASBS)
- Anacapa (North Middle) Island (Santa Barbara and Anacapa Islands ASBS)
- Mugu Lagoon (adjacent to Laguna Point to Latigo Point ASBS)
- Old Stairs (Laguna Point to Latigo Point ASBS)
- San Nicolas Island (San Nicolas Island and Begg Rock ASBS)
- San Clemente Island (San Clemente Island ASBS)
- Crystal Cove State Park (Irvine Coast ASBS)
- Scripps Reef (San Diego-Scripps ASBS)

Concentrations of ten constituents (including trace metals and PAHs) in samples from 2007 to 2009 were assessed at all mussel watch sites statewide and at ASBS sites. It is important to mention that all of these constituents have both anthropogenic (e.g., polluted runoff) and natural sources. Natural sources for trace metals include natural background in seawater, sometimes accentuated by upwelling and coastal erosion. In fact, certain metals, including copper and zinc, are essential micronutrients that when present at naturally low concentrations are essential for marine life. Hydrocarbon seeps are an important potential source for PAHs. The following information is provided to give a general status of these constituents in mussel tissue in ASBS.

Arsenic
Mean and median arsenic concentrations for all mussel watch sites statewide were 10.53 µg/ dry g and 9.45 µg/ dry g, respectively. Mean and median arsenic concentrations for all ASBS sites were 13.35 µg/ dry g and 10.8 µg/ dry g, respectively. San Clemente Island ASBS has the highest concentration of arsenic in mussels (39.9 µg/ dry g) among all ASBS sites, and also had the highest concentration of all mussel watch stations statewide.

Cadmium
Mean and median cadmium concentrations for all mussel watch sites statewide were 5.163 µg/ dry g and 5.01µg/ dry g, respectively. Mean and median cadmium concentrations for all ASBS sites were 7.522 µg/ dry g and 6.825 µg/ dry g, respectively. The Carmel Bay ASBS at Arrowhead Point has the highest concentration of cadmium in mussels (14.4 µg/ dry g) among all ASBS sites, and also had the highest concentration of all mussel watch stations statewide.

Chromium
Mean and median chromium concentrations for all mussel watch sites statewide were 1.753 µg/ dry g and 1.46 µg/ dry g, respectively. Mean and median chromium concentrations for all ASBS sites were 1.76 µg/ dry g and 1.6 µg/ dry g, respectively. Bodega Head, near the Bodega Head ASBS, has the highest concentration of chromium in mussels (4.61 µg/ dry g) among all sites in or near ASBS.

Copper
Mean and median copper concentrations for all mussel watch sites statewide were 9.28 µg/ dry g and 8.36 µg/ dry g, respectively. Mean and median copper concentrations for all ASBS sites were 9.335 µg/ dry g and 8.195 µg/ dry g, respectively. The King Range ASBS, at Point Delgada (Shelter Cove) has the highest concentration of copper in mussels (15.5 µg/ dry g) among all ASBS sites, and also had the highest concentration of all mussel watch stations statewide (see Figure 5.8.10.).

Lead
Mean and median lead concentrations for all mussel watch sites statewide were 1.948 µg/ dry g and 1.36 µg/ dry g, respectively. Mean and median lead concentrations for all ASBS sites were 2.279 µg/ dry g and 1.345 µg/ dry g, respectively. The Farallon Islands ASBS, at East Landing, has the highest concentration of lead in mussels (17.8 µg/ dry g) among all ASBS sites, and also had the highest concentration of all mussel watch stations statewide.

Mercury
Mean and median mercury concentrations for all mussel watch sites statewide were 0.116 µg/ dry g and 0.074µg/ dry g, respectively. Mean and median mercury concentrations for all ASBS sites were 0.144 µg/ dry g and 0.106 µg/ dry g, respectively.

San Miguel Island (ASBS 17), at Otter Harbor, has the highest concentration of mercury in mussels (0.69 µg/ dry g) among all ASBS sites, and also had the highest concentration of all mussel watch stations statewide.

Nickel
Mean and median nickel concentrations for all mussel watch sites statewide were 2.913 µg/ dry g and 2.18 µg/ dry g, respectively. Mean and median nickel concentrations for all ASBS sites were 2.973 µg/ dry g and 2.5 µg/ dry g, respectively. The Redwoods National Park ASBS at the mouth of the Klamath River has the highest concentration of nickel in mussels (9.23 µg/ dry g) among all ASBS sites, and also had the highest concentration of all mussel watch stations statewide.

Silver
Mean and median silver concentrations for all mussel watch sites statewide were 0.166 µg/ dry g and 0.061µg/ dry g, respectively. Mean and median silver concentrations for all ASBS sites were 0.131µg/ dry g and 0.084µg/ dry g, respectively. The Laguna Point to Latigo Point ASBS, at Point Dume in Malibu, has the highest concentration of silver (0.842 µg/ dry g) among all the ASBS sites.

Zinc
Mean and median zinc concentrations for all mussel watch sites statewide were 144.98 µg/ dry g and 138 µg/ dry g, respectively. Mean and median zinc concentrations for all ASBS sites were 156.8 µg/ dry g and 160.5 µg/ dry g, respectively. San Miguel Island (ASBS 17), at Otter Harbor has the highest concentration of zinc in mussels (232 µg/ dry g) among all ASBS sites.

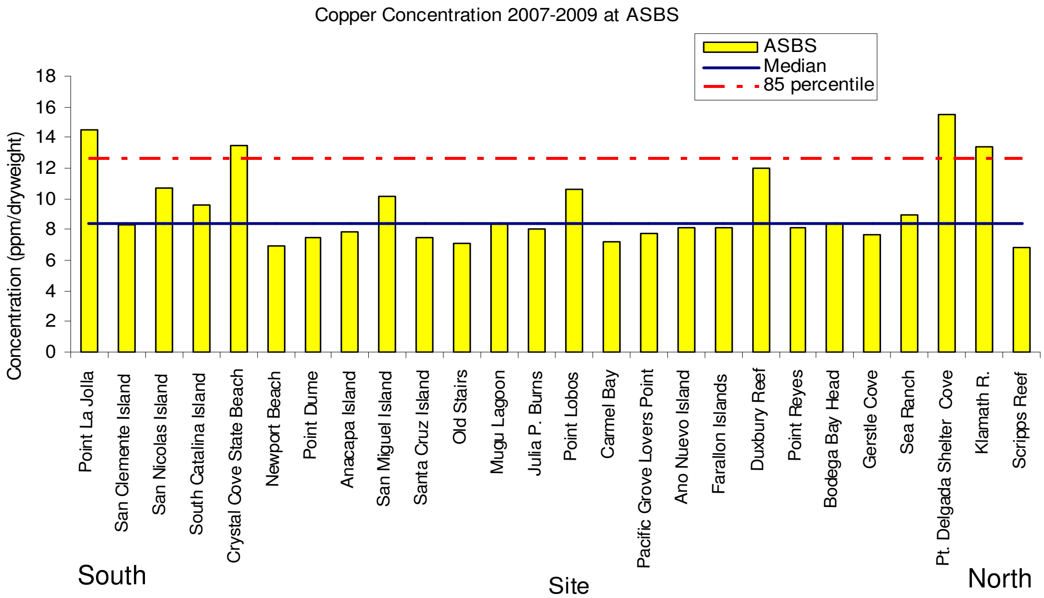
Total PAHs
Mean and median total PAH concentrations for all mussel watch sites statewide were 1139.17ng/ dry g and 122.2ng/ dry g, respectively. Mean and median total PAH concentrations for all ASBS sites were 128.68 ng/ dry g and 100.1 ng/ dry g, respectively. Ano Nuevo ASBS has the highest concentration of total PAHs in mussels (688.7ng/ dry g) among all the ASBS sites.

Trends for historical data (1986 – 2009) at several mussel watch sites at or near ASBS were assessed. Most organic pollutants are either staying the same or showing significant decreases in mussel tissues. Chlordane concentrations show a significant decrease at King Range ASBS, Laguna Point to Latigo Point ASBS, NW Catalina Island ASBS, and La Jolla ASBS. Butyltin concentrations show a significant decrease near the Robert Badham ASBS and in the Laguna Point to Latigo Point ASBS. DDT is also decreasing significantly at Laguna Point to Latigo Point ASBS.

Most trace metals are either staying the same or showing significant decreases in mussel tissues. Arsenic concentrations show a significant decrease at the Pacific Grove ASBS, NW Catalina Island ASBS and La Jolla ASBS. Lead concentrations show a significant decrease near in the Robert Badham ASBS and in the La Jolla ASBS.

Mercury concentrations show a significant decrease near in the Laguna Point to Latigo Point ASBS. Selenium concentrations are decreasing at Laguna Point to Latigo Point ASBS. Silver concentrations show a significant decrease near the Robert E. Badham ASBS and in the La Jolla ASBS. Tin concentrations are decreasing at the King Range ASBS, Pacific Grove ASBS, Laguna Point to Latigo Point ASBS, NW Catalina Island ASBS, and near the Robert Badham ASBS. However there were a few metals that were increasing at certain ASBS. Copper concentrations are increasing at the King Range ASBS; this increase in copper in mussels at the King Range ASBS is of concern because that site has the highest copper concentrations in resident mussels of any mussel watch site (Figure 5.8.10). Cadmium concentrations are increasing at the Pacific Grove ASBS and Laguna Point to Latigo Point ASBS. Mercury concentrations are increasing near the Robert Badham ASBS and in the La Jolla ASBS.

Appendix 3 provides the NOAA Mussel Watch data for ASBS.



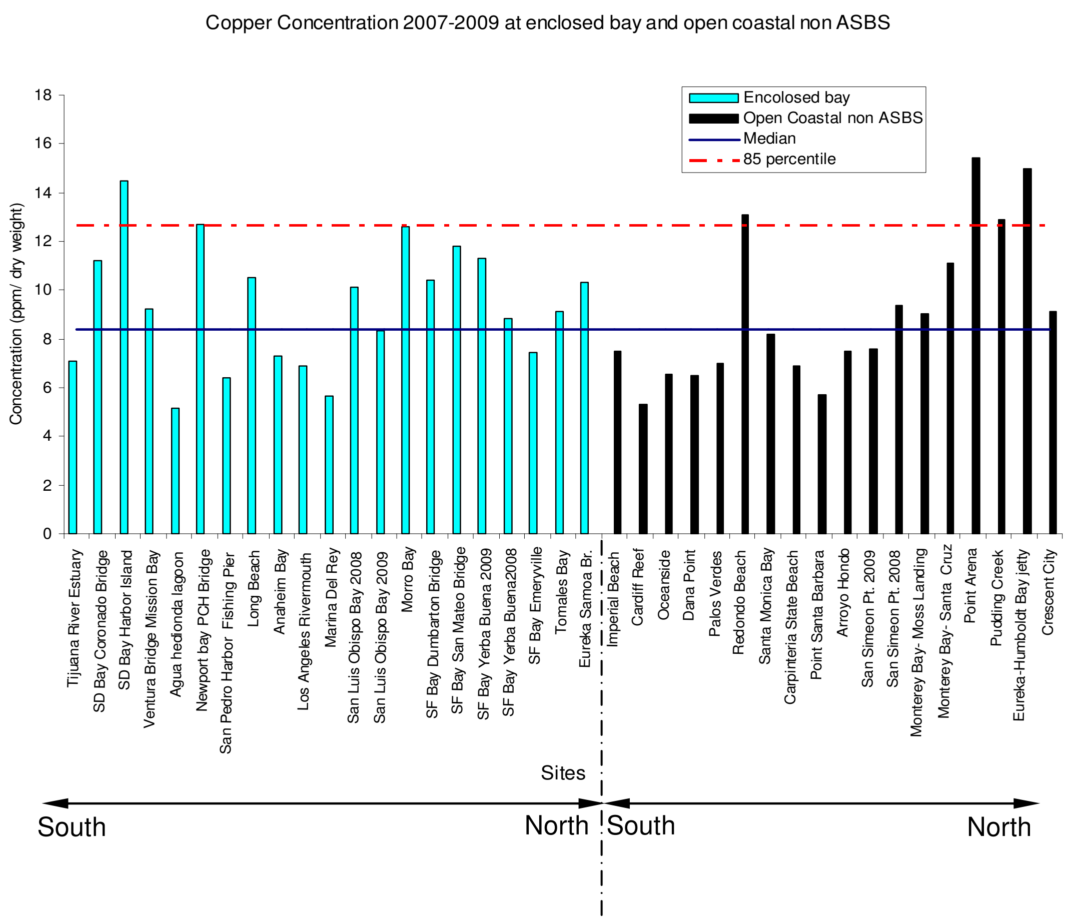


Figure 5.8.10. Mussel watch copper concentrations in ASBS and at other sites statewide.

6.0 ENVIRONMENTAL ANALYSIS

6.0 APPROACH TO THE ENVIRONMENTAL ANALYSIS

Sections 6.1 through 6.10 of this FEIR present a discussion of existing conditions, environmental impact associated with implementation of the proposed project, mitigation measures to reduce the level of impact, and residual significant impacts (i.e., impacts that would be significant and unavoidable despite the imposition of ay proposed mitigation measures). Issues evaluated in these sections consist of the range of environmental topics originally identified for review in the notice of preparation (NOP) and initial study (IS) prepared for the proposed project. Sections 6.1 through 6.10 each include the following components.

► **Environmental Impacts:** This subsection identifies the impacts of the proposed project on the existing environment, in accordance with State CEQA Guidelines Sections 15125 and 15143. Before presenting an evaluation of impacts, the section describes the analysis methodology used, and thresholds of significance used to identify impacts are then listed. Project impacts are identified alphanumerically and sequentially throughout this section. For example, impacts in Section 6.1 are identified as 6.1-1, 6.2-2, and so on. An impact statement preceded the discussion of each impact and provides a summary of the impact and its level of significance. The discussion that follows the impact statement included the evidence on which a conclusion is made regarding the level of impact. The discussions of cumulative impacts and growth-inducing impacts are presented in Section 8.0.

► **Mitigation Measures:** This subsection identifies potentially feasible mitigation measures to reduce significant and potentially significant impacts of the proposed project, in accordance with State CEQA Guidelines Sections 15002(a)(3), 15021(a)(2), and 15091(a)(1). Each mitigation measure is identified alphanumerically to correspond with the number of the impact being reduced by the measure. For example, Impact 6.1-1 would be mitigated with Mitigation Measure 6.1-1. This subsection also describes whether the mitigation measures would reduce impacts to less-that-significant levels. Significant and unavoidable impacts are identified as appropriate in this subsection, as well as in the "Residual Significant Impacts" subsection described below. Significant and unavoidable impacts are also summarized in Section 8.0.

► **Implementation:** This section identifies the agency responsible for the implementation of the mitigation measures.

► **Significance After Mitigation:** This section identifies impacts that would be reduced to less than significant and any significant impacts that would remain significant following implementation of the mitigation measures.

Any potential environmental impacts associated with the implementation of the General Exception Special Protections measures depend upon the specific compliance projects selected by the responsible parties identified herein, most of whom are public agencies subject to their own CEQA obligations. (See Pub. Res. Code § 21159.2, project-specific compliance projects). This program level EIR identifies broad mitigation approaches that could be considered at the program level for common selected BMPs. Consistent with PRC § 21159.2, this EIR does not engage in speculation or conjecture, but rather considers the reasonably foreseeable environmental impacts of the foreseeable methods of compliance, the reasonable foreseeable feasible mitigation measures, and the reasonable foreseeable alternative means of compliance, which would avoid or reduce the identified impacts.

Within each of the sections listed below, this EIR evaluated the impacts of each implementation alternative relative to the subject resource area. The physical scope of the environmental setting and the analysis in this EIR are the 26 ASBS potentially affected discharges arising from the 27 Responsible Parties identified previously in Section 1.0. Though this EIR governs potential impacts at 26 different geographic ASBS locations, generalizations are made about the impacts of different compliance measures (i.e. BMPs) and are expected to generate similar results. This is a reasonable assumption, given that the discharge of waste generated by the Responsible Parties is conveyed to the ocean waters of the ASBS primarily via storm drains and waste would be controlled and/or eliminated by any one of or a combination of the Special Protections implementation alternatives. Also, any potential impacts of implementing the proposed alternatives would be focused, short-term and ultimately produce long-term beneficial improvements to water quality and the removal of pollutants discharged to the ocean.

The implementation alternatives evaluated in this EIR are evaluated at a program level for impacts for each resource area. An assumption is made that a more detailed project-level analysis will be conducted by each Responsible Party once their mode of achieving compliance with the Special Protections has been determined. The analysis is this EIR assumes that, project proponents will design, install, and maintain implementation measures following all applicable laws, regulations, ordinances, and formally adopted municipal and/or agency codes, standards and practices. Several handbooks are available and currently used by municipal agencies that provide guidance for the selection and implementation of BMPs (Caltrans, CASQA, WERF).

As previously discussed in Section S.0 Executive Summary, the Special Protections would also be incorporated into the water quality control plans (basin plans) of six (6) coastal Regional Water Boards and into each Responsible Parties discharge permit. The Regional Water Boards would implement these regulations along with those authorized local agencies that would be given authority by the Regional Water Boards to implement and enforce the regulations, while the Responsible Parties are the lead agencies for any and all projects implemented within their jurisdiction, to comply with the program. The Regional Water Board does not specify the actual means of compliance by which responsible agencies choose to comply with the Special Protections.

Therefore, the implementation alternatives are mostly evaluated at a program level in this EIR. The alternatives assessed at a program level generally are projects that would be implemented as part of Special Protections compliance, PRC § 21159 places the responsibility of project-level analysis on the agencies that will implement the Special Protections.

6.01 DISCUSSION GENERAL EXCEPTION PROJECT MITIGATING TERMS AND SPECIAL CONDITIONS – SPECIAL PROTECTIONS

Since 1983, the Ocean Plan has prohibited the discharge of both point and nonpoint source waste to ASBS, unless the State Water Board grants an exception. The Ocean Plan allows the State Water Board to grant exceptions to plan requirements where the State Water Board determines that the exception "will not compromise protection of ocean waters for beneficial uses, and, [t]he public interest will be served." Prior to granting an exception, the State Water Board must hold a public hearing and comply with CEQA. In addition, the U.S. EPA must concur.

ASBS are also accorded special protection under the Marine Managed Areas Improvement Act (Act), PRC §36600 et seq. Under the Act, ASBS are a subset of state water quality protection areas and, as such, “require special protection as determined by the [State Water Board]” pursuant to the Ocean Plan (Public Resources Code §36700(f).) In all SWQPAs, waste discharges must be prohibited or limited by special conditions, in accordance with state water quality law, including the Ocean Plan (*Id.* §36710(f).)

On October 18, 2004, the State Water Board notified responsible parties to cease storm water and nonpoint source waste discharges into ASBS or to request an exception under the Ocean Plan. Several responsible parties submitted requests, or conditional requests, for exceptions. Subsequently, the State Water Board provided general instructions for exception application packages via its website. The State Water Board sent letters (in a few cases later in 2005) to responsible parties, providing specific instructions and a deadline for submission of the application package by May 31, 2006.

The State Water Board has received 27 applications for the general exception to the Ocean Plan prohibition against waste discharges to ASBS. The applications were filed by permitted storm water dischargers and nonpoint source dischargers, who are identified in Section 1.0. Staff recommends that the State Water Board grant the exceptions, provided that the dischargers comply with the Special Protections that are contained in this document.

Appendix 1 presents the staff draft proposal for State Water Board action on the exception applications that would establish “Special Protections” to address the applicants’ storm water and nonpoint source discharges into the affected ASBS. The proposed action is consistent with the Ocean Plan, which authorizes limited exceptions to the ASBS discharge prohibition, and with the Act, which authorizes waste discharges to ASBS only if they are limited by special conditions and conform to Ocean Plan requirements. The State Water Board will consider adoption of the Special Protections under the exception provisions of the Ocean Plan. The proposed special conditions in these Special Protections would limit waste discharges with prohibitions and special conditions to protect beneficial uses, including marine aquatic life and the maintenance of natural water quality within ASBS.

The 27 applicants have submitted extensive information. This FEIR is based on staff's review of that information, public comments received at the Board scoping meetings and subsequent stakeholder meetings.

This FEIR is in part modeled after State Water Board Resolution Nos. 2004-0052, 2006-0013, and 2007-0058, individual exceptions/Special Protections related to the Scripps Institution of Oceanography, Wrigley Marine Science Center, and Bodega Marine Lab discharges, respectively. The requirements in the draft Special Protections may be summarized generally to eliminate dry weather runoff, ensure that wet weather runoff does not alter natural water quality in the ASBS, and that adequate monitoring be conducted to determine if natural water quality and the marine life beneficial use is protected. The Special Protections are organized first according to applicability to permitted storm water or nonpoint source discharges. Each of these sections provides the applicable prohibitions and special conditions that limit waste discharges from each category. Requirements for storm water plans and compliance schedules are also provided. Special requirements are then given for parks and recreation facilities and waterfront and marine operations. Finally the terms and conditions for ASBS monitoring are provided.

6.1 ANALYSIS OF ENVIRONMENTAL IMPACTS - AESTHETICS

This section focuses on the existing visual resources at, or in the vicinity of, the proposed implementation locations of the General Exception Special Protections project. The potential impacts that could result to visual resources from installation and maintenance of each of the implementation alternatives are addressed, and the significance of those impacts, if anticipated, is analyzed for each of the implementation alternatives. Mitigation to reduce the impacts to the project is provided, where applicable. Visual resources include the aesthetics of the component sites and their surroundings, valued views, designated scenic highways, corridors or parkways, and lighting.

There are valuable scenic resources throughout all of the ASBS. Pacific Ocean view shed, surrounding hills and mountains in many ASBS provide a valuable scenic resource throughout the coastline. Additional resources include state-designated scenic and/or historic highways or roadways.

As part of the scoping and environmental analysis conducted for the General Exception project, sensitive visual resources were considered, but no potential for adverse impacts to these resources were identified. Depending on what measures each applicant uses to comply with the proposed exception, there may be an impact on aesthetics. However, the State Water Board believes that mitigation is available to reduce any potential impacts to aesthetics to less than significant levels. The mitigation measures would be implemented at the project-specific level.

CEQA establishes that it is the policy of the State to take all action necessary to provide the people of the state "with…enjoyment of aesthetic, natural, scenic and historic environmental qualities" [CA Public Resources Code § 21001 (b)].

It is anticipated that each applicant will assess sensitive visual resources on a project-by-project basis as part of compliance with the terms and conditions of the General Exception. If a proposed project is determined to have a significant visual resource impact under CEQA, then CEQA dictates that mitigation measures must be incorporated into the project unless such measures are not feasible. If it is determined that a project will have aesthetic impacts, then potential mitigation measures must be considered.

THRESHOLDS OF SIGNIFICANCE

For the purposes of this analysis, an aesthetic impact is considered significant if implementation of the proposed project would result in exceeding any of the thresholds identified below. These thresholds of significance are based on the State CEQA Guidelines. CEQA establishes that it is the policy of the State to take all action necessary to provide the people of the state "with…enjoyment of aesthetic, natural, scenic and historic environmental qualities" [CA Public Resources Code § 21001 (b)]. An aesthetic impact is considered significant in this analysis if implementation of the proposed project would result in potential:

- Substantial adverse effects on a scenic vista
- Substantial damage to scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway
- Substantial degradation of the existing visual character or quality of the site and its surroundings

IMPACTS OF THE PROPOSED PROJECT AND MITIGATION MEASURES

Impact 6.1-1 Direct Impacts Associated with Effects on a scenic vista.

The General Exception Project has the potential to have a substantial adverse effect on a scenic vista via construction disruption, which includes earth movement, distracting activities, and storing equipment and material; the effect is unavoidable, but not permanent.

► **Mitigation Measure:** As part of the scoping and environmental analysis conducted for the General Exception project, sensitive visual resources were considered, but no potential for long-term permanent adverse impacts to these resources were identified. Depending on what measures each applicant uses to comply with the proposed exception, there may be an impact on aesthetics. However, the State Water Board believes that mitigation is available to reduce any potential impacts to aesthetics to less than significant levels. The mitigation measures would be implemented at the project-specific level. Mitigation measures associated with specific BMPs are discussed below.

► **Implementation:** It is anticipated that each applicant will assess sensitive visual resources on a project-by-project basis as part of compliance with the terms and conditions of the General Exception. If, during the project analysis phase, a proposed project is determined to have a significant visual resource impact under CEQA, then CEQA dictates that mitigation measures must be incorporated into the project unless such measures are not feasible. If it is determined that a project will have aesthetic impacts, then potential mitigation measures must be considered.

► **Significance After Mitigation:** Less than significant.

Impact 6.1-2 Direct Impacts Associated with Damage to Scenic Resources

The General Exception Project has the potential to substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.

► **Mitigation Measure:** As part of the scoping and environmental analysis conducted for the General Exception project, sensitive visual resources were considered, but no potential for adverse impacts to these resources was identified. Depending on what measures each applicant uses to comply with the proposed exception, there may be an impact on aesthetics. However, the State Water Board believes that mitigation is available to reduce any potential impacts to aesthetics to less than significant levels. Siting criteria of the local authority would continue to help establish appropriate locations for new structures or modifications to existing structures, including the installation of treatment systems, and would address, on a site-specific basis, the potential for systems or BMPs to affect designated scenic vistas or resources. The mitigation measures would be implemented at the project-specific level.

► **Implementation:** It is anticipated that each applicant will assess sensitive visual resources on a project-by-project basis as part of compliance with the terms and conditions of the General Exception. If during the project analysis phase, a proposed project is determined to have a significant visual resource impact under CEQA, then CEQA dictates that mitigation measures must be incorporated into the project unless such measures are not feasible. If it is determined that a project will have aesthetic impacts, then potential mitigation measures must be considered.

► **Significance After Mitigation:** Less than significant.

Impact 6.1-3 Direct Impacts Associated with Visual Character or Quality of the Site and Surroundings

The General Exception Project has the potential to substantially degrade the existing visual character or quality of the site and its surroundings. The proposed project could cause a gradual shift toward the use of more surface and subsurface treatment systems. Such systems could be installed in a variety of settings in many areas of the coastline including scenic vista, however, most elements of conventional treatment systems are located underground. This is also true for most elements of VSS treatment systems. While some systems have above-grade components, these elements have relatively low profile. These elements may also be small relative to the conveyance they serve. Special Protections BMP implementation projects and measures would eventually improve the overall aesthetic appeal within the ASBS identified herein and affected by trash and debris discharged to the shoreline, beaches and ocean, by the removal of visible trash, thus causing an overall long-term beneficial impact.

► **Mitigation Measure:** As part of the scoping and environmental analysis conducted for the General Exception project, sensitive visual resources were considered, but no potential for adverse impacts to these resources were identified. Depending on what measures each applicant uses to comply with the proposed exception, there may be an impact on aesthetics. However, the State Water Board believes that mitigation is available to reduce any potential impacts to aesthetics to less than significant levels. Low profile or subsurface treatment systems may be covered with soil and vegetation following a relatively short construction period. The mitigation measures would be implemented at the project-specific level. Mitigation measures associated with specific BMPs are discussed below.

► **Implementation:** It is anticipated that each applicant will assess sensitive visual resources on a project-by-project basis as part of compliance with the terms and conditions of the General Exception. If a proposed project is determined to have a significant visual resource impact under CEQA, then CEQA dictates that mitigation measures must be incorporated into the project unless such measures are not feasible. If it is determined that a project will have aesthetic impacts, then potential mitigation measures must be considered.

► **Significance After Mitigation:** Less than significant.

The following BMPs which may be potentially implemented by the Responsible Parties for the General Exception were evaluated for their potential to impact aesthetic resources either directly or indirectly.

ANALYSIS OF VARIOUS BMPs IMPACTS – VISUAL RESOURCES

Catch Basin Inserts
Catch basin inserts will have less than significant impact on any scenic vista or view. Curbside catch basin inserts are roadside devices. Installation of catch basin inserts would not foreseeably obstruct scenic vistas. Installation of catch basin inserts is a quick process and would not likely create an aesthetically offensive site during installation. Once completed, catch basin inserts will not result in an impairment of scenic views. Catch basin inserts themselves are unlikely to create an aseptically offensive site after installation because they are installed at street level. That notwithstanding, the creation of an aesthetically offensive site could be mitigated by improving the aesthetic characteristics of that device.

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Vortex Separation System
Vortex separation systems (VSS) are subsurface devices and therefore installing them at a particular location is unlikely to result in an impairment of scenic vista. Since a VSS unit would be installed within already existing storm drain network, it is not foreseeable that the installation of VSS may substantially damage scenic resources and/or degrade the existing visual character or quality of any particular location and its surroundings. It is not foreseeable that the installation activities associated with siting VSS Units would result in any substantial adverse effect on the scenic vistas of the location. However, in the unlikely event that such activities should create aesthetically offensive impacts, these can be mitigated with screening and other construction BMPs. Screening can be used to reduce temporary impacts from aesthetically offensive installation activities.

Road and Parking Lot Street Sweeping
Increased street sweeping is unlikely to result in an impairment of scenic vistas. Increased street sweeping would not create an aesthetically offensive site. Rather, this alternative would pose a positive aesthetic impact by reducing visible litter instead.

Public Education
Public education would not result in an impairment of scenic vistas nor would it create an aesthetically offensive site. Public education would create a positive aesthetic, by reduction of litter and waste.

6.2 ANALYSIS OF ENVIRONMENTAL IMPACTS - AIR QUALITY

This section provides an overview of air quality, sensitive receptors and other conditions which may arise on potential project areas with the General Exception Special Protections implementation activities, including short term construction and installation activities and long term street sweeping activities. Federal, state, and regional regulations apply to air quality criteria. These criteria and each responsible party's compliance for their regional area is discussed below. Findings of the significance of impacts are presented. Mitigation to reduce the impacts associated with each activity is discussed where applicable.

There are two aspects of air pollution: daily emissions and pollutant concentrations. The term "emissions" means the quantity of pollutant released into the air and has unit of pounds per day (lbs/day). The term "concentrations" means the amount of pollutant material per volumetric unit of air and has unit of parts per million (ppm) or micrograms per cubic meter (µg/m3).

Criteria Pollutants

The State of California and the federal government have established ambient air quality standards for six pollutants to protect public health. The six air pollutants of concern, called criteria pollutants, are carbon monoxide (CO), ozone (O3), nitrogen dioxide (NO2), sulfur dioxide (SO2), respirable particulate matter (PM10), fine particulate matter (PM2.5), and lead (Pb). The criteria pollutants and associated adverse health effects are summarized below:

• **Carbon Monoxide.** Exposure to high concentrations of CO, a colorless and odorless gas, reduces the oxygen-carrying capacity of the blood, and therefore can cause dizziness and fatigue, impair central nervous system functions, and induce angina in persons with serious heart disease. CO is emitted almost exclusively from the incomplete combustion of fossil fuels. In urban areas, motor vehicles, power plants, refineries, industrial boilers, ships, aircraft, and trains emit CO. Motor vehicle exhaust releases most of the CO in urban areas. Vehicle exhaust contributes approximately 56 percent of all CO emissions nationwide and up to 95 percent in cities. CO is a non-reactive air pollutant that dissipates relatively quickly. As a result, ambient CO concentrations generally follow the spatial and temporal distributions of vehicular traffic. CO concentrations are influenced by local meteorological conditions; primarily wind speed, topography, and atmospheric stability. CO from motor vehicle exhaust can become locally concentrated when surface-based temperature inversions combine with calm atmospheric conditions. An inversion is an atmospheric condition in which a layer of warm air traps cooler air near the surface of the earth, preventing the normal rising of surface air.

• **Ozone.** While O3 serves a beneficial purpose in the upper atmosphere (stratosphere) by reducing potentially harmful ultraviolet radiation, when it reaches elevated concentrations in the lower atmosphere it can be harmful to the human and to sensitive species of plants. Short-term O3 exposure can reduce lung function, making persons susceptible to respiratory infection. Long-term exposure can impair lung defense mechanisms and lead to emphysema and chronic bronchitis. O3 concentrations build to peak levels during periods of light winds or stagnant air, bright sunshine, and high temperatures. Ideal conditions occur during summer and early autumn. Sensitivity to O3 varies among individuals. About 20 percent of the population is sensitive to O3, with exercising children being particularly vulnerable. O3 is formed in the atmosphere by a complex series of chemical reactions under sunlight that involve "ozone precursors." Ozone precursors are categorized into two families of pollutants: oxides of nitrogen (NOx) and reactive organic compounds (VOCs). NOx and VOCs are emitted from a variety of stationary and mobile sources. While NOx is considered a criteria pollutant, VOCs are not in this category, but are included in this discussion as O3 precursors. O3 is the chief component of urban smog and the damaging effects of photochemical smog generally relate to the concentration of O3, light winds or stagnant air, bright sunshine, and high temperatures. Ideal conditions occur during summer and early autumn. Sensitivity to O3 varies among individuals. About 20 percent of the population is sensitive to O3, with exercising children being particularly vulnerable. O3 is formed in the atmosphere by a complex series of chemical reactions under sunlight that involve "ozone precursors." Ozone precursors are categorized into two families of pollutants: oxides of nitrogen (NOx) and reactive organic compounds (VOCs). NOx and VOCs are emitted from a variety of stationary and mobile sources. While NOx is considered a criteria pollutant, VOCs are not in this category, but are included in this discussion as O3 precursors. O3 is the chief component of urban smog and the damaging effects of photochemical smog generally relate to the concentration of O3.

Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations.

THRESHOLDS OF SIGNIFICANCE

The Clean Air Act (CAA), as amended in 1990, is the federal law that governs air quality. Its California counterpart is the California Clean Air Act (CCAA) of 1988. These laws set standards for the quantity of pollutants that can be in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). Standards have been established for six criteria pollutants that have been linked to potential health concerns; the criteria pollutants are: carbon monoxide (CO), nitrogen dioxide (NO2), ozone (O3), particulate matter (PM), lead (Pb), and sulfur dioxide (SO2). Conformity with CAA would be assessed in accordance with CEQA by each of the applicants identified in this General Exception as individual projects are planned and designed by applicants. Individual projects should discuss conformance at the regional level and at the project level. In general, projects must not cause the pollutant standard to be violated and must not cause any increase in the number and severity of violations. If a known violation is located in the project vicinity, the project must include measures to reduce or eliminate the existing violation(s). Each applicant's individual project would assess the affected environment under National and California Air Quality Standards as part or their air quality evaluation.

For the purposes of this analysis, an air quality impact is considered significant if implementation of the proposed project would result in exceeding any of the following thresholds identified below. These thresholds of significance are based on the State CEQA Guidelines and relevant air quality standards. Consistent with State CEQA Guidelines, an air quality impact is considered significant in this analysis if implementation of the proposed project would result in potential for exceeding any of these air quality objectives.

A significant air quality impact would occur if the alternative would: Result in a violation of any State of national ambient air quality standard or contribute substantially to an existing or projected air quality violation. The significance thresholds recommended by each regional Air Quality Management District would be the specific basis for determining significance of an impact for this project. Construction and operational emissions are considered by a regional AQMD to be significant if they exceed the thresholds identified for that Region.

Result in an increase in carbon monoxide concentrations where: (1) an increase in CO concentrations is sufficient to cause an exceedances of the most stringent State or national CO standard (20 ppm for 1-hour concentrations and 9 ppm for 8-hour concentrations); or (2) in an area that already exceeds national or State CO standards, the project increase exceeds 1 ppm for a 1-hour average or 0.45 ppm for an 8-hour average.

In addition, the CEQA Guidelines checklist provides the following thresholds for determining significance with respect to air quality. Implementation of the proposed project would also result in significant air quality impacts if it would:

- ► Conflict with or obstruct the implementation of an applicable regional air quality plan
- ► Violate any air quality standard or contribute substantially to an existing or projected air quality violation
- ► Expose sensitive receptors to substantial pollutant concentrations; or
- ► Create objectionable odors affecting a substantial number of people

IMPACTS OF THE PROPOSED PROJECT AND MITIGATION MEASURES

As part of the scoping and environmental analysis conducted for the General Exception project, these environmental resources were considered, but no potential for adverse impacts to these resources were identified. Depending on what measures each applicant uses to comply with the proposed exception, there may be an impact on air quality. However, the State Water Board believes that mitigation is available to reduce any potential impacts to air quality to less than significant levels. The mitigation measures would be implemented at the project-specific level.

Impact 6.2-1 Direct Impacts Associated with Air Quality Standards and/or Contributing to an Existing or Projected Air Quality Violation.

The General Exception Project has the potential to have a potentially significant adverse effect on air quality. A significant air quality impact would occur if it would result in a violation of any State or national ambient air quality standard or contribute substantially to an existing or projected air quality violation. Significance thresholds are recommended by each Air Quality District and the basis for determining significance of an impact for this project. Construction and operational emissions are considered by the Air District to be significant if they exceed the thresholds indentified in a Regional ambient air quality standard. They are also considered significant if they result in an increase in carbon monoxide concentrations where: (1) an increase in CO concentrations is sufficient to cause an exceedance of the most stringent State or national CO standard (20 –m for 1-hour concentrations and 9ppm for 8-hour concentrations): or (2) exceed 1 ppm for a 1-hour average of 0.45 ppm for an 8-hour average. Impacts from Special Protections implementation activities include both short term and long term activities. Impacts evaluation is based on a calculation of the total emissions from travel of construction and BMP related vehicles that might be affected by implementation of the Special Protections.

Comparative evaluation, instead of the examination of the emissions from each individual source alone is one method typically used. Vehicle emissions are calculated using forecasts of total vehicle miles traveled for each alternative based on data provided in MOBILE6, which is a vehicle emission software developed by USEPA. MOBILE6 is used for predicting gram per mile emissions of Hydrocarbons (HC), Carbon Monoxide (CO), Nitrogen Oxides (NOx), Carbon Dioxide (CO2), Particulate Matter (PM), and toxics from cars, trucks, and motorcycles under various conditions. The data which this calculation is based on are from technical documents of MOBILE6. Considering the type of work involved in implementation of the Special Protection, the calculation assumes that non-tampered heavy-duty diesel vehicles (HDDV Class 6) are used for installation/construction/maintenance activities. The mileage is assumed to be 50,000 miles, which is the median mileage for HDDVs. The year of Vehicle is assumed to be 2001+ for HC, CO, NOx, and SO2 and 1994+ for PM.

Based on assumptions above, the exhaust emission rates are found to be 2.1, 9.92, and 6.49 grams per mile for HC, CO, and NOx, respectively. The PM standard for HDDVs is 0.1 g/bhp-hr. By applying a conversion factor of

1.942 bhp-hr/mi (from Update Heavy-Duty Engine Emission Conversion Factors for Mobile6 – Analysis of BSFCs and Calculation of Heavy-Duty Engine Emission Conversion Factors), the exhaust emission rate for PM is found to be 0.1942 grams per mile. There is no exhaust emission rate information available for SOx in MOBILE6. Instead by using diesel fuel sulfur level of 8 ppm (from MOBILE6 for years after 2006), diesel fuel economy of 8.71 miles per gallon (from Update Heavy-Duty Engine Emission Conversion Factors for Mobile6 – Analysis of BSFCs and Calculation of Heavy-Duty Engine Emission Conversion Factors), and diesel fuel density of 7.099 pounds per gallon (from Update Heavy-Duty Engine Emission Conversion Factors for Mobile6 – Analysis of Fuel Economy, Non-Engine Fuel Economy Improvements and Fuel Densities), exhaust emissions rate for SO2 could be 0.00592 grams per mile, assuming all sulfur in fuel would be transformed to SO2.

► **Mitigation Measure:** Mitigation measures for increased air emissions due to increased vehicle trips or increased use of construction equipment include: 1) use of construction, and maintenance vehicles with lower-emission engines, 2) use of soot reduction traps or diesel particulate filters, and 3) use of emulsified diesel fuel.

► **Implementation:** The emissions generated by construction equipment could be lower than the local authority AQMD daily construction emissions thresholds. Detailed analysis can only be done at project level. In the case that daily construction emission exceeds significance threshold, construction projects for different structural BMPs can be conducted on different days to reduce emissions rates. Comparative evaluation, as discussed above, instead of the examination of the emissions from each individual source alone is one method typically used. Detailed analysis can only be done at project level. In case that daily construction emission exceeds significance threshold, which is unlikely, construction projects for various structural BMPs can be conducted on different days to reduce emissions rates. Mitigation measures implemented at the project level would reduce anticipated impacts to less than significant.

► **Significance After Mitigation:** Less Than Significant.

Impact 6.2-2 Expose sensitive receptors to substantial pollutant concentrations

The General Exception Project has the potential to have short-term temporary emission levels of criteria pollutants during installation and maintenance of various BMPs to implement the Special Protections. Emission levels of criteria pollutants during installation and maintenance of BMPs may be below the local authority AQMD Air Quality Significance thresholds. Long-term increases in traffic caused by ongoing maintenance of catch basin inserts (e.g., delivery of materials, street sweeping) are potential sources of increased air pollutant emissions. When evaluating

comparatively as discussed in the previous section emissions of toxic air contaminants are expected to be below the thresholds, The emissions generated by construction equipment is considered significant if it violates any air quality standards or contributes substantially to an existing or projected air quality violation, or results in a cumulatively considerable net increase of any criteria pollutants for the project region. Based on the relatively small project areas typical of BMP construction sites. It is likely that the emission of toxic air contaminants will be lower than AQMD daily construction emissions thresholds not be significant.

► **Mitigation Measure:** Potential mitigation measures which could be implemented at the project level for increased air emissions due to increased vehicle trips or for construction equipment due to the installation of structural BMPs include: 1) use of construction and maintenance vehicles with lower-emission engines, 2) use of soot reduction traps or diesel particulate filters, and 3) use of emulsified diesel fuel. In case that daily construction emission exceeds significance threshold, which is unlikely, construction projects can be conducted on different days to reduce emissions rates. These measures would reduce impacts to less than significant level.

► **Implementation:** The emissions generated by construction equipments could be lower than the local authority AQMD daily construction emissions thresholds. Detailed analysis can only be done at project level.

► **Significance After Mitigation:** Less than Significant

Impact 6.2-3 Create Objectionable Odors Affecting a Substantial Number of People

The General Exception Project has the potential to have direct short term temporary creation of odors during maintenance or construction of Special Protections implementation projects such as VSS units. It is possible that foul air could be temporarily released to the atmosphere while enclosed sources are uncovered or piping is reconfigured. These releases could create objectionable odors at the nearest receptors. These impacts are temporary and unpleasant odors, if any, will be at minimum with completion of the installation. VSS devices may be a source of objectionable odors if design allows for water stagnation or collection of water with sulfur-containing compounds. Storm water runoff is not likely to contain sulfur-containing compounds, but stagnant water could create objectionable odors.

► **Mitigation Measure:** Mitigation measures to eliminate odors caused by stagnation could include covers, aeration, filters, barriers, and/or odor suppressing chemical additives. Devices could be inspected to ensure that intake structures are not clogged or pooling water. During maintenance, odorous sources could be uncovered for as short of a time period as possible. To the extent possible, pollution removal devices could be designed to minimize stagnation of water (e.g., allow for complete drainage within 48 hours) and installed to increase the distance to sensitive receptors in the event of any stagnation. Notably, the current conditions result in significant impacts from odor, especially following storm events, where upstream trash may collect downstream of rivers and streams and at shoreline, and beaches. The potential re-suspension of sediments and associated pollutants during construction could also impact air quality.

► **Implementation:** At the localized project level, Responsible Parties performing a CEQA analysis could develop an operations plan for the specific construction and/or maintenance activities designed to address the variety of available measures to limit the air quality impacts. These could include vapor barriers and moisture control to reduce transfer of small sediments to air. Mitigation measures applied would eliminate or reduce these impacts to less than significant

► **Significance After Mitigation:** Less than significant.

ANALYSIS OF VARIOUS BMPs IMPACTS – AIR RESOURCES

Catch Basin Inserts

Long-term increases caused by ongoing maintenance of catch basin inserts (e.g., delivery of materials, street sweeping) are potential sources of increased air pollutant emissions. Mitigation measures to mitigate any potential impacts to air quality due to increased traffic could include 1) use of construction, maintenance, and street sweeper vehicles with lower-emission engines, 2) use of soot reduction traps or diesel particulate filters, 3) use of emulsified diesel fuel, 4) use of vacuum-assisted street sweepers to eliminate potential re-suspension of sediments during sweeping activity, and 5) the design of trash removal devices to minimize the frequency of maintenance trips. As a requirement of the MS4 permit, **catch basins** are cleaned out on varying schedules at a minimum frequency of once a year. This implementation measure does not require an increase in cleaning frequency above what is already required for existing permits, therefore no significant increase in air emissions is anticipated.

Nonetheless, mitigation measures are available to mitigate any potential impacts to air quality due to increased traffic. Mitigation measures could include 1) use of construction, maintenance, and street sweeper vehicles with lower-emission engines, 2) use of soot reduction traps or diesel particulate filters, 3) use of emulsified diesel fuel, 4) use of vacuum-assisted street sweepers to eliminate potential re-suspension of sediments during sweeping activity.

Vortex separation system

Short term increases in traffic during the construction and installation of VSS units and long-term increases in traffic caused by ongoing maintenance of these devices (e.g., delivery of materials and deployment of vacuum trucks) are potential sources of increased air pollutant emissions. A detailed analysis of emissions generated by construction equipment can only be done at the project level. If daily construction emissions exceed significance thresholds, construction projects for different VSS units can be conducted on different days to reduce emissions rates. Mitigation measures for increased emissions due to increased vehicle trips of increased use of construction equipment could include: 1) use of construction and maintenance vehicles with lower-emission engines, 2) use of soot reduction traps or diesel particulate filters, and 3) use of emulsified diesel fuel. VSS units may be a source of objectionable odors if design allows for water stagnation or collection of water with sulfur-containing compounds. Mitigation measures to eliminate odors caused by stagnation could include covers, aeration, filters, barriers, and/or odor suppressing chemical additives. Devices could be inspected to ensure that intake structures are not clogged or pooling water. During maintenance, odorous sources could be uncovered for as short of a time period as possible. The potential re-suspension of sediments and associated pollutants during construction could also impact air quality. An operations plan for the specific construction and/or maintenance activities could be completed to address the variety of available measures to limit the air quality impacts. These could include vapor barriers and moisture control to reduce transfer of small sediments to air.

Road and Parking Lot Street Sweeping
Increased road and parking lot sweeping would increase traffic and therefore increase air pollutant emissions. Applicants implementing the Special Protections would analyze the impacts of increased sweeping at the project level. Increased sweeping may increase objectionable odors and mitigation measures are available to mitigate any potential impacts to air quality due to increased sweeping. Mitigation measures could include 1) use of street sweeper vehicles with lower-emission engines, 2) use of soot reduction traps or diesel particulate filters, 3) use of emulsified diesel fuel, 4) use of vacuum-assisted street sweepers to eliminate potential re-suspension of sediments during sweeping activity.

Increased street sweeping would increase traffic and therefore increase air pollutant emissions. Increased street sweeping would not foreseeably be implemented alone for the Special Protections. It is not clear how often street sweeping would be increased to fulfill the requirements at this point. If the stakeholders make decisions on the frequency of street sweeping, the impacts on air quality caused by increased street sweeping could be analyzed at project level. Nevertheless, the impacts of increased street sweeping have been included in alternatives, such as catch basin inserts, that may also include increased street sweeping.

Public Education
Public education is not expected to have an impact on air quality, as it does not involve physical changes to the environment. There are no foreseeable impacts on air quality.

Each applicant, as part of their individual Special Protections BMP implementation project and CEQA analysis, may assess impact to air quality related to construction activities. Such impacts to be considered may include exhaust emissions and potential odors from construction equipment used on the construction site and vehicles used to transport materials to and from the site, and exhaust emissions from the motor vehicles of the construction crew. Stationary or mobile-powered on-site construction equipment may include trucks, tractors, signal boards, excavators, backhoes, concrete saws, crushing and/or processing equipment, graders, trenchers, pavers, and other equipment.

Installation and maintenance of structural BMPs to implement the Special Protections could result in potentially significant environmental effects with regard to air quality. However, mitigation measures which can be applied to reduce and/or eliminate these impacts are available. These mitigation measures are within the responsibility and jurisdiction of the applicants of this General Exception and can or should be adopted by them. The State Water Board does not direct which compliance measures be applied in order that potential environmental impacts be reduced or avoided. It is foreseeable that these mitigation measures may not always be capable of reducing these impacts to levels that are less than significant in every conceivable instance. In the event that a specific mitigation measure or alternative may not reduce impacts to levels that are less that significant, the project proponent may need to consider an alternative strategy or combination of strategies in their project CEQA analysis subsequent to comply with the Special Protections.

Depending on what measures each applicant uses to comply with the proposed exception, there may be an impact on air quality. However, the State Water Board staff believes that mitigation is available to reduce any potential impacts to air quality to less than significant levels. The mitigation measures would be implemented at the project-specific level.

6.3 ANALYSIS OF ENVIRONMENTAL IMPACTS - BIOLOGICAL RESOURCES

This section addresses biological resources that could be affected with implementation of the proposed project. The information presented is based on literature reviews and a review of existing documentation and research prepared explicitly for the project. As explained in the IS , impacts on marine biological resources range from “no impact” to “potentially significant. These issues are addressed in the impact analysis.

Water quality issues that may affect biological resources may be caused by a large spectrum of constituents which may be introduced by a number of different sources. Most impacts on biological resources occur indirectly as a result of degradation of surface water quality, whether a stream, creek, estuary or bay adjacent to ASBS.

The potential for the Responsible Parties’ existing discharges identified herein to cause water quality impacts that would affect biological resources is dependant on the magnitude of the contamination or mass loading from these flows. A single discharge would not likely have a substantial effect on the mass loading of contaminants to the

ASBS; however, the mass loading from high densities of discharges within a watershed together with inputs from other sources such as agricultural, recreational (golf courses, etc), storm, or urban runoff, can have a substantial effect on ASBS ocean water quality which could lead to adverse impacts on biological resources.

Many watersheds adjacent to the ASBS identified herein contain 303(d)-listed water bodies known to contribute sediment, pathogens, nutrients as well as other constituents to the marine environments located within an ASBS. Some impairment metrics to the nearshore waters of ASBS may be assessed visually such as eutrophication which results in excessive algal and aquatic plant growth, low oxygen levels. This type of contamination to marine life can also lead to human health advisories such as shellfish harvesting advisories or closure of a fishery area.

Though each of the 25 ASBS listed herein is unique in its characteristics, some generalized assumptions are made with regard to contaminant loading via discharges of the Responsible Parties. Impacts to marine life from pollutants including the effects of constituents listed in the Ocean Plan are well known. The impact analysis for aquatic biological resources here compares existing conditions to conditions that would exist with implementation of the proposed statewide Special Protections. These comparisons are based primarily on the water quality impact analysis in Section 6.7 “Analysis of Hydrology and Water Quality,” because impacts to aquatic biological resources would occur as a result of impacts from discharges on ocean water quality. The construction and operation of BMPs can cause a variety of impacts on biological resources. However, these impacts can be difficult to quantify. The Ocean Plan water quality standards are enforceable limits composed of two parts: (1) the designated beneficial uses of water and (2) criteria (i.e., numeric or narrative limits) to protect those beneficial uses.

Biological resources are among the “beneficial uses” as defined in Section 13050(f) of the Porter-Cologne Water Quality Control Act, which defines them as uses of surface water and groundwater that must be protected against water quality degradation (beneficial uses are discussed in Section 4.1-4, “Beneficial Uses,” of this document). California Ocean Plan water quality objectives (or “criteria” under the Clean Water Act) are found in the Basin Plans adopted by the State Water Board and each of the nine Regional Water Boards. Some of these standards, as they pertain to biological resources, may be site specific or vary by season, such as for dissolved oxygen. Ammonia is pH and temperature dependent.

Toxicity thresholds may vary depending on some of these parameters and depend on length of exposure as well (e.g., 4-day average, 1-hour average). Therefore numeric water quality standards are often not explicitly defined for biological resources under federal, state, or local plans and regulations as they are for human health thresholds. Therefore, much of this impact discussion is based on qualitative information.

Indirect impacts to biological resources may occur during the construction of BMPs, which typically involves the excavation of trenches and other ground-disturbing work that can cause the erosion of soil, habitat loss, and displacement of wildlife. Furthermore, off-site erosion and storm water runoff can pollute streams and other receiving waters, especially if best management practices (BMPs) for standard storm water and erosion controls are not followed or are not successful.

Operation of properly functioning BMPs generally would have no direct effects on terrestrial biological resources, but could still cause direct impacts on water quality in sensitive ASBS marine ecosystems, which in turn, could result in indirect adverse effects on aquatic habitat. Species that occupy aquatic systems or whose life cycles are interconnected to these systems could also be affected. Impacts would vary substantially because of many variables. These variables that control the potential for BMPs to affect surface water quality include storm water effluent quality and the reduction and subsequent elimination of discharges of wastes to ocean waters.

THRESHOLDS OF SIGNIFICANCE

The potential for the Special Protections to result in significant environmental effects was analyzed using information and criteria provided in the California Environmental Quality Act (CEQA) Guidelines. Pursuant to the suggested thresholds in Appendix G of the State CEQA Guidelines, the proposed project would have a significant impact on biological resources if it would:

► Have a substantial adverse effect, either directly or indirectly through habitat modifications, on the population of any species identified as a candidate, sensitive, or special-status species in regional or local plans, policies, or regulations, or by DFG or USFWS;

► Have a substantial adverse effect on any riparian or other sensitive natural community identified in local or regional plans, policies, or regulations or by DFG or USFWS;

► Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;

► Conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or

► Conflict with the provisions of an adopted habitat conservation plan, natural communities conservation plan, or other approved local, regional, or state habitat conservation plan.

IMPACTS OF THE PROPOSED PROJECT AND MITIGATION MEASURES BIOLOGICAL RESOURCES

Impact 6.3-1 Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special

status species in local or regional plans, policies, or regulations, or by the DFG or USFWS.

> **As described under Impact 6.7 in "Hydrology and Water Quality," the proposed regulations could lead to an increase in BMP repairs, replacements, and upgrades. These changes would occur on sites that already have been disturbed and contain existing BMPs or other drainage conveyances and associated residential or commercial structures, and by virtue of their ongoing use are highly unlikely to support sensitive habitat that could be affected by repairs or replacement. With respect to new BMPs, as previously described these regulations do not alter the local land use agency process associated with ground-disturbing activities from residential and commercial development. A substantial adverse effect would occur if an individual project at the local level modified habitat of any species identified as a candidate, sensitive, or special status species. These effects would be significant. However, the implementation of Special Protections only affect the design of BMPs and their effectiveness to eliminate the discharge of waste to ASBS, not whether land uses associated with BMPs would be permitted. Therefore, impacts on biological resources related to typical ground-disturbing activities and water quality effects associated with the new BMPs regulations are considered less than significant with mitigation incorporated.**

► **Mitigation Measure:** Modify the proposed Special Protections to Require the Implementation of coordination with local or regional plans, policies, or regulations, or by the DFG or USFWS.

► **Implementation:** The application of Mitigation Measures is the responsibility of the Responsible Party implementing the project.

► **Significance After Mitigation:** Less than significant.

Impacts 6.3-2, 6.3-3, 6.3-4, and 6.3-5 are discussed together. The implementation of the Special Protections measures by the Responsible Parties identified herein may have the potential to; have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the DFG or USFWS; interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory corridors, or impede the use of native wildlife nursery sites; conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

The implementation of the proposed Special Protections would require most Responsible Parties to assess their needs for waste discharge correction and potentially convert their existing conveyances to treatment BMPs, LID or with other supplemental treatment units. Such BMP upgrades or replacements would need to be completed within the time frame specified in the Special Protections. As discussed in the "Hydrology and Water Quality" section under Impact 6.7, construction of LID or BMPs could lead to the concentration of a large amount of construction activity within 600 feet of ASBS shoreline within a short time frame. Construction and replacement activities could cause sediment, storm water effluent, and debris to enter shoreline and/or perennial drainages, and ultimately the ocean waters of ASBS.

Additionally, storm events could cause newly constructed sites to erode, flushing sediment into receiving waters. As discussed previously, TSS and sediments could physically block sunlight, precipitate out of suspension and smother benthic macro invertebrates, fish and amphibian eggs, or aquatic plants, which could lead to suffocating fish and other aquatic life. TSS and turbidity are particularly problematic for fisheries, especially in those that are critical for recovery of a species (e.g., steelhead and Chinook salmon). Sediments could also transport other contaminants to receiving waters, including nutrients, pathogens, and other organic materials in storm water runoff. Nutrients may promote eutrophication and hypoxia within the receiving waters, which could increase the mortality of special status species, while pathogens that could be present in storm water runoff, such as *Toxoplasma* and *Cryptosporidium* could adversely affect mammals (i.e., harbor seals, sea otters) and other species as described above.

Where areas larger than 1 acre could be disturbed, the activities would be subject to the requirements of the statewide National Pollutant Discharge Elimination System General Permit for Storm water Discharges Associated with Construction Activity. However, in the majority of cases, construction activities at individual sites are not anticipated to affect more than 0.5 acre, and as discussed and addressed further in the "Hydrology and Water Quality" section under Impact 6.7, not all jurisdictions have local BMP requirements related to sedimentation and erosion control for construction activities disturbing less than 1 acre that are sufficient to avoid water quality impacts. Therefore, where targeted areas of impairment are located in jurisdictions with inadequate BMP requirements, compliance with implementation of the proposed draft Special Protection regulations could lead to sediments, erosion, or deposits of hazardous materials washing into adjacent waters, which could affect natural water quality and beneficial uses to the degree that it could degrade wetlands or sensitive aquatic habitat such as estuaries, bays, and marine aquatic life. The result would be harmful to fisheries and special status species. Therefore, this impact is considered **potentially significant**.

► **Mitigation Measure:** Modify the proposed implementations to require erosion and sediment control measures during BMP related construction activities. Erosion and sediment control measures are found in the Construction General Permit online at http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml.

► **Implementation:** The application of the site specific mitigation measure is the responsibility of the discharger identified herein the General Exception. Appropriate measures would be identified in the project proponents CEQA analysis.

► **Significance After Mitigation:** Less than significant with mitigation incorporated.

The General Exception project has the potential to impact species, habitat, and sensitive natural communities within each of the 26 ASBS identified in this General Exception, if existing inadequate controls currently in force are allowed to continue. The applicants (Responsible Parties) submitted biological monitoring reports characterizing near shore marine biota. Four reports provided data sufficient to statistically compare impact from reference locations at San Clemente and San Nicolas Islands (Navy), Del Mar Landing, and Trinidad ASBS. Based on comparison of community composition, there is evidence that at three ASBS the impact locations are different from reference locations, but there is some question whether the differences are due to discharges or sample design. Caltrans reports for multiple ASBS locations include Redwood National Park, James V. Fitzgerald, Año Nuevo, Point Lobos, Carmel, and Irvine Coast ASBS. While certain ASBS sites within Caltrans area of impact differed from reference sites, there was no strong support that this was due to discharges. Differences between impact and reference locations were also found at Duxbury Reef ASBS (County of Marin) and at the Pillar Point area of James V. Fitzgerald ASBS (Air force). Again at these locations, the data was inadequate to attribute the variation to the impacts of the discharge.

The project, granting an exception with special mitigating conditions (i.e., special protections) will allow the continued discharge of wastes from various origins including storm water runoff into ASBS. It is anticipated that the mitigating terms and conditions of the special protections will result in improved water quality conditions. Further, the terms and conditions of the special protections provide for continued water quality improvements over time if all of the special protections designed to limit discharges of waste from the applicants are implemented.

It is anticipated that, as the applicants identified in this General Exception plan for and design individual control projects to comply with the terms and conditions or "Special Protections," each applicant will assess biological impacts on a project-by-project basis. If it is determined that a project will have biological impacts, then potential mitigation measures must be considered. A technical biological impact analysis may include evaluation of terrestrial and marine biota of an individual project. The impact analysis may assess mitigation measures that are determined to be reasonable and feasible, and at the time of final design would then be incorporated into projects' plans and specifications. Indirect effects to biological resources may extend throughout the duration of construction and may include increased erosion, siltation, and runoff. Projects should result in long-term, beneficial effects to biological resources within each individual project.

Thresholds of Significance:
1 - Indirect impacts on marine biological resources associated with existing baseline inadequate pollution and dry-weather flows control measures.

ANALYSIS FOR IMPACTS VARIOUS BMPs TO BIOLOGICAL RESOURCES

Catch Basin Inserts

Catch basin inserts fit directly into curbside catch basins typically in urbanized areas where native habitat or special status species may be absent. As such, potential impacts to biological resources would likely be avoided, including impacts to species diversity, impacts to special status species, impacts to habitat, or impacts to wildlife migration. Typically, installation of catch basin inserts requires no construction or ground disturbance which could impact biological resources. It is anticipated that the use of catch basin inserts will improve biological resources and no mitigation is required since no impact is anticipated. However, during a proposed site specific projects CEQA analysis, these issues would be assessed and coordinated with the appropriate agency, DFG, FWS, NMFS.

Vortex Separation System

It is anticipated that vortex separation system units would be implemented in currently urbanized areas. Because these areas are already urbanized it is unlikely that the installation of VSS systems would cause the removal, disturbance or change in diversity of any plant species or cause a change or reduction in the number of any unique, rare or endangered species of plants. However, depending on the final location of facilities, potential impacts to biological resources including special status species and habitat, wetlands, and trees protected under local ordinances or policies could occur where facilities are located.

It is not reasonably foreseeable that implementation of VSS units would result in the introduction of exotic or invasive plant species into an area. Nor will it result in a barrier to the normal replenishment of existing species. However, in the case that landscaping is incorporated into the specific project design, there is a possibility of disruption of resident species. It is possible that direct or indirect impacts to special status animal species may occur at the project level. Because these animal species are protected by state and/or federal Endangered Species Acts, impacts to them would be considered potentially significant, even though it is expected that potential projects would occur in what would generally be described as urban areas. If these species are present during activities associated with the potential projects, it could conceivably result in direct impacts to special status species, including; direct loss of a sensitive species; increased human disturbance in previously undisturbed habitats; mortality by construction or other human-related activity; impairing essential behavioral activities, such as breeding, feeding or shelter/refugia; destruction or abandonment of active nests/den sites; direct loss of occupied habitat. In addition, potential indirect impacts may include but are not limited to; displacement of wildlife by construction activities; disturbance in essential behavioral activities due to an increase in ambient noise levels and/or artificial light from outdoor lighting around facilities.

It is not reasonably foreseeable that implementation of VSS units will result in the introduction of a new animal species. In addition, because it is anticipated that potential projects would be established in existing developed areas it is not expected that potential project sites would act as a travel route or regional wildlife corridor. It is anticipated that construction of these facilities would not considerably restrict wildlife movement. A travel route is generally described as a landscape feature such as a ridgeline, canyon, or riparian strip within a larger natural habitat area that is used frequently by animals to facilitate movement and provide access to necessary resources such as food, water and den sites. Generally, wildlife corridors are found in areas of habitat which connect two or more habitat patches that would otherwise be fragmented or isolated from one another. It may be unlikely that VSS units would be construction in areas such as these.

VSS units may potentially impact wildlife crossings, where the crossing is small, narrow, short or constricted. Such an area allows wildlife to pass under or through obstacles that would otherwise hinder movement. Crossings may typically be manmade and include culverts, underpasses and drainage pipes to provide access across or under roads, highways, or other physical obstacles.

Migratory avian species potentially may be impacted by the construction activities associated with the implementation of VSS units. Avian species have the potential to utilize potential project sites, including ornamental vegetation during breeding and nesting season, and may be protected under the Migratory Bird Treaty Act (MBTA). The MBTA includes provisions for protection of migratory birds under the authority of the USFWS and CDFG. The MBTA protects over 800 species including geese, ducks, shorebirds, raptors, songbirds and many other relatively common species.

It is not reasonably foreseeable that the implementation of VSS will result in the deterioration of existing fish and or wildlife habitat. It is anticipated that potential VSS locations will be in already developed areas and would not result in the removal of sensitive biological habitats. VSS would not be sited within a stream course, but within a storm drain system.

6.3.6 Mitigation which should be implemented to reduce or avoid potential project level impacts to biological resources include:

1. If any unique plant species are present at the proposed installation site, plants could be preserved prior, during and after construction or by re-establishing and maintaining the plant communities affected, post-construction.

2. When proposed project sites are identified, a search of the California Natural Diversity Database (CNDDB) could be employed to confirm that any potentially sensitive plant species or biological habitats in the site area are properly

identified and protected. Plant surveys for special-status plant species could be conducted at each site location. If sensitive plant species occur on the project site, mitigation would be required in accordance with the Endangered Species Act. Mitigation measures shall be developed in consultation with the California Department of Fish and Game (CDFG) and the United States Fish and Wildlife Service (USFWS). Applicants should take steps to avoid impacts to unique, rare or endangered species or sensitive habitats.

3. Proposed project designs which incorporate the use of landscaping, should avoid or minimize the disruption of resident native species by using plants native to the area. The use of exotic invasive species or other plants listed in the Exotic Pest Plant of Greatest Ecological Concern in California should be prohibited (CalEPPC, 1999). As Applicants select measures or projects to comply with Special Protections which have the potential to significantly impact unique, rare or endangered (special status) species or sensitive habitat, such projects should be avoided. When specific projects are developed a search of the CNDDB would confirm that any potentially special status animal species in the site area are properly identified and protected. Focused animal protocol surveys for special status animal species shall be conducted at each site location.

4. If special status animal species are potentially near the project site area, as required by the Endangered Species Act (ESA), two weeks prior to grading or the construction of facilities and per applicable USFWS and/or CDFG protocols, pre-construction surveys to determine the presence or absence of special status species would be conducted. They should extend off-site to determine the presence or absence of any special status species adjacent to the project site. If special Status species are found to be present on the project site or within the project site buffer area, mitigation would be required under the ESA. Mitigation measures would be developed with the USFWS and CDFG to reduce potential impacts.

5. If VSS units are implemented at locations where they would foreseeably adversely impact species migration or movement patterns, mitigation measures shall be implemented to ensure that impacts which may result in a barrier to the migration or movement of animals is less than significant. Any site specific wildlife crossings shall be coordinated in consultation with CDFG. If a wildlife crossing would be significantly impacted, the project design shall include a new wildlife crossing in the same general location.

6. If a project is proposed for construction during the avian breeding season for special status species and/or MBTA protected species, then prior to (within 2 weeks) to the onset of construction activities, surveys for nesting migratory avian species shall be conducted on the site following USFWS and/or CDFG protocols. Active nests identified on or within a distance stipulated by USFWS and/or CDFG would require mitigation in consultation with these agencies.

Road and Parking Lot Street Sweeping
It is anticipated that road and parking lot sweeping would not involve a direct change to the physical environment. Indirect impacts could include an increase in ambient noise levels, but should not result in a significant impact to wildlife species adapted to a developed environment. No mitigation would be required since no impact is anticipated.

Public Education
It is anticipated that public education would involve no change to the physical environment either directly or indirectly and is not foreseeable to result in impacts to biological resources. Public education measures employed to comply with Special Protections, which include interpretive signage or kiosks, shall be evaluated at the project level and incorporate mitigation measures to a less than significant level.

Installation and maintenance of some structural BMP's could result in potentially significant environmental effects with regard to biological resources. However, mitigation measures which can be applied to reduce and/or eliminate these impacts are available as described. These mitigation measures are within the responsibility and jurisdiction of the responsible parties of the General Exception, and can or should be adopted by them. The project proponent would perform CEQA analysis on a project to determine measures appropriate for their location. The State Water Board does not direct which compliance measures applicants choose to adopt or which mitigation measures they employ. The State Water Board does, however, recommend that appropriate mitigation measures be applied in order that potential environmental impacts be reduced or avoided to ASBS. It is foreseeable that these mitigation measures may not always be capable of reducing these impacts to levels that are less than significant in every conceivable instance. In the event that a specific mitigation measure or alternative may not reduce impacts to levels that are less than significant, the project proponent may need to consider an alternative strategy or combination of strategies to comply with the Special Protections.

6.4 ANALYSIS OF ENVIRONMENTAL IMPACTS - CULTURAL RESOURCES

Regulations adopted pursuant to CEQA (Title 14; Chapter 3; Article 5; § 15064.5) establish rules for the analysis of historical resources, including archaeological resources, in order to determine whether a proposed project may have a substantial adverse effect on the significance of the resource.

The National Historic Preservation Act (NHPA) of 1966, as amended, sets forth national policy and procedures regarding historic properties, defined as districts, sites, buildings, structures, and objects included in or eligible for the National Register of Historic Places (NRHP).

CEQA and California Public Resources Code (PRC) §5024.1 established the California Register of Historical Resources. PRC §5024 requires state agencies to identify and protect State-owned resources that meet NRHP listing criteria. Sections 5024(f) and 5024.5 require state agencies to provide notice and consult with the State Historic Preservation Office (SHPO) before altering, transferring, relocating, or demolishing State-owned historical resources that are listed on or are eligible for inclusion in the National Register or are registered or eligible for registration as California Landmarks.

PRC §5097.9 established the Native American Heritage Commission (NAHC), which maintains a statewide list of sacred sites, designates the "most likely descendants" when human remains are encountered, and can mediate disputes relating to the treatment of human remains. PRC §5097.991 states that Native American remains and associated grave artifacts shall be repatriated. PRC §5097.5 makes it a misdemeanor for anyone to knowingly disturb any archaeological, paleontological, or historical feature situated on public lands.

If a proposed project is determined to have a significant cultural resource impact under CEQA, then CEQA dictates that mitigation measures must be incorporated into the project unless such measures are not feasible. It is anticipated that each applicant will assess cultural resource impacts on a project-by-project basis as part of compliance with the terms and conditions of the General Exception and part of their CEQA project analysis.

THRESHOLDS OF SIGNIFICANCE

For the purpose of this analysis an impact to cultural resources is considered significant if the project would result in the potential to:

► disturb any human remains, including those interred outside of formal cemeteries

IMPACTS OF THE PROPOSED PROJECT AND MITIGATION MEASURES

Impact 6.4-1 Direct Impacts Associated with Effects on a Cultural Resource

> **The General Exception Project has the potential to have a substantial adverse effect on cultural resources during construction of various Special Protections implementation measures and the possibility of disturbance of any human remains including those interred outside of formal cemeteries. A program level of analysis of the potential for impacts to cultural resources related to the implementation of the Special Protections and potential impacts are evaluated for various BMPs considered as a method of compliance.**

► **Mitigation Measure:** Upon determination of specific locations for BMPs, responsible agencies should complete further investigation, including consultation with Native American tribes, to make an accurate assessment of potential to affect historic, archaeological, or architectural resources or to impact any human remains. If potential impacts are identified, mitigation measures could include project redesign, such as the relocation of facilities outside the boundaries of archeological or historical sites. According to the California Office of Historic Preservation, avoidance and preservation in place are the preferable forms of mitigation for archeological sites. When avoidance is infeasible, a data recovery plan should be prepared which adequately provides for recovering scientifically consequential information from the site. Studies and reports resulting from excavations must be deposited with the California Historical Resources Regional Information Center (California Office of Historical Preservation, 2006). As such, with mitigation employed, it anticipated that any reasonably foreseeable impacts would be reduced to less than significant with mitigation.

► **Implementation:** Project-level impacts on cultural resources due to implementation of various BMPs would be similar.

► **Significance After Mitigation:** Less than significant

ANALYSIS OF VARIOUS BMPs IMPACTS - CULTURAL RESOURCES

Catch Basin Inserts

Catch basin inserts fit directly into curbside catch basins in urbanized areas and require no construction or ground disturbance. There is therefore no potential to impact cultural resources from this alternative means of compliance. No mitigation is required since no impact is anticipated**.**

Vortex Separation System

Vortex separation systems would be installed in currently urbanized areas where ground disturbance has previously occurred. Because these areas are already fully urbanized it is unlikely that their implementation would cause a substantial adverse change to historical or archeological resources, destroy paleontological resources, or disturb human remains. However, depending on the final location of facilities, potential impacts to cultural resources could occur. Paleontological resources can be found in areas of the coastal zone containing fossil-bearing formations. Archaeological resources have been found within the urbanized portions of the coastal zone. Historic and architectural resources have also been found within the coastal zone. The site-specific presence or absence of these resources is unknown because the specific locations for VSS will be determined by applicants at the project level. Installation of these systems could result in minor ground disturbances, which could impact cultural resources if they are sited in locations containing these resources and where disturbances have not previously occurred.

Upon determination of specific locations for VSS, applicants should complete further investigation, including consultation with Native American tribes, to make an accurate assessment of potential to affect historic, archaeological, or architectural resources or to impact any human remains. If potential impacts are identified, mitigation measures could include project redesign, such as the relocation of facilities outside the boundaries of archeological or historical sites. According to the California Office of Historic Preservation, avoidance and preservation in place are the preferable forms of mitigation for archeological sites. When avoidance is infeasible, a data recovery plan should be prepared which adequately provides for recovering scientifically consequential information from the site. Studies and reports resulting from excavations must be deposited with the California Historical Resources Regional Information Center. No impact is anticipated after mitigation.

Road and Parking Lot Street Sweeping
Road and parking lot sweeping would occur in areas along public rights of way and would have no potential to impact cultural resources. No mitigation is required since no impact is anticipated.

Public Education
Public education would involve no change to the physical environment either directly or indirectly and would have no impact on cultural resources. No mitigation is required since no impact is anticipated.

6.5 ANALYSIS OF ENVIRONMENTAL IMPACTS - GREENHOUSE GAS EMISSIONS

On June 1, 2005, the governor signed Executive Order S-3-05. The goal of this Executive Order is to reduce California's greenhouse gas (GHG) emissions to: (1) 200 levels by 2010; (2) 1990 levels by 2020; and (3) 80% below the 1990 levels by the 2050. In 2006, this goal was further reinforced with the passage of Assembly Bill 32 (AB 32), the Global Warming Solutions Act of 2006. AB 32 sets the same overall GHG emissions reduction goals while further mandating the California Air Resources Board create a plan. It is anticipated that an individual project planned and designed by each applicant would also be assessed under CEQA for climate change related impacts as part of the project's air quality assessment report.

For most Special Protections implementation projects of small to moderate size, GHG emissions could be to some extent quantified, but the analysis would focus on qualitative compliance with the emission reduction strategies contained in the California Climate Action Team's Report to the Governor. This report proposes a path to achieve the GHG reduction targets found in AB 32 and Executive Order S-3-05. While the report and Executive Order S-3-05 do not specifically mention CEQA, they do include a list of various measures that can be employed to achieve the GHG reduction targets. It can be easily argued that proposed projects that implement all appropriate actions listed in the emissions reduction strategies relevant to the proposed project would have a less than significant impact to global climate change. This same type of approach can be used for projects within counties that have an adopted GHG Reduction Plan (currently Marin County is the only one). In cases where quantifying emissions is not reasonable or possible, such as Specific Plans where the development is at a very programmatic approach, this approach could still be used and is defensible. For projects that have an established emissions inventory (such as cities, counties, or specific plans) the analysis can rely more heavily upon the quantitative analysis by estimating the existing GHG emissions inventory, the past GHG emissions invent ory for year 2000, year 1990, and the future year emissions inventory with the project. This approach can then quantitatively show how the project will (or will not) meet the GHG emissions targets (i.e. achieve the year 2000 GHG emissions inventory by year 2010, and the 1990 GHG emissions inventory by year 2020) found in Executive Order S-3-05. The types of projects that can rely upon the quantities of GHG emissions in determining significance is fairly limited, but lend themselves to General Plan updates.

By combining both a qualitative and quantitative approach, the analysis can be tailored to the particular type and size of the General Exception Special Protections project and still provide, to the fullest extent feasible, a comprehensive analysis of global climate change impacts that includes a comparison of significance criteria and mitigation methods. This is the most legally defensible method currently available.

Recommended Climate Change impact analysis process, as discussed earlier, the most defensible method to assess the significance of a project's indirect or direct and/or cumulative contribution to global climate change involved: 1) project compliance with emission reduction strategies, or when available and feasible comparison of emissions inventories; and 2) an inventory of project GHG emissions.

THRESHOLDS OF SIGNIFICANCE

For the purpose of this analysis an impact to greenhouse gas emissions is considered significant if the project would result in:

► generating greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.

IMPACTS OF THE PROPOSED PROJECT AND MITIGATION MEASURES

Impact 6.5-1 Direct Impacts Associated with Greenhouse Gas Emissions

The General Exception Project has the potential to have direct temporary short-term impacts from construction-related activities as associated with implementation of Special Protections. Construction activities and BMPs such as street sweeping have the potential to generate emissions related to GHG.

► **Mitigation Measure:** Onsite project mitigation. Project compliance with the greenhouse gas emission reduction strategies contained in the California Climate Action Team's Report to the Governor will be assessed. If new projects are consistent with those strategies, it follows that the project would not significantly contribute to a cumulative global climate change impact. To reduce California's greenhouse gas emissions to the levels proposed in Executive Order S-3-05, the California EPA Climate Action Team developed a report that outlines strategies for meeting the Governor's targets. Use of the strategies in the report to determine project consistency are the most appropriate to use at this time because the report "proposes a path to achieve the Governor's targets that will build on voluntary actions of California businesses, local government and community actions, and State incentive and regulatory programs" (CA 2006). AB 32 requires that a list of emission reduction strategies be published to achieve the goals set out in AB 32. However, until those reduction strategies are published, emission reduction strategies to meet Executive Order S-3-05 will be relied upon.

Emission strategies would be implemented by a Responsible Party and identified as part of a projects CEQA analysis. The strategies that CARB is to implement over the next two years are summarized in Appendix 9.

► **Implementation:** A project inventory of greenhouse gas emissions (carbon dioxide, ethane, nitrous oxide) forseeably generated by a local project would be presented for informational purposes and for full disclosure. The inventory would be compared to the California inventory and/or the County, when they become available. Emissions are typically estimated in tons per year, which are converted to teragrams of carbon dioxide equivalents (Tg CO2 Eq.) using the formula: Tg CO2 Eq. = (tons of gas) x (GWP) x (Tg / 1,000,000). One Tg is equal to one million metric tons. The global warming potential (GWP) for selected gases assessed are located in Appendix 9. The emissions are also compared with the current inventory for California, the air district, the county, and/or the city, as available. The Air Resources Board's website http://www.arb.ca.gov/homepage.htm provides additional AB32 information.

Motor vehicles emit carbon dioxide, methane, and nitrous oxide. URBEMIS2002 does not estimate emissions of carbon dioxide. However, URBEMIS2007 should estimate emissions of carbon dioxide. In the interim, carbon dioxide from motor vehicles can be manually calculated using emission factors from EMFAC2002 or EMFAC2007, whichever version of EMFAC the air district with jurisdiction over the basin in which the project is located has accepted. Emissions of methane from motor vehicles can also be calculated with EMFAC. Responsible Parties implementing a site specific project may, as part of their CEQA analysis utilize U.S. EPA emission factors available to calculate nitrous oxide and methane emissions from vehicles (EPA 2004, EPA 2004b).

► **Significance After Mitigation:** Less Than Significant.
Depending on what measures each applicant uses to comply with the proposed exception, there may be an impact on greenhouse gas emissions, either directly or indirectly. As such, since BMP construction projects are considered relatively small short-term and localized projects, the State Water Board believes that mitigation is

available to reduce any reasonably foreseeable potential GHG impacts to greenhouse gas emissions would be less than significant level.

6.6 ANALYSIS OF ENVIRONMENTAL IMPACTS - HAZARDS AND HAZARDOUS MATERIALS

CEQA requires an analysis to assess whether a proposed project would have a hazard or hazardous material impact. If a proposed project is determined to have a significant hazard or hazardous material impact under CEQA, then CEQA dictates that mitigation measures must be incorporated into the project unless such measures are not feasible. It is anticipated that each applicant will assess hazard or hazardous material impacts on a project-by-project basis as part of compliance with the terms and conditions of the General Exception. If it is determined that a project will have hazard or hazardous material impacts, then potential abatement measures must be considered. A hazards analysis may include materials or waste generated from construction of an individual project.

As part of the scoping and environmental analysis conducted for the General Exception project, the environmental resources and hazards were considered, but no potential for significant long-term adverse impacts were identified. Depending on what measures each applicant uses to comply with the proposed exception, there may be an impact from hazards and hazardous materials. However, the State Water Board believes that mitigation is available for the Responsible Parties to reduce any potential impacts from hazards and hazardous materials to less than significant levels.

THRESHOLDS OF SIGNIFICANCE

The potential for the Special Protections to result in significant environmental effects was analyzed using information and criteria provided in the State CEQA Guidelines. Pursuant to the suggested thresholds in Appendix G of the Guidelines, the proposed project would have a significant impact if it would:

- ► Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;

- ► Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

IMPACTS OF THE PROPOSED PROJECT AND MITIGATION MEASURES

Impact 6.6-1 Direct Impacts Associated with Construction of General Exception Special Protections BMP Implementation.

The potential exists for Special Protections-related construction to create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. Construction activities related to installation on various BMPs may include soil disturbance, potential involvement with aerially deposited lead, structures with lead-based paint and asbestos-containing materials, and hazardous materials. These activities may be considered reasonably foreseeably minimal and localized to the immediate area.

Hazards and hazardous materials have the potential to be located throughout more urbanized portions of the coastline and/or may occur as naturally occurring or man-made hazards. The potential for contaminated soil or associated groundwater from commercial and industrial sites such as gas stations, dry cleaners and manufacturing facilities also may occur in more urbanized portions adjacent to ASBS. Aboveground and underground storage tanks may contain hazardous substances and have the potential to leak petroleum fuels, solvents or other hazardous substances into the subsurface soils. Both naturally occurring hazards and anthropogenic contaminated soils could be encountered during the installation of structural treatment alternatives for implementation of the Special Protections. The California Department of Toxic Substances Control is the repository for cleanup sites and hazardous waste permitted facilities and their webpage http://www.envirostor.dtsc.ca.gov contains a searchable database to locate areas of potential hazardous materials concern.

In general, most BMP installation, replacement, repair, or upgrade projects would disturb less than 1 acre, and are regulated by the local land use agency with regard to implementation of appropriate siting and erosion control measures. Counties and cities have requirements in place that include sediment and erosion control measures. The Regional Water Boards, in addition to the cities and counties, also have requirements in place that include sediment and erosion control measures. While existing BMPs at the local level may be adequate to avoid significant water quality impacts in many or most situations, local agencies vary widely in the management measures required, and there may be some situations where those BMPs are not sufficient to avoid such impacts. Therefore, in instances where new BMPs are being installed, replaced, repaired, or upgraded would disturb less than 1 acre, the potential exists for construction to affect water quality related to sedimentation and erosion. However, the likelihood of uncontrolled releases of sediment from erosion or other releases of pollutants from such activities may be small. Furthermore, these impacts, as with the initial construction impacts potentially would be minimal and associated with other development on generally the same sites; for instance, a storm water conveyance system would be constructed on the same site, and future repairs would occur on that site. Water quality impacts relating to typical ground disturbance from BMP installation, repair, replacement, and upgrade in areas other than targeted areas of impairment are considered less than significant. In the few instances where the area of ground disturbance affected by construction of new facility infrastructure and construction of staging areas would exceed 1 acre, BMPs installation, replacement, repair and upgrade would be subject to the requirements of the statewide NPDES storm water general permit for construction activity (Order 99-08-DWQ). In these situations, before construction activities can be approved, the project applicant is required under existing state law to apply for permit coverage. This would result in the project applicant preparing a storm water pollution prevention plan (SWPPP) and any other necessary engineering plans and specifications for pollution prevention and control. The SWPPP would identify and specify BMPs that must be in place throughout all site work and construction.

Typical BMPs include the following:

1) Use erosion and sediment control measures, including construction techniques that would reduce the potential for runoff and minimize discharge of sediment into nearby drainage conveyances; these BMPs may include silt fences, staked straw bales or wattles, sediment/silt basins and traps, geofabric, sandbag dikes, and temporary vegetation.

2) Establish permanent vegetative cover to reduce erosion in areas disturbed by construction by slowing runoff velocities, trapping sediment, and enhancing filtration and transpiration.

3) Use drainage swales, ditches, and earth dikes to control erosion and runoff by conveying surface runoff down sloping land, intercepting and diverting runoff to a watercourse or channel, preventing sheet flow over sloped surfaces, preventing runoff accumulation at the base of a grade, and avoiding flood damage along roadways and facility infrastructure.

4) Identify the means of disposal of waste materials (i.e., brush, vegetation) removed from the site.

5) Identify pollutants that are likely to be involved in construction activities that could be present in storm water drainage and non-storm water discharges and in other types of materials used for equipment operation.

6) Establish spill prevention and contingency measures, including measures to prevent or clean up spills of hazardous waste and of hazardous materials used for equipment operation, and emergency procedures for responding to spills.

Several technical studies (California Storm water Quality Association 2003, Huffman & Carpenter 2003, and EPA 1999) have established that water quality control features such as revegetation, erosion control measures, and detention and infiltration basins are successful techniques for avoiding or minimizing construction-related water quality impacts (e.g., metals and organic compounds from storm water are typically filtered out within the first few feet of soil beneath retention basins for groundwater). Technical studies by Huffman and Carpenter (2003) demonstrated that the use of various BMPs, such as source control, detention basins, revegetation, and erosion control, have maintained surface water quality conditions in adjacent receiving waters. Given the adequacy of the existing NPDES, and SWPPP program where applicable (for areas of disturbance of 1 acre or more) and the effectiveness of BMPs when used appropriately in such situations, the project's potential construction-related impacts on water quality are also considered less than significant for BMPs construction disturbing 1 acre or more.

► **Mitigation Measure:** As discussed above, when hazardous materials are encountered during construction operations, formal procedures specified by a hazardous waste management plan, which are developed during a projects' CEQA analysis phase, would be implemented immediately, per a previously approved plan. Since most Special Protections BMP projects are anticipated to be site specific and localized, the CEQA threshold of significance that a project would reasonably foreseeable created a significant hazard to the public or the environment through release of hazardous materials, would be reduced to a less than significant level with mitigation.

► **Implementation:** All hazardous materials involvement would be coordinated with the appropriate federal, state, and local regulatory agencies. The plan should follow current laws and regulations governing hazardous waste. Relevant federal Resource Conservation and Recovery Act (RCRA) and California Hazardous Waste Control Law (HWCL) laws and regulations are relied upon when making any determinations about a waste. It is anticipated that each project implemented at a local level perform relevant CEQA site assessment prior to construction.

► **Significance After Mitigation:** Less than significant with mitigation employed

Impact 6.6-2 Indirect Impacts Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

> **Construction activities related to installation of various BMPs such as vortex separation systems could result in the temporary interference of emergency response or evacuation plans if construction equipment, road closures, or traffic interfered with emergency vehicles traveling through the installation area.**

► **Mitigation Measure:** Project-level emergency response plans and/or traffic and circulation plans would be prepared as part of a proposed projects' CEQA analysis and as recommended in accordance with local city or county ordinances.

► **Implementation:** Project-level by Applicant.

► **Significance After Mitigation:** Less than significant

ANALYSIS OF BMPS IMPACTS - HAZARDS AND HAZARDOUS MATERIALS
Catch Basin Inserts
Catch basin inserts fit directly into curbside catch basins and require no construction or ground disturbance. There is therefore no potential to encounter contaminated soils or groundwater or other hazards from this alternative means of compliance. Since no construction is required, the use of hazardous materials or potential for construction accidents is unlikely during installation. However, catch basin cleaning and maintenance could pose risks to maintenance workers. To the extent that catch basin cleaning and maintenance could pose risks to maintenance workers, mitigation measures to avoid these risks include requiring workers to obtain hazardous materials maintenance record keeping and disposal activities training. OSHA-required Health and Safety Training, and OSHA Confined Space Entry training.

Vortex Separation System
It is reasonably foreseeable that hazards or hazardous materials could be encountered during the installation of vortex separation systems. Contamination could exist depending on the current and historical land uses of the area. Depending on their location, VSS could be proposed in areas with contaminated soils or groundwater. The use of hazardous materials such as oil, gasoline and potential for accidents is also likely during installation. Debris that is trapped by VSS could become hazardous to the public or to maintenance workers who collect and transport the material if it is not handled in a timely manner and disposed of appropriately. Installation of VSS could result in the temporary interference of emergency response or evacuation plans if construction equipment, road closures, or traffic interfered with emergency vehicles traveling through the installation area. It is anticipated that VSS will be located in urbanized areas; it is not reasonably foreseeable that their installation would expose people too wild land fires. VSS would not result in a safety hazard for people residing or working within two miles of a public airport or public use airport.

To the extent that installation of VSS could involve work with of near hazards or hazardous materials, potential risks of exposure can be mitigated with proper handling and storage procedures. The health and safety plan prepared for any project should address potential effects from cross contamination and worker exposure to contaminated soils and water and should include a plan for temporary storage, transportation and disposal of contaminated soil and water. Compliance with the requirements of California Occupational Health and Safety Administration (Cal OSHA) and local safety regulations during installation, operation, and maintenance of these systems would prevent any worksite accidents or accidents involving the release of hazardous materials into the environment, which could harm the public, nearby residents and sensitive receptors such as schools. Systems can be redesigned and sites can be properly protected with fencing and signage to prevent accidental health hazards.

To the extent that trash and debris trapped by VSS could become hazardous, impacts to maintenance workers and the public could be avoided or mitigated by educating the local community of the effects of improper disposal of such wastes, enforcing litter ordinances, and timely cleaning out inserts and structural controls.

To the extent that installation of VSS interfered with emergency response or evacuation plans, traffic control plans could be used to manage traffic through installation zones.

To the extent that VSS become a source of standing water and vector production, design at the project-level can help mitigate vector production from standing water.

Road and Parking Lot Street Sweeping
Road and parking lot sweeping would occur in public rights of way and would have no potential impact related to hazards, hazardous material, or human health. No mitigation is required since no impact is anticipated.

Public Education
Public education would involve no change to the physical environment either directly or indirectly and would have no impact related to hazards, hazardous materials, or human health. No mitigation is required since no impact is anticipated.

Installation and maintenance of some structural BMP's could result in potentially significant INDIRECT SHORT-TERM environmental effects with regard to hazards and hazardous materials. However, mitigation measures which can be applied to reduce and/or eliminate these impacts are available as described. These mitigation measures are within the responsibility and jurisdiction of the applicants of the General Exception, and can or should be adopted by them. The State Water Board does not direct which compliance measures applicants choose to adopt nor which mitigation measures they employ. The State Water Board does, however, recommend that appropriate mitigation measures be applied in order that potential environmental impacts be reduced or avoided. As such, a Responsible Party's proposed project, in their CEQA analysis develop appropriate strategies to eliminate or reduce possible impacts. It is foreseeable that these mitigation measures may not always be capable of reducing these impacts to levels that are less than significant in every conceivable instance. In the event that a specific mitigation measure or alternative may not reduce impacts to levels that are less than significant, the project proponent may need to consider an alternative strategy or combination of strategies to comply with the Special Protections.

6.7 ANALYSIS OF ENVIRONMENTAL IMPACTS HYDROLOGY AND WATER QUALITY

The State Water Board's California Ocean Plan for Areas of Special Biological Significance

Section 13170.2 of the California Water Code directs the State Water Board to formulate and adopt a water quality control plan for ocean waters of California. The State Water Board first adopted this plan, known as the California Ocean Plan, in 1972. Over the years the plan and Public Resources Code have been amended to bolster the protection of important coastal and marine areas. The California Ocean Plan establishes water quality objectives for California's ocean waters and provides the basis for regulation of wastes discharged into the state's coastal waters. The plan applies to point and nonpoint source discharges and the plan provides numeric and narrative water quality objectives for discharges to marine environments (Table 6.7-1), including bacterial, physical, chemical, biological, and radioactivity standards for offshore water quality. For the most part, these standards, which are intended to protect aquatic resources, are more stringent than those for contact recreation, but are less stringent than those applied to drinking water to protect public health (see Ocean Plan, "Water Quality Objectives Addressing Bacteria or Pathogens").

THRESHOLDS OF SIGNIFICANCE

For the purpose of this analysis, a water quality impact is considered significant if implementation of the proposed project would result in exceeding any of the thresholds identified below and in Table B of the Ocean Plan. These thresholds of significance are based on the California Environmental Quality Act (CEQA) Guidelines (State CEQA Guidelines) and relevant adopted water quality objectives. Consistent with State CEQA Guidelines, a water quality impact is considered significant in this analysis if implementation of the proposed project would result in potential for exceeding any of these adopted water quality objectives related to State's ocean waters.

Implementation of the proposed project would also result in significant water quality impacts if it would:

► Violate federal, state, or local criteria concerning exposure to pollutants or pathogenic microorganisms;

► Violate any ambient natural ocean water quality objective, contribute substantially to an existing or projected water quality violation, or expose sensitive receptors to substantial waterborne pollutant concentrations; or

► Create a substantial water quality hazard or involve the use, production, or disposal of materials that pose a hazard to marine biota in the area affected.

TABLE 6.7.1 Ocean Plan Table B Water Quality Objectives

	Units of Measurement	Limiting Concentrations 6-Month Median	Daily Maximum	Instantaneous Maximum
OBJECTIVES FOR PROTECTION OF MARINE AQUATIC LIFE				
Arsenic	ug/l	8.	32.	80.
Cadmium	ug/l	1.	4.	10.
Chromium (Hexavalent)	ug/l	2.	8.	20.
Copper	ug/l	3.	12.	30.
Lead	ug/l	2.	8.	20.
Mercury	ug/l	0.04	0.16	0.4
Nickel	ug/l	5.	20.	50.
Selenium	ug/l	15.	60.	150.
Silver	ug/l	0.7	2.8	7.
Zinc	ug/l	20.	80.	200.
Cyanide	ug/l	1.	4.	10.
Total Chlorine Residual	ug/l	2.	8.	60.
Ammonia (expressed as nitrogen)	ug/l	600.	2400.	6000.
Acute Toxicity*	*TUa*	*N/A*	*0.3*	*N/A*
Chronic* Toxicity	TUc	N/A	1.	N/A
Phenolic Compounds (non-chlorinated)	ug/l	30.	120.	300.
Chlorinated Phenolics	ug/l	1.	4.	10.
Endosulfan	ug/l	0.009	0.018	0.027
Endrin	ug/l	0.002	0.004	0.006
HCH*	ug/l	0.004	0.008	0.012
Radioactivity	Not to exceed limits specified in Title 17, Division 1, Chapter 5, Subchapter 4, Group 3, Article 3, Section 30253 of the California Code of Regulations. Reference to Section 30253 is prospective, including future changes to any incorporated provisions of federal law, as the changes take effect.			

Table B Continued

Chemical	30-day Average (ug/l) Decimal Notation	Scientific Notation
OBJECTIVES FOR PROTECTION OF HUMAN HEALTH – NONCARCINOGENS		
acrolein	220.	2.2×10^{2}
antimony	1,200.	1.2×10^{3}
bis(2-chloroethoxy) methane	4.4	4.4×10^{0}
bis(2-chloroisopropyl) ether	1,200.	1.2×10^{3}
chlorobenzene	570.	5.7×10^{2}
chromium (III)	190,000.	1.9×10^{5}
di-n-butyl phthalate	3,500.	3.5×10^{3}
dichlorobenzenes*	5,100.	5.1×10^{3}
diethyl phthalate	33,000.	3.3×10^{4}
dimethyl phthalate	820,000.	8.2×10^{5}
4,6-dinitro-2-methylphenol	220.	2.2×10^{2}
2,4-dinitrophenol	4.0	4.0×10^{0}
ethylbenzene	4,100.	4.1×10^{3}
fluoranthene	15.	1.5×10^{1}
hexachlorocyclopentadiene	58.	5.8×10^{1}
nitrobenzene	4.9	4.9×10^{0}
thallium	2.	$2. \times 10^{0}$
toluene	85,000.	8.5×10^{4}
tributyltin	0.0014	1.4×10^{-3}
1,1,1-trichloroethane	540,000.	5.4×10^{5}
OBJECTIVES FOR PROTECTION OF HUMAN HEALTH – CARCINOGENS		
acrylonitrile	0.10	1.0×10^{-1}
aldrin	0.000022	2.2×10^{-5}
benzene	5.9	5.9×10^{0}
benzidine	0.000069	6.9×10^{-5}
beryllium	0.033	3.3×10^{-2}
bis(2-chloroethyl) ether	0.045	4.5×10^{-2}
bis(2-ethylhexyl) phthalate	3.5	3.5×10^{0}
carbon tetrachloride	0.90	9.0×10^{-1}
chlordane*	0.000023	2.3×10^{-5}
chlorodibromomethane	8.6	8.6×10^{0}

Table B Continued

Chemical	30-day Average (ug/l) Decimal Notation	Scientific Notation
OBJECTIVES FOR PROTECTION OF HUMAN HEALTH – CARCINOGENS		
chloroform	130.	1.3×10^{2}
DDT*	0.00017	1.7×10^{-4}
1,4-dichlorobenzene	18.	1.8×10^{1}
3,3'-dichlorobenzidine	0.0081	8.1×10^{-3}
1,2-dichloroethane	28.	2.8×10^{1}
1,1-dichloroethylene	0.9	9×10^{-1}
dichlorobromomethane	6.2	6.2×10^{0}
dichloromethane	450.	4.5×10^{2}
1,3-dichloropropene	8.9	8.9×10^{0}
dieldrin	0.00004	4.0×10^{-5}
2,4-dinitrotoluene	2.6	2.6×10^{0}
1,2-diphenylhydrazine	0.16	1.6×10^{-1}
halomethanes*	130.	1.3×10^{2}
heptachlor	0.00005	5×10^{-5}
heptachlor epoxide	0.00002	2×10^{-5}
hexachlorobenzene	0.00021	2.1×10^{-4}
hexachlorobutadiene	14.	1.4×10^{1}
hexachloroethane	2.5	2.5×10^{0}
isophorone	730.	7.3×10^{2}
N-nitrosodimethylamine	7.3	7.3×10^{0}
N-nitrosodi-N-propylamine	0.38	3.8×10^{-1}
N-nitrosodiphenylamine	2.5	2.5×10^{0}
PAHs*	0.0088	8.8×10^{-3}
PCBs*	0.000019	1.9×10^{-5}
TCDD equivalents*	0.0000000039	3.9×10^{-9}
1,1,2,2-tetrachloroethane	2.3	2.3×10^{0}
tetrachloroethylene	2.0	2.0×10^{0}
toxaphene	0.00021	2.1×10^{-4}
trichloroethylene	27.	2.7×10^{1}
1,1,2-trichloroethane	9.4	9.4×10^{0}
2,4,6-trichlorophenol	0.29	2.9×10^{-1}
vinyl chloride	36.	3.6×10^{1}

ANALYSIS OF BMPS IMPACTS ON HYDOLOGY AND WATER QUALITY

The proper siting, construction, and operation of BMPs implemented as part of the Special Protections can affect water quality through various mechanisms. In general, these mechanisms are divided into three categories: construction, operation, and maintenance. Each of these mechanisms provides distinct avenues by which BMP's could affect water quality as described below.

Construction of BMPs is regulated by local agencies through the land use and development approval process (described in Chapter 3.0, "Regulatory Setting," and in Section 4.3, "Land Use and Planning"). The draft Special Protections do not alter the authority of local agencies to approve construction of BMP's or the processes by which local agencies determine whether to allow development of specific properties and construction of BMP's on those properties.

BMPs construction procedures typically involve the excavation of trenches and other earthwork that can cause the erosion of soil into nearby streams and other receiving waters, especially if standard BMPs for erosion control are not implemented successfully. This impact mechanism is evaluated below in Impacts 6.7-1 and 6.7-2. In addition, the draft Special Protections could affect the number of BMP's installed in areas that have been designated an ASBS SCCWRP discharge.

The potential increase in installation in these areas is addressed as well. After they are operating, different types of BMPs treat the pollutants found in the discharge to varying levels, and then discharge the treated flows during wet weather, or divert to dry weather flow unit or system. Some of these pollutants, if not adequately removed, may adversely affect beneficial uses.

The primary method used in the water quality and marine life health impact analysis consists of comparing water quality objectives (Ocean Plan Table B) to Natural Ocean Water Quality concentrations expected to result from the proposed project.

The impact headings below make a distinction between "**direct" and "indirect"** impacts. State CEQA Guidelines Section 15064(d) provides guidance on the definition of these terms and how to assess such effects in an EIR:

1. A direct physical change in the environment is a physical change in the environment that is caused by and immediately related to the project.

2. An indirect physical change in the environment is a physical change in the environment that is not immediately related to the project, but which is caused indirectly by the project and is still reasonably foreseeable.

3. An indirect physical change is to be considered only if that change is a reasonably foreseeable impact that may be caused by the project. A change that is speculative or unlikely to occur is not reasonably foreseeable.

It should be noted the key term “reasonably foreseeable” is not further defined in either CEQA or the State CEQA Guidelines.

IMPACTS OF THE PROPOSED PROJECT AND MITIGATION MEASURES

Environmental Impacts: This subsection identifies the impacts of the proposed project on the existing environment, in accordance with State CEQA Guidelines, Sections 15125 and 15143. Before presenting an evaluation of impacts, the section describes the analysis methodology used, and thresholds of significance used to identify impacts are then listed. Project impacts are identified alphanumerically and sequentially throughout this section. For example, impacts in Section 6.1 are identified as 6.1-1, 6.2-2, and so on. An impact statement preceded the discussion of each impact and provides a summary of the impact and its level of significance. The discussion that follows the impact statement included the evidence on which a conclusion is made regarding the level of impact. The discussions of cumulative impacts and growth-inducing impacts are presented in Section 8.0.

► **Mitigation Measures:** This subsection identifies potentially feasible mitigation measures to reduce significant and potentially significant impacts of the proposed project, in accordance with State CEQA Guidelines Sections 15002(a)(3), 15021(a)(2), and 15091(a)(1). Each mitigation measure is identified alphanumerically to correspond with the number of the impact being reduced by the measure. For example, Impact 6.1-1 would be mitigated with Mitigation Measure 6.1-1. This subsection also describes whether the mitigation measures would reduce impacts to less-that-significant levels. Significant and unavoidable impacts are identified as appropriate in this subsection, as well as in the “Residual Significant Impacts” subsection described below. Significant and unavoidable impacts are also summarized in Section 8.0.

► **Implementation:** This section identifies the agency responsible for the implementation of the mitigation measures.

► **Significance After Mitigation:** This section identifies impacts that would be reduced to less than significant and any significant impacts that would remain significant following implementation of the mitigation measures.

Impact 6.7.1 Direct Impacts Associated with Discharge of Waste by Existing inadequate Controls, with the reasonably foreseeable potential to violate federal, state, or local criteria concerning exposure to pollutants or pathogenic microorganisms; violate any ambient natural ocean water quality objective, contribute substantially to an existing or projected water quality violations, or expose sensitive receptors to substantial waterborne pollutant concentrations.

The General Exception Project has the potential to violate the ASBS waste discharge prohibition of the Ocean Plan if existing inadequate controls currently in force are allowed to continue. The project, granting an exception with special mitigating conditions (i.e., special protections) will allow the continued discharge of wastes from various origins including storm water runoff into ASBS. Existing ocean water quality conditions within ASBS have had measured concentrations of constituents which exceed the Table B water quality objectives of the Ocean Plan. Exceedances of the Table B Ocean Plan water quality objectives were also found in the storm water runoff of some of the applicants. It is expected that the mitigating terms and conditions of the special protections will result in improved water quality conditions. Further, the terms and conditions of the special protections provide for continued water quality improvements over time if all of the conditions designed to limit discharges of waste from the 27 applicants are implemented.

► **Mitigation Measure:** Granting the general exception will not violate federal antidegradation requirements because water quality will not be lowered, but rather, will be improved within the ASBS affected. Further, allowance of the General Exception will not violate the State Water Board's antidegradation policy (SWRCB 1968) since water quality conditions are anticipated to improve; the discharges will not unreasonably affect present and anticipated beneficial uses; the discharge will not result in water quality lower than that prescribed in the Ocean Plan; and beneficial uses will be protected and potential impacts will be less than significant with mitigation incorporated.

► **Implementation:** It is anticipated that the applicants identified in this General Exception project will implement various individual or collaborative projects to comply with the terms and conditions or "Special Protections." (See Special Protections Appendix 1).

► **Significance After Mitigation:** Less than significant with mitigation incorporated.

Impact 6.7.2 Direct Impacts Associated with Degradation of Water Quality otherwise substantially degrade water quality, or have the potential to reasonably and forseeably create a substantial water quality hazard or involve the use, production, or disposal of materials that pose a hazard to marine biota in the area affected.

It is anticipated that the applicants identified in this General Exception project will implement various individual or collaborative projects to comply with the terms and conditions or "Special Protections." As part of the scoping and environmental analysis conducted for the General Exception project, project types identified include: Low Impact

Development (LID); dry-weather flow diversions; and Best Management Practices (BMPs), such as Pollution Prevention BMPs and Treatment BMPs, such as infiltration basins and Gross Solids Removal Devices (GSRDs). Under the State Water Board's storm water program, these types of projects may require coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit). Dischargers whose projects disturb 1 or more acres of soil or whose project disturbs less than 1 acre but are part of a larger common plan of development that in total disturbs 1 or more acres, are required to obtain coverage under this permit. The activity would include clearing, grading, and disturbances to the ground such as stockpiling, or excavation. Additional requirements of the Construction General Permit require the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP should contain a site map(s) which shows the construction site perimeter, existing and storm water collection and discharge points and drainage patterns across the project. The SWPPP includes a chemical monitoring program for "non-visible" pollutants to be implemented if there is a failure of BMPs during a project's construction.

► **Mitigation Measure:** Implementation of mitigation measures as applicable on a project by project basis in the Construction General Permit. These hydrology and water quality resource impacts were considered to be short-term and no potential for adverse impacts to these resources were identified.

► **Implementation:** Project-level by Applicant

► **Significance After Mitigation:** Less than significant with mitigation incorporated.

ANALYSIS VARIOUS BMPS IMPACTS - HYDROLOGY AND WATER QUALITY

Catch Basin Inserts

Catch basin inserts are manufactured frames that typically incorporate filters or fabric and placed in a curb opening or drop inlet to remove trash, sediment or debris. They can also be perforated metal screens placed horizontally or vertically within a catch basin. These devices have less hydraulic effect than the VSS systems, however, flooding is still a potential hazard if the filters or screens became blocked by trash and debris and prevent the discharge of storm water. This would be of particular concern in areas susceptible to high leaf litter rates. This potential impact can be mitigated through the use of inserts that are designed with automatic release mechanisms or retractable screens that allow flow-through during wet-weather and by performing regular maintenance to prevent the build up of trash and debris. Therefore the exposure of people and property to flooding hazards after mitigation should be less than significant.

Vortex separation system
VSS units are designed to allow the incoming flow of urban or storm water to pass through the device while capturing trash and other debris within the unit. These types of devices may result in a potentially significant impact due to flooding hazards if the screens became blocked by trash and debris and prevent the discharge of storm water, or it the VSS system was not properly designed and constructed to allow for bypass of storm water during storm events that exceed the design capacity. This potential impact can be mitigated through the design of the system with overflow/bypass structures and by performing regulate maintenance to prevent the build up of trash and debris. Therefore, the exposure of people and property to flooding hazards after mitigation is less than significant.

The VSS unit may cause a significant change in the drainage patterns, rate and amount of surface water runoff. These units may impede or slow overland flow to the storm drain system. Any device installed in a storm drain, especially in an older, under-capacity drain could have a negative effect on the drain's ability to convey surface waters including flood waters. This negative impact can be mitigated through design of the VSS system with overflow/bypass structures and by performing regular maintenance of these devices and if necessary enlargement of the storm drain upstream of the device.

Road and Parking Lot Street Sweeping
It is not reasonably foreseeable that increased road and parking lot sweeping would negatively impact hydrology or water quality.

Public Education
It is not reasonably foreseeable that public education would negatively impact hydrology or water quality.

Installation and maintenance of some structural BMP's could result in potentially significant environmental effects with regard to hydrology. However, mitigation measures which can be applied to reduce and/or eliminate these impacts are available as described. These mitigation measures are within the responsibility and jurisdiction of the applicants of the General Exception, and can or should be adopted by them. The State Water Board does not direct which compliance measures applicants choose to adopt or which mitigation measures they employ. The State Water Board does, however, recommend that appropriate mitigation measures be applied in order that potential environmental impacts be reduced or avoided. It is foreseeable that these mitigation measures may not always be capable of reducing these impacts to levels that are less than significant in every conceivable instance. In the event that a specific mitigation measure or alternative may not reduce impacts to levels that are less than significant, the project proponent may need to consider an alternative strategy or combination of strategies to comply with the Special Protections.

► **Significance After Mitigation:** Less than significant with mitigation incorporated.

DISCUSSION IMPACTS GENERAL EXCEPTION PROJECT

The General Exception Project has the potential to violate the ASBS waste discharge prohibition of the Ocean Plan if existing inadequate controls currently in force are allowed to continue. The project, granting an exception with special mitigating conditions (i.e., special protections) will allow the continued discharge of wastes from various origins including storm water runoff into ASBS. Existing ocean water quality conditions within ASBS have had measured concentrations of constituents which exceed the Table B water quality objectives of the Ocean Plan. Exceedances of the Table B Ocean Plan water quality objectives were also found in the storm water runoff of some of the applicants. It is expected that the mitigating terms and conditions of the special protections will result in improved water quality conditions. Further, the terms and conditions of the special protections provide for continued water quality improvements over time if all of the conditions designed to limit discharges of waste from the 27 applicants are implemented.

Granting the general exception will not violate federal antidegradation requirements because water quality will not be lowered, but rather, will be improved within the ASBS affected. Further, allowance of the General Exception will not violate the State Water Board's antidegradation policy (SWRCB 1968) since water quality conditions are anticipated to improve; the discharges will not unreasonably affect present and anticipated beneficial uses; the discharge will not result in water quality lower than that prescribed in the Ocean Plan; and beneficial uses will be protected and potential impacts will be less than significant with mitigation incorporated.

It is anticipated that the applicants identified in this General Exception project will implement various individual or collaborative projects to comply with the terms and conditions or "Special Protections." As part of the scoping and environmental analysis conducted for the General Exception project, project types identified include: Low Impact Development (LID); dry-weather flow diversions; and Best Management Practices (BMPs), such as Pollution Prevention BMPs and Treatment BMPs, such as infiltration basins and Gross Solids Removal Devices (GSRDs). Under the State Water Board's storm water program, these types of projects may require coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit). Dischargers whose projects disturb 1 or more acres of soil or whose project disturbs less than 1 acre but are part of a larger common plan of development that in total disturbs 1 or more acres, are required to obtain coverage under this permit. The activity would include clearing, grading, and disturbances to the ground such as stockpiling, or excavation.

Additional requirements of the Construction General Permit require the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP should contain a site map(s) which shows the construction site perimeter, existing and storm water collection and discharge points and drainage patterns across the project. The SWPPP includes a chemical monitoring program for "non-visible" pollutants to be implemented if there is a failure of BMPs during a project's construction.

These hydrology and water quality resource impacts were considered to be short-term and no potential for adverse impacts to these resources were identified.

Thresholds of Significance:
1 - Exceedances of Table B water quality objectives in storm water
2 - Dry weather flows
3 - Violate federal antidegradation requirements
4 – Discharge of waste materials into the ASBS

6.8 ANALYSIS OF ENVIRONMENTAL IMPACTS - NOISE

The California Health and Safety Code Section 46022 defines noise as "excessive undesirable sound, including that produced by persons, pets and livestock, industrial equipment, construction, motor vehicles, boats, aircraft, home appliances, electric motors, combustion engines, and any other noise-producing objects "the degree to which noise can affect the human environment range from levels that interfere with speech and sleep (annoyance and nuisance) to levels that cause adverse health effects (hearing loss and psychological effects). Human response to noise is subjective and can vary greatly from person to person. Factors that influence individual response include the intensity, frequency, and pattern of noise; the amount of background noise present before the intruding noise; and the nature of work or human activity that is exposed to the noise source.

CEQA requires an analysis to assess whether a proposed project would have a noise impact. If a proposed project is determined to have a significant noise impact under CEQA, then CEQA dictates that mitigation measures must be incorporated into the project unless such measures are not feasible. It is anticipated that each applicant will assess noise impacts on a project by project basis as part of compliance with the terms and conditions of the General Exception. If it is determined that a project will have noise impacts, then potential abatement measures must be considered. A technical noise impact analysis may include evaluation of traffic and construction noise of an individual project. Other factors to consider as part of the analysis would be decibel, distance, and duration of construction. The impact analysis may assess noise abatement measures that are determined to be reasonable and feasible, and at the time of final design would then be incorporated into projects' plans and specifications.

Construction noise impacts and the degree of construction noise may vary depending on the location and type of construction activity.

THRESHOLDS OF SIGNIFICANCE

- ► Exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies
- ► Exposure of persons to, or generation of, excessive ground borne vibration or ground borne noise levels
- ► A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project
- ► A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project

IMPACTS OF THE PROPOSED PROJECT AND MITIGATION MEASURES

Impact 6.8-1 Exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

The General Exception Project has the potential to result in the generation of construction-related noise with the implementation of Special Protections.

Construction noise levels generated during construction must comply with applicable local, state, and federal regulations and all equipment must be fitted with adequate mufflers according to the manufacturers' specifications. Table 3.2.7-7 summarizes noise levels produced by construction equipment that is commonly used on construction projects. Construction equipment is expected to generate noise levels ranging from 70 to 90 dB at a distance of 50 feet, and noise produced by construction equipment would be reduced over distance at a rate of about 6 dB per doubling of distance.

Table 3.2.7-7. Construction Equipment Noise

Equipment	Maximum Noise Level (dBA at 50 feet)
Scrapers	89
Bulldozers	85
Heavy trucks	88
Backhoe	80
Pneumatic tools	85
Concrete pump	82

Source: Federal Transit Administration 2006.

No long-term adverse noise effects from construction are anticipated, because construction would be conducted in accordance with applicable local noise standards. Construction noise would be short-term, intermittent, and potentially masked by local traffic noise in some cases.

► **Mitigation Measure:** Minimize Construction Noise. It is anticipated that at the project-level, measures will be implemented to minimize noise effects from construction. In addition, the following measures may be implemented to further minimize noise effects from construction:

1) Use of equipment with sound-control devices that are no less effective than those provided on the original equipment.

2) Prohibition of the use of any equipment with an unmuffled exhaust.

3) Changing the location of stationary construction equipment to maximize the distance to noise sensitive uses.

4) Turning off idling equipment.

5) Rescheduling construction activity to non-sensitive hours of the day.

6) Notifying adjacent residents in advance of construction work.

7) Installing acoustic barriers around stationary construction noise sources.

► **Implementation:** It is anticipated that each applicant will assess noise levels on a project-by-project basis as part of compliance with the terms and conditions of the General Exception. Some of the Special Protections implementation alternatives have the potential to affect noise levels within the local project area. Noise within the counties and cities are regulated by noise ordinances, which are found in the municipal code of the county and each city. These noise ordinances limit intrusive noise and establish sound measurements and criteria, minimum ambient noise levels for different land use zoning classifications, sound emission levels for specific uses, hours of operation for certain activities (such as construction and trash collection), standards for determining noise deemed a disturbance of the peace, and legal remedies for violations. If a proposed project is determined to have a significant noise level impact under CEQA, then CEQA dictates that mitigation measures must be incorporated into the project unless such measures are not feasible. If it is determined that a project will have noise level impacts, then potential mitigation measures must be considered.

► **Significance After Mitigation:** Less than significant with mitigation incorporated.

The following impacts are discussed collectively: Impact 6.8-2,direct Impacts Associated with Construction of General Exception Special Protections; BMP Implementation as exposure of persons to, or generation of, excessive ground-borne vibration or ground-borne noise levels; Impact 6.8-3, substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; Impact 6.8-4, substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

The General Exception Project has the potential to result in the generation of construction-related noise with the implementation of Special Protections. A certain degree of disruptive noise is inevitable during construction activities. Overall, installation noise levels are governed primarily by the noisiest pieces of equipment. For most construction equipment, the engine is the dominant noise source. Table 4.2-2 identifies the major pieces of construction equipment associated with the various stages of installation. Typical maximum noise emission levels (Lmax) are summarized, based on construction equipment operating at full power at a reference distance of 50 feet, and an estimated equipment usage factor based on experience with other similar installation projects. The usage factor is a fraction that accounts for the total time during an eight-hour day in which a piece of installation equipment is producing noise under full power. Although the noise levels in Table 7.17-3 represent typical values, there can be wide fluctuations in the noise emissions of similar equipment based on two important factors: (1) the operating condition of the equipment (e.g., age, presence of mufflers and engine cowlings); and (2) the technique used by the equipment operator (aggressive vs. conservative).

Table 7.13-3: Typical Installation Equipment Noise Emission Levels

Equipment	Maximum Noise Level, (dBA) 50 feet from source	Equipment Usage Factor	Total 8-hr Leq exposure (dBA) at various distances	
			50ft	100ft
Foundation Installation			83	77
Concrete Truck	*82*	*0.25*	76	70
Front Loader	*80*	*0.3*	75	69
Dump Truck	*71*	*0.25*	65	59
Generator to vibrate concrete	*82*	*0.15*	74	68
Vibratory Hammer	*86*	*0.25*	80	74
Equipment Installation			83	77
Flatbed truck	*78*	*0.15*	70	64
Forklift	*80*	*0.27*	74	69
Large Crane	*85*	*0.5*	82	76

Source; Caltrain, 2004

Special Protections BMP implementation projects would be short-term and localized. As such, the potential to expose persons, wildlife and marine life to substantial excessive permanent ground borne vibration of ground borne noise levels can be mitigated with common industry standard mitigation measures available. It is not anticipated that the potential for substantial, permanent increases in ambient noise levels would occur in the project area. Given the natural features of the landscape within each ASBS identified herein and its unique characteristics, during the CEQA analysis of each proposed implementation project by the Responsible Party appropriate consideration and mitigation must occur to eliminate or reduce impacts below threshold limits.

► **Mitigation Measure:** Noise and vibration abatement criteria would include the following measures to minimize impacts caused by construction.

1) Equipment Noise Control: Newer equipment that is quieter would be used. All equipment items would have intact and operational manufacturers' recommended noise abatement measures, such as mufflers, engine covers, and engine vibration isolators.

2) Administrative measures: Maintenance yard and other construction-oriented operations staging areas would be placed in the locations that would minimize disruption to the community.

3) Community Relations: Good public relations would be maintained with the community to minimize objections to the impact of unavoidable construction nose. Community members and visitors would be notified in advance of the construction schedule through the public awareness campaign.

► **Implementation:** Specific construction noise levels could be estimated for each project to be implemented by the Applicants of the General Exception. Noise level estimation is dependant on the type of activities and equipment expected to be employed during construction. Typical noise protocols would require consideration of noise abatement measures when predicted noise levels from a project substantially increase existing noise levels or when the project noise levels approach or exceed the individual project's local ordinances or noise abatement criteria for residences. Noise levels would be considered on a project-by-project basis and adjusted for urban or for passively used open spaces and evaluated as what is considered normally acceptable for that site.

► **Significance After Mitigation:** Less than significant with mitigation incorporated.

ANALYSIS OF VARIOUS BMPs IMPACTS NOISE

Catch Basin Inserts

Installation of catch basin inserts should not involve any construction activity or the use of major equipment, therefore no significant increase in ambient noise levels is anticipated. Catch Basins need to be cleaned regularly. Frequency of cleaning would be site specific and dependant on the amount of debris accumulated in the insert. Increased street sweeping efforts would help to reduce the amount of debris caught by the catch basin inserts. It is not anticipated that ambient noise levels will be adversely affected by the use of catch basin inserts.

Vortex Separator System

Installation of VSS units would potentially involve removal of asphalt and concrete from streets and sidewalks, excavation and shoring, installation of reinforced concrete pipe, installation of the unit, and repaving of the streets and sidewalks. It is anticipated that installation activities would occur in limited, discrete, and discontinuous areas over a short duration. No major construction activities are anticipated. It is anticipated that excavation, for the purposed of installation, and repaving would result in the greatest increase in noise levels during the period of installation. The manufacturer of the VSS unit recommends that the unit receive maintenance 2 to 4 times a year depending on amount and frequency of precipitation. Maintenance involves cleaning using vacuum trucks, which would increase ambient noise levels. The increase in noise levels would be dependent on the proximity of sensitive receptors to the site. Maintenance is also expected to generate 2-4 vehicle trips per year which is not expected to increase ambient noise levels noticeably.

Contractors and equipment manufacturers have been addressing noise problems for many years, and through design improvements, technological advances, and a better understanding of how to minimize exposures to noise, noise effects can be minimized. An operations plan for the specific construction and/or maintenance activities could be developed to address the variety of available measures to limit the impacts from noise to adjacent homes and businesses. To minimize noise and vibration impact at nearby sensitive site, installation activities should be conducted during daytime hours to the extent feasible. There are a number of measures that can be taken to reduce intrusion without placing unreasonable constraints on the installation process or substantially increasing costs. These include noise and vibration monitoring to ensure that contractors take all reasonable steps to minimize impacts when near sensitive areas; noise testing and inspections of equipment to ensure that all equipment on the site is in good condition and effectively muffled; and an active community liaison program. A community liaison program should keep residents informed about installation plans so they can plan around noise or vibration impacts; it should also provide a conduit for residents to express any concerns or complaints.

Measures that would minimize noise and vibration disturbances at sensitive areas during installation include:

1) The use of newer equipment with improved noise muffling and ensure that all equipment items have the manufacturers' recommended noise abatement devices, such as mufflers, engine covers, and engine vibration isolators intact and operational. Newer equipment will generally be quieter in operation than older equipment. All installation equipment should be inspected at periodic intervals to ensure proper maintenance and presence of noise control devices.

2) Perform all installation in a manner to minimize noise and vibration. Use installation methods or equipment that will provide the lowest level of noise and ground vibration impact near residences and consider alternative methods that are also suitable for the soil condition. The contractor should select installation processes and techniques that create the lowest noise levels.

3) Perform noise and vibration monitoring to demonstrate compliance with the noise limits. Independent monitoring should be performed to check compliance in particularly sensitive areas. Require contractors to modify and/or reschedule their installation activities if monitoring determines that maximum limits are exceeded at residential land uses.

4) Conduct truck loading, unloading and hauling operations so that noise and vibration are kept to a minimum by carefully selecting routes to avoid going through residential neighborhoods to the greatest possible extent. Ingress and egress to and from the staging area should be on collector streets or higher street designations (preferred).

5) Turn off idling equipment.

6) Temporary noise barriers shall be used and relocated, as practicable, to protect sensitive receptors against excessive noise from installation activities. Consider mitigation measures such as partial enclosures around continuously operating equipment or temporary barriers along installation boundaries.

7) The installation contractor should be required by contract specification to comply with all local noise and vibration ordinances and obtain all necessary permits and variances.

Road and Parking Lot Street Sweeping
Increased road and parking lot street sweeping would involve an increase in current street sweeping frequencies in order to reduce the amount of accumulated debris. Any increases in these sweeping frequencies would be focused in areas which generate higher amounts of trash and debris such as those with greater commercial and industrial land uses. The increase in ambient noise levels is expected to be limited in duration. In areas where noise levels have the potential to be considered a nuisance, efforts should be employed to reduce noise impacts.

Public Education
Public education efforts are not expected to create an increase in ambient noise levels, as such, no mitigation would be required.

Installation and maintenance of some structural BMP's could result in potentially significant environmental effects with regard to noise. However, mitigation measures which can be applied to reduce and/or eliminate these impacts are available as described. These mitigation measures are within the responsibility and jurisdiction of the responsible parties of the General Exception, and can or should be adopted by them. The State Water Board does not direct which compliance measures applicants choose to adopt or which mitigation measures they employ. The State Water Board does, however, recommend that appropriated mitigation measures be applied in order that potential environmental impacts be reduced or avoided. It is foreseeable that these mitigation measures may not always be capable of reducing these impacts to levels that are less than significant in every conceivable instance. In the event that a specific mitigation measure or alternative may not reduce impacts to levels that are less than significant, the project proponent may need to consider an alternative strategy or combination of strategies to comply with the Special Protections.

6.9 ANALYSIS OF ENVIRONMENTAL IMPACTS – PUBLIC SERVICES

CEQA requires an analysis to assess whether a proposed project would have public services impacts. If a proposed project is determined to have a significant public services impact under CEQA, then CEQA dictates that mitigation measures must be incorporated into the project unless such measures are not feasible. It is anticipated that each applicant will assess public services impacts on a project-by-project basis as part of compliance with the terms and conditions of the General Exception. If it is determined that a project will have public services impacts, then potential mitigation measures must be considered. A technical public services impact analysis may include evaluation of community facilities or services, or result in any removal or change of access to facilities or services, or create new demand for community services of an individual project. The impact analysis may assess mitigation measures that are determined to be reasonable and feasible, and at the time of final design would then be incorporated into projects' plans and specifications. Impacts to public services and the degree of impact may vary depending on the location and type of construction activity. Indirect effects to public services may extend throughout the duration of construction within the Project Limits.

Recreational resources include public parks, golf courses, beaches, wildlife areas. As part of the scoping and environmental analysis conducted for the General Exception project, impacts to these resources were considered for some structural and non-structural controls, but no potential for adverse impacts to these resources were identified. The General Exception project does not include recreational facilities or require the construction or expansion of recreational facilities.

THRESHOLDS OF SIGNIFICANCE

A public services impact is considered significant if implementation of the proposed project would result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service rations, response times or other performance objectives for any of the following public services:

► fire protection
► police protection
► recreational resources
► other public facilities

IMPACTS OF THE PROPOSED PROJECT AND MITIGATION MEASURES

Impact 6.9-1 Indirect Impacts Associated with Construction of General Exception Special Protections BMP Implementation.

> **While the potential exists for Special Protections-related construction to result in an impact to public services or facilities, it is reasonably foreseeable that these impacts would be temporary, short-term. Substantial adverse physical impacts associated with the provision of new or physically altered government facilities, is not foreseeable.**

► **Mitigation Measure:** None required due to less than significant impact.

► **Implementation:** None required.

► **Significance After Mitigation:** N/A.

As part of the scoping and environmental analysis conducted for the General Exception project, these resources were considered, but no potential for adverse impacts to these resources were identified and are not expected to result in permanent, direct, or indirect impacts to public services, nor would it create new demand for community services since no capital improvements are included in this General Exception project. Reasonably foreseeable impacts for some structural compliance measures such as vortex separation systems, catch basin inserts and non-structural alternatives such as road and parking lot sweeping and public education are analyzed. Depending on what measures each applicant uses to comply with the proposed exception, there may be an impact on public services. However, the State Water Board believes that mitigation is available to reduce any potential impacts to public services to less than significant levels.

APPROACH AND ANALYSIS OF VARIOUS BMPs IMPACTS PUBLIC SERVICES
Catch Basin Inserts
The environmental impacts associated with the installation, maintenance and monitoring of catch basin inserts are anticipated to be of a short duration and limited to traffic delays. It is not reasonably foreseeable that installation of catch basin inserts will not contribute to an increase in the cumulative demand for fire and police emergency services.

Vortex Separation System
There is potential for temporary delays in response times of fire and police vehicles due to road closure or traffic congestion during installation of the vortex separation systems. To mitigate potential delays the applicants identified in this General Exception could notify local emergency and police service providers of construction activities and road closures, if any, and coordinate with the local fire and police providers to establish alternative routes and traffic control during the installation activities. Most jurisdictions have in place guidelines to ensure safe passage of emergency and police vehicles during periods of road maintenance, construction, or other activities. It is anticipated that installation of a VSS unit would be subject to existing applicable building and safety codes and permits. Therefore, the potential delays in response times for fire and police vehicles after mitigation are less than significant. The installation of vortex separation systems will not result in development of land uses for residential, commercial, and/or industrial uses, nor will these units result in increased growth, it is reasonably foreseeable that the vortex separation systems would not result in a need for new or altered fire or police protection services. In addition, Emergency Preparedness Plans could be developed in consultation with local emergency providers to ensure that the new vortex separation systems will not contribute to an increase in the cumulative demand for fire and police emergency services.

Road and Parking Lot Street Sweeping
It is not reasonably foreseeable that road and parking lot street sweeping would result in an impact to fire and police emergency services.

Public Education
It is not reasonably foreseeable that public education would result in the need for new or altered government services.

Installation and maintenance of structural BMPs should not result in potentially significant effects with regard to public services. However, mitigation measures can be applied by the applicants identified in this General Exception to reduce and/or eliminate any potential impact. In the event that a specific mitigation measure or alternative may not reduce impacts to levels that are less than significant, the project proponent may need to consider an alternative to comply with the terms and conditions of the General Exception.

6.10 ANALYSIS OF ENVIRONMENTAL IMPACTS - TRANSPORTATION/TRAFFIC

As part of the scoping and environmental analysis conducted for the General Exception project, these resources were considered, but no potential for adverse impacts to these resources were identified and are not expected to result in permanent, direct, or indirect impacts to transportation and circulation. Depending on what measures each applicant uses to comply with the proposed exception, there may be an impact on transportation/traffic. However, the State Water Board believes that mitigation is available to reduce any potential impacts to transportation/traffic to less than significant levels.

THRESHOLDS OF SIGNIFICANCE

- ► Exceed the capacity of the existing circulation system, based on an applicable measure of effectiveness (as designated in a general plan policy, ordinance, etc.), taking into account all relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit

- ► Result in inadequate emergency access

IMPACTS OF THE PROPOSED PROJECT AND MITIGATION MEASURES

Impact 6.10-1 Direct Impacts Associated with Construction of General Exception Special Protections BMPs.

> **While the potential exists for Special Protections-related construction to create a potentially significant impact to transportation and circulation, these construction activities related to installation of various BMPs, may be considered foreseeably minimal and localized to the immediate area of the project.**

► **Mitigation Measure:** Implementation of a Traffic Management Plan would be developed to increase driver awareness, ease congestion, and minimize delay during construction. Depending on the localized project to be implemented, the Plan could be broadened to allow for consideration of recommendations resulting from consultation and feedback from a community advisory group. The community advisory group could potentially include representation from local tourist and commerce bureaus and businesses, representatives of the Sherriff’s Department, California Highway Patrol, local emergency service providers and others. Development of a Plan could be initiated during the design phase of a project and include agreements reached with the community advisory group that would inform and may constrain the construction contractor for the purpose of minimizing traffic impacts during construction. A Traffic Management Plan would cover construction scheduling, limitations of lane closures, noticing requirements, emergency response, and other topics as necessary. It would describe the manner in which to inform travelers of potential traffic delays and road closures and other construction-related activities that could inconvenience local businesses, residents and travelers, so that they could plan accordingly. The project contract could contain provisions required for emergency services (police, fire, and ambulances) to be notified before any required roadways or lane closures.

It is reasonably foreseeable that traffic impacts during construction may include impedance of traffic flow affected by any large amount of equipment and materials that would need to be transported over the roadway or highway and from lane closures needed to provide room for construction.

► **Implementation:** Transportation and circulation would be assessed in accordance with CEQA by each of the applicants identified in this General Exception as individual projects are planned and designed by each applicant. Individual projects should discuss the transportation and circulation concerns as they relate to project design and construction. Transportation and circulation are prime considerations within the coastal zone communities and each applicant would be responsible for assessing these impacts in concert with their individual projects to ensure sufficient levels of service.

► **Significance After Mitigation:** Less than significant.

Impact 6.10-2 Indirect Impacts associated with Construction of General Exception Special Protections BMP Implementation.

While the potential exists for Special Protections-related construction to create inadequate emergency access, it is reasonably foreseeable that these impacts would be short-term, temporary and localized.

► **Mitigation Measure:** None required.

► **Implementation:** N/A

► **Significance After Mitigation:** Less than significant.

ANALISIS OF POTENTIAL BMPs IMPACTS - TRANSPORTATION/TRAFFIC
Catch Basin Inserts

Installation of catch basin inserts is not anticipated to involve the use of heavy construction equipment, therefore additional vehicular movement during installation of the catch basin inserts is unlikely to be significant. Any potential impact would be limited and of short-term during the installation process, and not anticipated to have an adverse effect on traffic and transportation. Catch basins are required to be cleaned regularly at a minimum frequency or once per year. Mitigation measures which could be implemented would be the same as those used with vortex separation systems. It is anticipated that impacts after mitigation will be less than significant.

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Vortex Separation Systems

During installation of these devices, additional vehicle movement will occur. However, these impacts will be temporary and limited in duration to the period of installation. Maintenance requirements for trash removal devices demonstrate that devices could be emptied when they reach 85% capacity. However, devices could be designed so that they need to be cleaned once per storm season. As site-specific projects are implemented, mitigation measures could include construction barricades, traffic-flow controls such as signals or personnel in compliance with authorized local police or California Highway Patrol requirements. These methods would be selected and implemented by responsible local agencies considering project level concerns. Standard safety measures should be employed including fencing, other physical safety structures, signage, and other physical impediments designed to promote safety and minimize pedestrian/bicyclists accidents. It is not foreseeable that implementation of VSS will result in significant increased in traffic hazards to motor vehicles, bicycles, or pedestrians.

To reduce the impact of construction traffic, implementation of a construction management plan for specified facilities could be developed to minimize traffic impacts upon the local circulation system. A construction traffic management plan could address traffic control for any street closure, detour, or other disruption to traffic circulation. The plan could identify the routes that construction vehicles will use to access the site, hours of construction traffic, and traffic controls and detours. The plan could also include plans for temporary traffic control, temporary signage and tripping, location points for ingress and egress of construction vehicles, staging areas, and timing of construction activity which appropriately limits hours during which large construction equipment may be brought on or off site. Potential impacts could also be reduced by, limiting or restricting hours of construction so as to avoid peak traffic times and by providing temporary traffic signals and flagging to facilitate traffic movement. It is anticipated that impacts after mitigation will be less than significant.

Road and Parking Lot Street Sweeping

The number of trips generated by increased road and parking lot sweeping will depend on the sweeping frequency determined by the applicant implementing this alternative. It is not anticipated that a significant impact will result; however, mitigation measures employed could include noticing any affected residents, businesses and property owners in the vicinity of the areas which this activity will occur.

Public Education
No adverse impacts to traffic or transportation is anticipated with this alternative.

6.11 CONCLUSION

Under the less stringent and somewhat inadequate controls currently in force, 27 applicants discharge waste into the 26 ASBS and are in violation of the ASBS discharge prohibition. The project, granting a general exception with special mitigating conditions (i.e., special protections), will allow the continued discharges from nonpoint sources and storm water runoff, and therefore has some potential to degrade water quality and biological resources unless mitigating conditions are implemented. However, under the mitigating conditions composing these special protections, the quality of the discharges will improve from current conditions, with an important reduction in the potential to degrade water quality. If all of the conditions designed to limit the discharge are met, the discharges will not compromise the protection of ocean waters of the ASBS for beneficial uses, and the public interest will be served.

Granting the conditional exception, likewise, will not violate federal antidegradation requirements because water quality will not be lowered, but rather will be improved. Further, allowance of the exception will not violate the State Water Board's antidegradation policy (SWRCB 1968) since water quality conditions will improve; the discharge will not unreasonably affect present and anticipated beneficial uses; the discharge will not result in water quality lower than that prescribed in the Ocean Plan; and the people of California benefit from the terms and conditions implemented while beneficial uses will still be protected.

7.0 ECONOMIC ANALYSIS OF SPECIAL PROTECTIONS

This section discusses a range of potential costs associated with the General Exception project implementation of the Special Protections and various selected monitoring and management practices which could be used by the dischargers identified herein.

7.1 MONITORING

One large problem faced by both ASBS dischargers and regulators is a lack of information. The lack of information falls into at least three categories. First, it is uncertain what constitutes natural water quality. Second, it is uncertain which discharges cause alterations in natural water quality. Finally, it is uncertain what the extent and magnitude of natural water quality impacts are on a statewide basis.

In response to the need for additional information, the State Water Board is working with ASBS dischargers to collaboratively conduct regional ASBS monitoring programs that are consistent statewide. The goal of this monitoring program is to determine water quality at each of the ASBS and analyze discharged water quality from applicants subject to these Special Protections. This will allow the State Water Board to assess potential impacts to the ASBS from specific discharges. Three regional monitoring groups are being established to perform the required core and regional monitoring requirement. The estimated costs for these monitoring programs are provided below. It should be noted that participation in the regional monitoring programs is an option and is not mandatory.

7.1.1 <u>Southern California Regional Monitoring Group</u>

In southern California, the regional monitoring group has been organized by SCCWRP and operated in conjunction with the Bight 08 program. This group will address the regional monitoring program required as part of the Special Protections. This monitoring group will include an extensive series of reference sites as part of their monitoring program as this fits nicely with the Bight 08 sampling project.

A. Wet Weather Chemistry and Toxicity

1) <u>Site Selection</u>
Since there is little or no historic water quality data available in ASBS sites prior to anthropogenic discharges, reference sites have been selected that will be used to determine the range of natural water quality and natural condition of marine life. The following primary criteria were established for reference sites:

- Located in receiving water at the mouth of watersheds with limited anthropogenic influences and with no offshore discharges in the vicinity.

- Limited anthropogenic influence defined as a minimum of 90% open space. Preferably, the few anthropogenic sources in a reference watershed will be well attenuated (e.g., natural space buffers between a highway and the high tide line).
- There should be no 303(d) listed waterbodies either in the reference watershed or in the coastal zone.

There are additional secondary criteria that are deemed important, but may not lead to complete exclusion:

- A range of reference watershed sizes that are inclusive of the ranges observed in watersheds that discharge to ASBS.
- A range of reference watershed geologies that are inclusive of the geologies observed in watersheds that discharge to ASBS.
- A range of reference beach substrate that includes sand, cobble, and rock.
- Reference watersheds that include channel island and mainland sites.

A minimum of eight reference sites have been selected for sampling as part of the regional monitoring survey.

In addition to reference sites, receiving water sites near ASBS discharges will also be sampled. These receiving water sites are located directly in front of discharges from regulated ASBS outfalls. The number of sites in ASBS was based on the following criteria:

- Minimum of 1 site/stakeholder/ASBS.
- Sample receiving waters near at least 10% of all regulated outfalls in an ASBS (> 18 inches opening).
- Discharge must reach receiving water (i.e., ocean).
- Approval by Regional Water Board and State Water Board.

A minimum of 10 receiving water sites near discharges have been targeted for sampling. Additional sites may be selected for contingency measures due to impaired sampling logistics or limited rainfall.

A cost estimate for each participant in the southern California regional receiving water monitoring effort is about $50,000 to $80,000 for chemistry and toxicity at one discharge and one reference station. For approximately 10 participants, receiving water chemistry and toxicity costs may cumulatively range from $500,000 to $800,000.

It is important to note that core monitoring will also be performed by the southern California dischargers and is not included in the costs of the regional receiving water study. Core monitoring is estimated to cost about $2,000 to $5,000 per outfall (sampling and analysis) per year, depending on size. It is estimated that in southern California, about 200 discharges may be sampled at $400,000 to $1,000,000 per year, depending on outfall size. Assuming a roughly equal distribution of outfalls > 18 inches and >36 inches, the cost would be about $700,000. Because southern California dischargers participated in the Bight "08 Regional Monitoring Program, core sampling for runoff will occur in only the first year, and there will be no additional runoff sampling for the remainder of the permit cycle for those parties.

B. Biological Monitoring

The Southern California regional monitoring program is focused on assessing the status of biological communities associated with rocky subtidal reefs located between one and 30 m (3 and 90 feet) depth. High and low relief substrates, nearshore and offshore reefs, as well as areas of persistent kelp are all included in this regional monitoring program. For the program to assess the spatial distribution among reefs, a probabilistic sampling design is used that consists of 60 sites stratified by mainland vs. islands and warm temperature vs. cold temperature marine habitats. The sampling methodology utilizes a modified PISCO/CRANE style biodiversity protocol that is conducted using trained scuba divers. The protocols include transects and unified point contact grids to quantify invertebrate, algal, and vertebrate species assemblages.

Bight 08 Rocky and Bight 08 ASBS investigators worked together to identify what sampling design specifics would be needed to integrate the two programs. Since the Bight 08 Rocky program is already a portion of the Bight Regional Survey, the primary data gap was site selection. Other important design specifics, such as sampling methods, have already been developed for the survey.

While 60 sites are targeted, many have yet to be sampled. In fact, approximately 40 sites are currently being sampled. Of these, 22 are located in or near an ASBS. This provides a broad base of coverage as a starting point for the Bight 08 ASBS program. Like the rocky intertidal program, there are at least three data gaps that still exist: (1) additional sites to ensure coverage for every ASBS in southern California; (2) additional sites to ensure adequate coverage for reference locations; and (3) resource matching to ensure the existing sites can be used for ASBS purposes. In order to address the first data gap, at least three additional mainland sites (Robert E. Badham ASBS, Heisler Park ASBS, La Jolla ASBS) and five Channel Island sites (East end Catalina, San Clemente, San Nicolas) will need to be added to cover the remaining ASBS locations. In order to address the second data gap, at least two additional mainland sites (Santa Barbara/Ventura Counties, Northern San Diego/Southern Orange Counties) and three additional Channel Island sites (Catalina, San Clemente, San Nicolas) will be needed to assess unsampled reference locations. Finally, the ASBS Planning Committee agreed to support nine of the existing sites to ensure these sites can be used for ASBS purposes.

Cost estimates for rocky subtidal monitoring are $12,500 per participant and for rocky intertidal monitoring is $22,000 per participant. For all participants combined, the collective costs for biological monitoring may total about $345,000.

In summary, for regional receiving water and biological monitoring, combined with core runoff monitoring, costs would be about $1,545,000.

7.1.2 <u>Central Coast ASBS Regional Monitoring</u>

In order to maintain comparability between regions, the basic questions, methods, and reference criteria will be the same for central and northern California as what was described above for southern California.

One proposal for central coast ASBS regional monitoring has been for the applicants to work with CCLEAN, which is a regional monitoring program that has been collecting, interpreting, and reporting water quality data in the Monterey Bay area since 2001. Currently, the participants in CCLEAN are the City of Santa Cruz, City of Watsonville (Lead Agency), Moss Landing Power Plant, Monterey Regional Water Pollution Control Agency, Carmel Area Wastewater District, and the Central Coast Regional Water Board. However, no decision has been made by the applicants to join CCLEAN or to initiate their own separate regional monitoring program.

Three scenarios have been developed for consideration that would provide for a regional monitoring program to monitor storm water runoff into ASBS in the Monterey Bay area. These scenarios have been developed with consideration of the Draft Special Protections for Selected Storm Water and Nonpoint Source Discharges into Areas of Special Biological Significance dated March 3, 2008.

The three scenarios that have been discussed by the dischargers are:

1) A regional monitoring program that is not part of CCLEAN,
2) A regional program that includes collection of data to allow estimates of contaminant loads, also not part of CCLEAN, and
3) A regional program that is part of CCLEAN.

These are presented and compared in the following sections. Implementation of either scenario would require the agreement of State and Regional Water Board. Scenario 3 would also require the agreement of current CCLEAN program participants. It should be emphasized that no agreement has been reached by the ASBS storm water/nonpoint source dischargers and CCLEAN participants.

This scenario makes use of the Monterey Bay National Marine Sanctuary's First Flush program to collect runoff samples, and includes funds to augment their effort by monitoring approximately 25 discharges currently not sampled by them. These additional sites include all discharges >18 inches, and those at Pebble Beach and Carmel Meadows. Biennial receiving water monitoring would be performed at seven sites and would include water sampling before and after a storm, and one-time sampling of benthic communities and bioaccumulation.

Table 7.1.1. Comparison of monitoring elements required by the Draft Special Protections and a proposed regional ASBS monitoring program that is not part of CCLEAN

Monitoring Element	Scenario 1 - Special Protections Requirements	Scenario 2 – Flow-proportioned Sampling
Runoff Flow Measurements	Estimate from rain gauges and % impervious surface with ground-truthing	Estimate from rain gauges and % impervious surface with ground-truthing
Runoff Samples	Annual in wet season at all discharges >18 inches (total of 37) Analyze for Table A; Table B acute toxicity annually at 1/5 outfalls (total of 7)	Annual in wet season at all discharges >18 inches (total of 37) Analyze for Table A; Table B acute toxicity annually at 1/5 outfalls (total of 7)
	Annual in wet season at all discharges >36 inches (total of 5) Table B for marine aquatic life, PAHs, pyrethroids, OP pesticides, nitrates, phosphates	Annual in wet season at 2 discharges >36 inches Table B for marine aquatic life, nitrates, phosphates, urea; and flow-proportioned samples for endosulfan, endrin, HCH, PAHs, PCBs, chlorinated pesticides, pyrethroids, OP pesticides, PBDEs
Receiving Water	Biennially in wet season at 2 reference sites and 5 ASBS sites, before and after a storm Table B for marine aquatic life, nitrates, phosphates, urea, endosulfan, endrin, HCH, PAHs, PCBs, chlorinated pesticides, pyrethroids, OP pesticides, PBDEs	Biennially in wet season at 2 reference sites and 5 ASBS sites, before and after a storm Table B for marine aquatic life, nitrates, phosphates, urea, endosulfan, endrin, HCH, PAHs, PCBs, chlorinated pesticides, pyrethroids, OP pesticides, PBDEs
Benthic Fauna	Biennially in wet season at 2 reference sites and 5 ASBS sites Infaunal abundance and sediment grain size and concentrations of TOC, endosulfan, endrin, HCH, PAHs, PCBs, chlorinated pesticides, pyrethroids, OP pesticides and PBDEs	Biennially in wet season at 2 reference sites and 2 ASBS sites on a rotating basis Infaunal abundance and sediment grain size and concentrations of TOC, endosulfan, endrin, HCH, PAHs, PCBs, chlorinated pesticides, pyrethroids, OP pesticides and PBDEs
Bioaccumulation	Biennially in wet season at 2 reference sites and 5 ASBS sites	Biennially in wet season at 2 reference sites and 2 ASBS sites on a rotating basis

Monitoring Element	Scenario 1 - Special Protections Requirements	Scenario 2 – Flow-proportioned Sampling
	Concentrations of endosulfan, endrin, HCH, PAHs, PCBs, chlorinated pesticides, pyrethroids, OP pesticides and PBDEs	Concentrations of endosulfan, endrin, HCH, PAHs, PCBs, chlorinated pesticides, pyrethroids, OP pesticides and PBDEs

There are seven ASBS dischargers on the central Coast that would be subject to the general exception. Cumulative cost estimates range from $325,000 per year under scenario 1 (ASBS discharges perform analysis within their own group) to $286,000 per year under scenario 2 (regional monitoring performed by group including ASBS dischargers and current NPDES monitoring group CCLEAN). Water quality monitoring will be required for only the first two storm seasons. Therefore the first permit cycle costs for runoff and receiving water monitoring are estimated to be $572,000 - $650,000. In addition, rocky intertidal monitoring would be required to be comparable with other regional monitoring efforts. It is estimated that rocky intertidal monitoring would collectively cost about $154,000. Using the above figures, the estimated total for central California would therefore be about $726,000 to $804,000.

7.1.3 <u>Northern California Regional Monitoring Group</u>

Unlike in other parts of the state, there is no existing regional monitoring organization. The Southern California Water Research Project (SCCWRP) has been retained by the Water Boards to initiate a regional monitoring program in central and northern California. There are twelve ASBS storm water/nonpoint source dischargers in northern California north of Point Año Nuevo.

The following is a cost estimate prepared by State Water Board staff based on available information. The estimate is based on requirements as outlined in the March 3, 2008 draft Special Protections document and February 3, 2012 updates and also includes before and after storm sampling events for receiving water and reference sites. As with other ASBS regional monitoring, applicants for individual point source exceptions, or holders of existing individual point source exceptions, would participate with applicants for the general exception; costs for parties with individual exceptions are not included below.

For this estimate, runoff flow measurement would use estimates from rain gauges and percent impervious surface, and checked with ground-truthing at selected sites. The core runoff monitoring would sample all discharges >18 inches three times annually for oil and grease, total suspended solids and indicator bacteria in the range of the southern sea otter, and once annually for Table B chronic toxicity (one species). This would be required for two storm seasons. Additional core runoff monitoring at larger discharges (>36 inches) would be done three times annually for Table B metals and ammonia, PAHs, pyrethroids, OP pesticides, nitrates, and phosphates, and once annually for Table B chronic toxicity (one species). This would also be required for two storm seasons. Core monitoring is estimated to cost about $2,000 to $5,000 per outfall per year depending on size. For the entire permit cycle (two storm seasons) for core monitoring, it is expected to cost $4,000 to $10,000 per outfall depending on outfall size. Staff estimates about 50 municipal and industrial outfalls in northern California of sufficient size to monitor runoff, with roughly an equal distribution of >18 inch and >36 inch sizes. Therefore we estimate core monitoring for runoff to be about $350,000 for a permit cycle.

For regional monitoring, receiving water would be sampled at twelve ASBS discharges and twelve reference sites, pre- and post-storm for the same constituents analyzed in southern California. Staff estimates that receiving water monitoring would cost about $500,000 during the first year and $500,000 in the second year, for a total of $1,000,000 for ocean water monitoring. In addition, intertidal monitoring would be required to be comparable with other regional monitoring efforts. It is estimated that intertidal monitoring would cost about $220,000.

The total program cost for northern California runoff and regional monitoring is estimated to be about $1,570,000.

7.1.4 Regional Monitoring Summary Costs

Combined, the Northern, Central, and Southern California regional monitoring efforts are estimated to cost as much as $3.92 million during their first permit cycle.

7.2 IMPLEMENTING THE ABSOLUTE DISCHARGE PROHIBITION (NO PROJECT ALTERNATIVE)

Caltrans has provided a cost estimate of eliminating all discharges from a set of properties into adjacent ASBS. Their estimate is based on eliminating all highway infrastructure and related discharges into ASBS.

Caltrans calculates that there are 57 miles (91.7 km) of State Coastal Highways, 1 and 101, that are adjacent to 10 ASBS. State Coastal Highways 1 and 101 are estimated to have 184 drainage conveyances that carry highway runoff into the ASBS. Of these, 85 carry runoff directly to ASBS. Caltrans estimates that 100% compliance with the ASBS absolute waste discharge prohibition would necessitate pumping storm water runoff to adjacent basins or discharge points outside of the ASBS. Initial calculations made in 2005 show that capital costs for installing the infrastructure to do this (e.g., drainage inlets, subsurface piping, pumping stations, power supply, etc.) may exceed $500 million.[13] For 184 discharges, it is estimated that this cost would be $2.7 million per Caltrans discharge.

There are approximately 1,673 total storm water and nonpoint source discharges from the applicants and property owners currently not subject to individual exceptions. Using the same figure used by Caltrans, installing infrastructure to eliminate all these discharges into ASBS would cost $4.5 billion. This is a minimum estimate, probably only applicable to storm drains and small nonpoint source runoff. Moving some discharges would involve completely removing entire businesses and infrastructure, as well as the complete disruption of military operations. Undoubtedly, the costs would actually be vastly greater than what is estimated above.

7.3 BEST MANAGEMENT PRACTICES (BMP) COSTS USING COMPARISON WITH CLEAN BEACHES INITIATIVE (CBI) PROJECTS

The CBI provides funding for infrastructure improvements with the end goal of improving water quality conditions at California's beaches. Examples of some of the costs associated with some of the projects which have successfully been implemented are listed in Table 22.

The State Water Board administers many innovative water bond projects. Over $1.5 billion in loans and grants managed by the State Water Board since 2006 are aimed, in whole or in part, at improving water quality and reducing sediment impacts to our coasts and ocean. Of this amount, almost $70 million dollars has been spent directly on projects to improve beach water quality in California. These projects have not been aimed at ASBS discharges but directed to improve beach water quality at the most impacted beaches. Still some CBI projects were performed at ASBS that were also contact recreation beaches.

These are a set of large projects that have been funded through California Bond funds administered by the State Water Board. In extreme cases of poor water quality in an ASBS that result from adjacent applicant facilities, these types of projects may be required. State Bond funds may be available at those places to help implement potentially required projects.

[13] Caltrans Memorandum from CTC meeting of December 14-15, 2005. Prepared by Jay Norvell for Cindy McKim regarding "Regulation by the State Water Quality Control Board for Discharge in Areas of Special Biological Significance".

Table 7.3.1. Costs - Clean Beaches Initiative Water Quality Projects 2006

CBI Projects	Diversions	Piers	Treatment	Wetlands
Number	34	3	18	2
Minimum	$ 350,000	$ 402,500	$ 272,000	$ 575,000
Maximum	$ 3,823,868	$1,800,000	$ 5,351,485	$ 600,000
Average	$ 1,160,647	$ 868,333	$ 1,546,275	$ 587,500
Total	$38,301,344	$2,605,000	$27,832,957	$1,175,000

7.4 STORM WATER RUNOFF BEST MANAGEMENT PRACTICES

BMP will be required to control discharge volume and quality from areas under the applicants' control in order to attain natural water quality. Examples of types of controls and relative costs provided by U.S. EPA are provided in Table 7.4.1. The costs of BMPs are highly dependent on the types of practices chosen, size of area to be controlled, and the volumes of water quality to be addressed. There are many references available to help choose which practices are appropriate in a given circumstance.

Table 7.4.1. Stormwater Best Management Practices in an Ultra-Urban Setting: Selection and Monitoring

Relative Rankings of Cost Elements and Effective Life of BMP Options			
BMP	**Capital Costs**	**O&M Costs**	**Effective Life[1]**
Structural BMPs			
Infiltration Trench	Moderate to High	Moderate	10 - 15 years
Infiltration Basin	Moderate	Moderate	5 - 10 years before deep tilling required
Bioretention	Moderate	Low	5 - 20 years[2]
Detention Ponds	Moderate	Low	20 - 50 years
Wetlands	Moderate to High	Moderate	20 - 50 years
Detention Tanks	Moderate to High	High	50 - 100 years
Underground Sand Filters	High	High	5 - 20 years
Surface Sand Filters	Moderate	Moderate	5 - 20 years
Organic Media Filters	High	High	5 - 20 years
Vegetated Swales	Low to Moderate	Low	5 - 20 years
Vegetated Filter Strips	Low	Low	20 - 50 years
Oil-Grit Separators	Moderate	High	50 - 100 years
Catch Basin Inserts	Low	Moderate - High	10 - 20 years
Manufactured Systems	Moderate	Moderate	50 - 100 years
Porous Pavement	Low	Moderate	15 - 20 years
Nonstructural BMPs			
Road and parking area street sweeping	Moderate	NA	4 - 8 years
Proper chemical and fuel storage, use, handling, containment, and spill response procedures	Moderate - High	Low	4 - 8 years
Vehicle and equipment, maintenance, storage and washing areas	Moderate	Low	long term
Bridge cleaning, maintenance and deck drainage (painting and sanding activities)	Moderate	NA	NA
Litter and debris management (dumpsters,	Low	Low	4 - 8 years

trash piles, equipment storage, waste management practices)			
Modification of existing nonstructural BMP programs or structural BMP maintenance schedule or procedure	Low to Moderate	Low to Moderate	long term
Nonstructural BMPs			
Education programs (employee, adopt-a-road, adopt-a-stream, outreach	Low	Low	long term
Elimination of illicit discharge and connections	Moderate	Low	long term
New and Innovative Practices			
Alum Injection	Moderate	Moderate	5 - 20 years[3]
MCTT	High	High	5 - 20 years[3]
Biofilters (e.g., StormTreat System)	Moderate	Moderate	5 - 20 years[3]
Vegetated Rock Filters	High	High	5 - 20 years
Adapted from Young et al. (1996); Claytor and Schueler (1996); U.S. EPA (1993); and others NA = Not Applicable or Not Available [1]Assumes regular maintenance, occasional removal of accumulated materials, and removal of any clogged media. [2]As a relatively new BMP, the effective life is uncertain. It is reasonable to assume an effective life at least as long as that of a vegetated swale. [3]Estimated based on best professional judgment.			
http://www.fhwa.dot.gov/environment/ultraurb/uubmp6p4.htm			

7.5 TYPES OF BMPS APPROVED BY CALTRANS

Nine types of BMPs are being used in these studies representing a broad base of state-of-the-art BMP technology:

- Extended Detention Basin: These basins capture storm water runoff and allow for an extended drain time to remove particulates and other associated pollutants through sedimentation. http://www.dot.ca.gov/hq/env/stormwater/ongoing/pilot_studies/bmps/details/ed_basins/index.htm
- Drain Inlet Inserts: Devices are inserted into storm drain inlets to filter or absorb sediment, oil and grease, and other pollutants.

http://www.dot.ca.gov/hq/env/stormwater/ongoing/pilot_studies/bmps/details/di_inserts/index.htm

- Infiltration Basins and Trenches: Trenches are lined with filter fabric and filled with rock. Stormwater runoff captured in the trenches then infiltrates into the soil. Basins are excavated depressions that infiltrate captured storm water. http://www.dot.ca.gov/hq/env/stormwater/ongoing/pilot_studies/bmps/details/ib_trenches/index.htm
- Oil/Water Separator: These plate separators treat runoff from Caltrans facilities that generate oil and grease. Vertical plates separate oil from water, while a vault traps and collects sediments. http://www.dot.ca.gov/hq/env/stormwater/ongoing/pilot_studies/bmps/details/ow_separator/index.htm
- Media Filters: Fine sediments and pollutants are filtered through chambers containing sand or perlite/zeolite media. http://www.dot.ca.gov/hq/env/stormwater/ongoing/pilot_studies/bmps/details/m_filters/index.htm
- Multi-Chambered Treatment Trains (MCTT): Three vaults capture sediment and debris, remove oil and grease with absorbent pillows, and filter pollutants through fabric and a mixture of peat and sand. http://www.dot.ca.gov/hq/env/stormwater/ongoing/pilot_studies/bmps/details/mctt/index.htm
- Biofiltration Swales and Strips: Grassy pathways, also known as biofilters, filter and deposit pollutants from storm water when water flows through the vegetation. http://www.dot.ca.gov/hq/env/stormwater/ongoing/pilot_studies/bmps/details/bs_strips/index.htm
- Vortex seperation systems (VSS): VSS™ units treat runoff by screening sediment and debris and depositing the debris in a sump. Pre-cast VSS™ units create a vortex of water that allows water to escape through the screen, while pollutants are deflected into the storage sump. http://www.dot.ca.gov/hq/env/stormwater/ongoing/pilot_studies/bmps/details/cds/index.htm
- Wet Basin: A wet basin removes sediment, nutrients, and particulate metals from storm water runoff. An in-line permanent pool or basin enhances settling. http://www.dot.ca.gov/hq/env/stormwater/ongoing/pilot_studies/bmps/details/w_basin/index.htm

7.6 PROPOSITION 84 ASBS GRANT PROGRAM

In 2006, the Public Resources Code[14] required that the Proposition 84 ASBS Grant Program funds be used to provide matching grants to local public agencies to fund a variety of water quality improvement projects to assist local public agencies to comply with the discharge prohibition into ASBS. Following this legislation and in 2008, the

[14] Proposition 84- The Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (§ 1. Division 43 Chapter 1)

Division of Financial Assistance solicited and received funding proposals from many of the Applicants included in this General Exception.

Proposals, which were approved by the State Water Board, include detailed analysis and project costs related to compliance with the ASBS discharge prohibition. Proposals submitted factored into their project's requirements contained in the March 3, 2008 "Draft Special Protections," considerations that only allowable discharges to the ASBS are those that occur during wet weather and are composed only of storm water runoff. As a result, many projects presented plans to build and operate diversion systems designed to eliminate the discharge of flows to the ASBS during dry weather (dry weather flows) when flows are composed largely of non-storm water.

Some projects consider eliminating runoff that would normally be discharged from the outfalls during non-rainfall periods, but would instead be captured by plugging the outfall pipes, and either diverting the non-storm water to the sanitary sewer. Alternatively, captured water may be vacuumed or removed by pump and then trucked to a treatment facility. Table 7.6.1 provides a summary of project related costs.

Table 7.6.1. Project Related Costs

ASBS AREA	PROJECT TYPE	PROJECT DESCRIPTION	OVERALL COST	COST PER DISCHARGE
Marin County	Catch basin treatment; LID	8 storm drains; 5 considered high threat, 3 moderated threat; LID parking lot retrofit	$1.48 million	~ $ 184,875
Carmel	Dry-weather flow diversions	17 storm drains; 10 considered high threat	$2.5 million	~ $ 147,000
Carmel	Dry-weather flow diversions	Multiple diversions	$2.5 million	~ $ 250,000
Carmel	Dry-weather flow diversion, multiple drainage treatments	Includes constructed wetland basin treatment and 6 dry-weather flow diversions	$ 2.4 million	--------
San Mateo County	Catch basin treatment; LID	10 storm drains considered high threat; LID parking lot retrofit	$2.5 million	----------
La Jolla	Dry-weather flow diversion; LID	1 large storm drain dry-weather flow diversion; parking lot LID retrofit	$1.69 million	

ASBS AREA	PROJECT TYPE	PROJECT DESCRIPTION	OVERALL COST	COST PER DISCHARGE
Latigo to Laguna	Catch basin treatments	2 major storm drains	$.54 million	--------
Latigo to Laguna	Catch basin treatments; linear highway facility LID	8 storm drains; 1 mile coastal hwy LID	$ 2.25 million	
Pacific Grove	Dry-weather flow diversions; parking lot bios wale	Multiple urban and roadway runoff treatment	$2.4 million	----------

Structural improvement costs vary and are dependant on project type, location, and number of storm water conveyances to be addressed (Table 24). Each applicant has a unique set of runoff issues within their ASBS. For example, at the Duxbury Reef ASBS, Marin County plans to begin work on correcting eight storm drains and address one asphalt parking lot immediately adjacent to the ASBS. Catch basin treatments are designed for each of the storm drains. The parking lot will be retrofitted into a LID structure. Marin County estimates that these projects, combined, will cost approximately $1.48 million, or about $185,000 per discharge. As another example, the City of Carmel by the Sea selected dry weather flows as a primary target for control. Seventeen storm drains were proposed for control, totaling $2.5 million or $147,000 per discharge.

The cost figures derived from the Prop 84 proposals may not represent all situations. For example, a more expensive large structural BMP (e.g., a moderate size VSS unit with a diversion) may cost $500,000 per priority discharge, and an inexpensive vegetated filter strip or small swale on a small discharge may cost only $10,000 to $20,000 per discharge. Still, an estimate of $147,000 to 185,000 per discharge is reasonable to assume as a general estimate, with some discharges being more or less expensive. There are about 294 total discharges greater than 18 inches in width or diameter. If all these discharges are controlled with structural BMPs, the total cost would range from $43 to $54 million statewide.

7.7 SUMMARY AND CONCLUSIONS OF SPECIAL PROTECTIONS COST

Combined, the costs for Northern, Central, and Southern California regional monitoring groups are estimated at about $3.9 million. Staff estimates the cost of BMPs on priority discharges would be about $43 to $54 million statewide. This is two orders of magnitude less than the minimum figure of $4.5 billion to eliminate ASBS discharges by moving all storm drains outside of ASBS into other ocean areas, an alternative that would have harmful environmental effects as well.

8.0 OTHER STATUTORY REQUIREMENTS

8.1 CUMULATIVE IMPACTS

According to Section 15355 of the State CEQA Guidelines:

> "cumulative impacts" refers to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.
>
> (a) The individual effects may be changes resulting from a single project or a number of separate projects.
>
> (b) The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.

An EIR must discuss cumulative impacts of a proposed project when the incremental effect of the project is "cumulatively considerable" (State CEQA Guidelines Section 15130[a]). This chapter provides information about past, present, and reasonably foreseeable future projects that could result in cumulative environmental impacts; describes the contribution of the proposed statewide Special Protections to those cumulative impacts; and determines whether the project's contribution to those cumulative impacts would be cumulatively considerable.

This cumulative impacts analysis evaluates existing statewide conditions and proposed implementation projects that could contribute to cumulative impacts along with the implementation of the proposed project. Where land-based discharges have been determined by local Regional Water Boards to be contributing to impairment (defined for purposes of this EIR as "targeted impaired areas"), extra attention is given to cumulative impacts where they correspond to the intersection of ASBS and 303(d)-listed impaired waters. Many of the 303[d] listed water bodies draining to ASBS are impaired for sediments and bacteria (i.e. Redwoods ASBS and James V. Fitzgerald ASBS).

Projects considered in this analysis consist of past, present, and probable future projects that may contribute to discharge-related cumulative impacts, including local projects outside of the regulatory purview of the state. These projects include regulatory programs and actions (e.g., the total maximum daily load [TMDL] process) in addition to other types of related projects such as general plans, specific plans, resource management plans, and other planning projects.

8.2 GROWTH INDUCING IMPACTS

The California Environmental Quality Act (CEQA) requires EIRs to address growth-inducement potential of a project and the related environmental effects. The General Exception project and Special Protections proposed by State Water Board staff would establish minimum requirements for the permitting and monitoring, of discharges into ASBS to prevent pollution and protect beneficial uses of ASBS including the protection of marine aquatic life within the ASBS throughout California. Therefore, this growth inducement analysis considers a broad context to characterize the potential effects of implementating the new ASBS regulations at a statewide level.

8.2.1 Basis for Analysis of Growth-Inducing Impacts

In accordance with Section 15126.2(d) of the State CEQA Guidelines, an EIR must discuss the growth-inducing impacts of the proposed project. The regulation states that the EIR shall: Discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth (a major expansion of a wastewater treatment plant might, for example, allow for more construction in service areas). Increases in the population may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. Also discuss the characteristics of some projects which may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.

Growth-inducing impacts would result from a project that would directly or indirectly foster (promote or encourage) additional economic or population growth or construction of additional housing. Growth can be fostered when an obstacle to growth is removed, as when expansion of infrastructure resolves growth-constraining capacity problems. In the case of the project, growth could be fostered if the Special Protections would allow the construction of discharge conveyances in locations where they currently cannot be constructed, or would otherwise reduce the cost or other barriers to the placement and re-direction of discharges to wastewater treatment plants. Development requires wastewater treatment, and regulations that would reduce barriers to construction of conveyances would remove one barrier to growth.

The State CEQA Guidelines do not distinguish between planned and unplanned growth for purposes of considering whether such growth could result in environmental impacts. Therefore, in order to reach the conclusion that a project is growth inducing as defined by CEQA, the EIR must find that it would foster (i.e., promote or encourage) additional growth in economic activity, population, or housing, regardless of whether the growth is already approved by and consistent with local plans. The conclusion does not determine that induced growth is beneficial or detrimental, consistent with Section 15126.2(d) of the State CEQA Guidelines.

If the EIR determines that a project is growth inducing, the next question is whether that growth may cause adverse effects on the environment. Environmental effects resulting from induced growth (i.e., growth-induced effects) fit the CEQA definition of "indirect" effects in Section 15358(a) (2) of the State CEQA Guidelines. These indirect or secondary effects of growth may result in significant environmental impacts. CEQA does not require that the EIR speculate unduly about the precise location and site-specific characteristics of significant, indirect effects caused by induced growth, but a good-faith effort is required to disclose what is feasible to assess.

Potential secondary effects of growth could include consequences—such as conversion of open space to developed uses, increased demand on community and public services and infrastructure, increased traffic and noise, degradation of air and water quality, or degradation or loss of plant and wildlife habitat—that are the result of the growth fostered by a project. If significant, indirect environmental effects of growth may occur, a final question to consider is whether those effects have already been considered and mitigated, or are appropriate for a statement of overriding considerations, if unavoidable, in a completed CEQA process.

If the induced growth is consistent with an approved general plan or community plan for the area, and a CEQA document on that plan adequately addresses the effects of growth in the plan, the environmental effects of growth induced by the proposed project should have already been evaluated and considered by the lead agency in which the growth could occur. In this circumstance, the EIR for a proposed project may incorporate the completed CEQA document by reference and need not re-evaluate previously identified impacts. A project that would induce growth that is not consistent with an adopted general plan or community plan could indirectly cause additional significant environmental impacts beyond those evaluated in the earlier CEQA document on the plan.

The decision to allow potentially induced growth is the subject of separate decision making by the lead agency responsible for allowing such projects to move forward. The proposed Special Protections specifically address how existing discharges, which already would be approved or operating under local land use authorities, would be cited and operated; they do not address or approve permits for development of projects, nor does it approve the discharges. Because the decision to allow growth is subject to separate discretionary decision making, and such decision making itself is subject to CEQA, the analysis of growth-inducing effects is not intended to determine site-specific environmental impacts and specific mitigation for the potentially induced growth. Rather, the discussion is intended to disclose the potential for environmental effects to occur more generally, such that decision makers are aware that additional environmental effects are a possibility if growth inducing projects are approved. The decision of whether impacts do occur, their extent, and the ability to mitigate them is appropriately left to consideration by the agency responsible for approving such projects, at such times as complete applications for development are submitted.

8.2.2 Growth Variables and Mechanisms of Growth Inducement

The timing, magnitude, and location of land development and population growth in a community or region are based on various interrelated land use and economic variables. Key variables include regional economic trends, market demand for residential and nonresidential uses, land availability and cost, the availability and quality of transportation facilities and public services, proximity to employment centers, the supply and cost of housing, and regulatory policies or conditions. As discussed in Chapter 3.0, "Regulatory Setting," the general plan of a community defines the location, type, and intensity of growth and it is the primary means of regulating development and growth in the State of California. Mechanisms by which a project may induce growth include creating jobs that attract economic or population growth to the area, promoting the construction of homes that would bring new residents to the area, or removing an existing obstacle that impedes growth in the area.

8.2.3 Potential for the Proposed Statewide Special Protections to Restrict Growth

Other comments submitted at public meetings and during the scoping period for the project suggested that approval and adoption of the proposed statewide regulations would restrict growth. The central idea expressed by these comments is as follows:

> ► The proposed Special Protections will render existing coastal lots and properties throughout the coastline of the state's ASBS unbuildable or prevent people from building in areas already designated for development i.e. impose a "building moratorium."

As discussed previously, the nine Regional Water Boards were established in their current form by the Porter-Cologne Water Quality Control Act of 1969 (Water Code Section 13000 et seq.). Six of these nine Regional Water Boards have coastal jurisdiction over the ASBS described in the General Exception and carry out the requirements of the Ocean Plan. In addition, development, adoption, and approval of Basin Plans followed during the 1970s. In some parts of California, legal lots of record were created preceding enactment of the Porter-Cologne Water Quality Control Act of 1969.

During the years that followed, the new water quality protection standards set forth in the Basin Plans in accordance with state and federal law rendered some existing legal lots unbuildable in places throughout California. As discussed above, six of the nine Regional Water Boards may include additional localized restrictions that are more protective of ocean water of ASBS than the proposed statewide Special Protections. Implementation of the proposed statewide Special Protections would not change the requirements and provisions contained in the Ocean Plan or approved Basin Plans for the respective Regional Water Boards. Ongoing enforcement of existing water quality protection standards that have been in effect since the 1970s would continue to render certain legal lots unbuildable.

It is not known where implementation of the proposed statewide Special Protections could inhibit growth. The proposed statewide Special Protections would likely increase the cost to install BMPs in some areas or re-direct existing waste discharge conveyances; consequently, in some instances it is probable that compliance costs could make development of some properties too costly. In those instances, it is likely that Special Protections could moderately reduce potential growth. It is not known, and there is no data available, to quantify the degree to which growth would be restricted by increased costs.

8.3 SIGNIFICANT AND UNAVOIDABLE IMPACTS

Section 6.0 of this draft EIR describes the potential environmental impacts of the proposed project and recommend various mitigation measures to reduce these impacts, to the extent feasible. After implementation of the recommended mitigation measures, most of the impacts associated with the proposed project would be reduced to a less-than-significant level. Impacts on ASBS ocean water quality and protection of marine biological resources and beneficial uses of the ASBS would remain significant and unavoidable if existing inadequate controls currently in force are allowed to continue. Summary discussions of significant and unavoidable impacts by issue are provided in the following text. Section 4.0, “Alternatives to the Proposed Project,” considers alternatives to the proposed project that may be capable of reducing or avoiding some of the impacts of the proposed project.

8.3.1. Determining Significance under CEQA

The *CEQA Guidelines* (§15000, et seq., California Code of Regulations, 2009) define a “significant effect” as:

“…*a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic and aesthetic significance. An economic or social change by itself shall not be considered a significant effect on the environment. A social or economic change related to a physical change may be considered in determining whether the physical change is significant” (CEQA Guidelines §15382, 2009).*

The *CEQA Guidelines* further state that “An ironclad definition of significant effect is not possible because the significance of an activity may vary with the setting. For example, an activity which may not be significant in an urban area may be significant in a rural area *(CEQA Guidelines §15064, 2009).* Appendix G of the *CEQA Guidelines* describes impacts that the California Resources Agency has determined are normally considered significant. These guidelines require that physical changes in the environment be evaluated based on factual evidence, reasonable assumptions supported by facts, and expert opinion based on fact.

8.3.2. Significance Criteria

Analysis of each project alternative was conducted to determine if there would be an impact to a particular environmental resource (Section 6.0 Environmental). This review included a determination of whether an impact occurring from the implementation of an alternative would be rated as “significant” under CEQA. Table 8.3.2 summarizes the significance of temporary, long-term, and cumulative environmental impacts of the General Exception/Special Protections Project alternatives under CEQA. Levels of significance stating “less than significant with mitigation incorporated” are based on the application of successful mitigation measures, meaning the impact would not be diminished until mitigation successfully accomplishes the desired goals.

Table 6.7.1 summarizes the Thresholds of Significance for Ocean Plan water quality objectives. For the purposes of this analysis, a water quality impact is considered significant if implementation of the proposed project would result in exceeding any of the Ocean Plan water quality objectives. Section 6.0 Environmental Analysis of this document provides a detailed discussion of the impacts for each resource category. Significant impacts were identified for the No—Project Alternative which is used as the baseline for comparison with other alternatives.

8.3.3. Thresholds of Significance

For the purposes of the Analysis of Environmental Impacts, a water quality impact is considered significant if implementation of the proposed project would result in exceeding any of the thresholds identified in Table B of the Ocean Plan (OP water quality objectives). These thresholds of significance are based on the CEQA Guidelines (State CEQA Guidelines) and relevant water quality objectives. Consistent with State CEQA Guidelines, a water quality impact is considered significant in this analysis if implementation of the proposed project would result in potential for exceeding any of these adopted water quality objectives related to ASBS.

8.3.4. Potential Impacts

This section discusses the resources which will experience potential impacts as a result of the General Exception/Special Protections Project.

The General Exception project has the potential to impact species, habitat, and sensitive natural communities within each of the 26 ASBS identified in this General Exception, if existing inadequate controls currently in force are allowed to continue. The applicants submitted biological monitoring reports characterizing near shore marine biota. Four reports provided data sufficient to statistically compare impact from reference locations at San Clemente and San Nicolas Islands (Navy), Del Mar Landing, and Trinidad ASBS. Based on comparison of community composition, there is evidence that at three ASBS the data show that sampled discharge locations are different from sampled reference locations. However, there is some question whether these differences are attributed to the discharges or an artifact of the sample design. For example, Caltrans reported data for their multiple ASBS discharge locations that include Redwood National Park, James V. Fitzgerald, Año Nuevo, Point Lobos, Carmel, and Irvine Coast ASBS. While data results from certain ASBS sites within Caltrans area of potential discharge impact differed from selected reference sites, there was no strong support that this was due to discharges. Differences between impact and reference locations were also found at Duxbury Reef ASBS (County of Marin) and at the Pillar Point area of James V. Fitzgerald ASBS (Air force). Again at these locations, the data was inadequate to attribute the variation to the impacts of the discharge.

The project, granting an exception with special mitigating conditions (i.e., special protections) will allow the continued discharge of wastes from various origins including storm water runoff into ASBS. It is anticipated that the mitigating terms and conditions of the special protections will result in improved water quality conditions. Further, the terms and conditions of the special protections provide for continued water quality improvements over time if all of the special protections designed to limit discharges of waste from the applicants are implemented.

It is anticipated that, as the applicants identified in this General Exception plan for and design individual control projects to comply with the terms and conditions or "Special Protections," each applicant will assess biological impacts on a project-by-project basis. If it is determined that a project will have biological impacts, then potential mitigation measures must be considered. A technical biological impact analysis may include evaluation of terrestrial and marine biota of an individual project. The impact analysis may assess mitigation measures that are determined to be reasonable and feasible, and at the time of final design would then be incorporated into projects' plans and specifications. Indirect effects to biological resources may extend throughout the duration of construction and may include increased erosion, siltation, and runoff. It is anticipated that cumulative proposed projects to implement Special Protections should result in long-term, beneficial effects to biological resources within each individual project.

Thresholds of Significance:
1 - Indirect impacts on marine biological resources associated with existing baseline inadequate pollution and dry-weather flows control measures.

The General Exception Project has the potential to violate the ASBS waste discharge prohibition of the Ocean Plan if existing inadequate controls currently in force are allowed to continue. The project, granting an exception with special mitigating conditions (i.e., special protections) will allow the continued discharge of wastes from various origins including storm water runoff into ASBS. Existing ocean water quality conditions within ASBS have had measured concentrations of constituents which exceed the Table B water quality objectives of the Ocean Plan. Exceedances of the Table B Ocean Plan water quality objectives were also found in the storm water runoff of some of the applicants. It is expected that the mitigating terms and conditions of the Special Protections will result in improved water quality conditions of ASBS. Further, the terms and conditions of the special protections provide for continued water quality improvements in storm water and nonpoint source discharges over time.

Granting the general exception will not violate federal antidegradation requirements because water quality will not be lowered, but rather, will be improved within the ASBS affected. Further, allowance of the General Exception will not violate the State Water Board's antidegradation policy (SWRCB 1968) since water quality conditions are anticipated to improve; the discharges will not unreasonably affect present and anticipated beneficial uses; the discharge will not result in water quality lower than that prescribed in the Ocean Plan; and beneficial uses will be protected and potential impacts will be less than significant with mitigation incorporated.

It is anticipated that the applicants identified in this General Exception project will implement various individual or collaborative projects to comply with the terms and conditions or "Special Protections." As part of the scoping and environmental analysis conducted for the General Exception project, project types identified include: Low Impact Development (LID); dry-weather flow diversions; and Best Management Practices (BMPs), such as Pollution Prevention BMPs and Treatment BMPs, such as infiltration basins and Gross Solids Removal Devices (GSRDs). Under the State Water Board's storm water program, these types of projects may require coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit). Dischargers whose projects disturb 1 or more acres of soil or whose project disturbs less than 1 acre but are part of a larger common plan of development that in total disturbs 1 or more acres, are required to obtain coverage under this permit. The activity would include clearing, grading, and disturbances to the ground such as stockpiling, or excavation.

Additional requirements of the Construction General Permit require the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP should contain a site map(s) which shows the construction site perimeter, existing and storm water collection and discharge points and drainage patterns across the project. The SWPPP includes a chemical monitoring program for "non-visible" pollutants to be implemented if there is a failure of BMPs during a project's construction.

These hydrology and water quality resource impacts were considered to be short-term and no potential for adverse impacts to these resources were identified.

Thresholds of Significance:
1 - Exceedances of Table B water quality objectives in storm water
2 - Dry weather flows
3 - Violate federal antidegradation requirements
4 – Discharge of waste materials into the ASBS

8.4 DETERMINATION

The implementation of the General Exception to the Ocean Plan and associated terms and conditions, the Special Protections, will result in improved water quality in the waters of the State's 26 ASBS listed herein and will have significantly positive impacts to the environment, including preservation and enhancement of beneficial uses of the ASBS[15], and the economy over the long term. Enhancement of the beneficial uses will have positive social and economic effects by decreasing potential waste discharges and trash and increasing the aesthetic experience along the shoreline and waters of ASBS. Specific projects employed to implement Special Protections may have some adverse impacts to the environment, but these impacts are generally expected to be limited, short-term or may be mitigated through design and scheduling.

The FEIR, Initial Study and the Special Protections provide the necessary information pursuant to Public Resources Code section 21159 to conclude that properly designed and implemented BMPs or other waste discharge capture systems generally should not foreseeably have a significant adverse effect on the environment. Any potential impacts can be mitigated at the subsequent project level when specific sites and methods have been identified, and Responsible Parties identified herein can and should implement the recommended mitigation measures. These mitigation measures in most cases are routine measures to ease the expected and routine impacts attendant with ordinary minor construction projects and infrastructure maintenance in an urbanized environment. Routine construction and maintenance of power lines, sewers, streets, etc. are regular and expected incidents of living in urban and infrastructure improved environments (i.e. highways and roadways) along the coast. Sewer and power line maintenance, street sweeping, traffic alterations, and environmental impacts from them already occur and are expected.

This Special Protections project will foreseeably require many more such waste discharge prevention projects, but their individual impacts are not expected to be extraordinary in magnitude or severity. Specific projects, that may have a significant impact, would therefore be subject to a separate environmental review. The lead agency for subsequent projects would be obligated to mitigate any impacts they identify, for example by mitigating potential flooding impacts by designing the BMPs with adequate margins of safety. Notably, in almost all circumstances, where unavoidable or unmitigable impacts would present unacceptable hardship upon nearby receptors or venues, the Responsible Parties and/or associated local agencies have a variety of alternative implementation measures available instead. For instance, they can locate BMPs further down the storm drain system away from such receptors, or impose increased street sweeping or enforcement at that location instead.

All of the potential impacts discussed in this EIR must, however, be mitigated at the subsequent, project level because they involve specific sites and designs not specified at the program level. At this stage, any more particularized conclusions would be

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[15] California Ocean Plan § I.A. Beneficial Uses

speculative. The State Board does not have legal authority to specify the manner of compliance with its orders or regulations (Wat. C. § 13360), and thus cannot dictate that an appropriate location be selected for any particular project. It is anticipated that compliance projects will be designed consistent with standard industry practices and that routine and ordinary mitigation measures be employed. These measures are all within the jurisdiction and authority of the Responsible Parties that will be responsible for implementing the Special Protections. The Responsible Parties can and should employ those alternatives and mitigation measures to reduce any impacts as much as feasible (14 Cal. Code Regs., §15091(a)(2).

Implementation of the General Exception Project and Special Protections is both necessary and beneficial. To the extent that the alternatives, mitigation measures, or both, that are examined in this analysis are not deemed feasible by those 27 Responsible Parties identified herein , the necessity of implementing the Project and removing the discharge of waste into ASBS (an action required to achieve the express, national policy of the Clean Water Act) remains.

On the basis of this evaluation and staff Program FEIR, which collectively provides the required information:

The State Water Board finds that the proposed General Exception and Special Protections could have a significant adverse effect on the environment. However, there are feasible alternatives and/or feasible mitigation measures that would substantially lessen any significant adverse impact. These alternatives are discussed above and in the Program FEIR.

Table 8.3.2. Summary of Project Impacts – (Refer to Section 6.0)			
Impacts	**Significance Before Mitigation**	**Mitigation Measures**	**Significance After Mitigation**
6.1 Aesthetics			
6.1-1: Direct Impacts Associated with Effects on a scenic vista	Potentially Significant, short-term temporary	Construction related mitigation project-by-project implemented by Applicant	Less than Significant
6.1-2: Direct Impacts Associated with effects on scenic highway	Potentially Significant, short-term temporary	Construction related mitigation project-by-project implemented by Applicant	Less than Significant
6.1-3: Direct Impacts Associated with Visual Character of site or surroundings	Potentially Significant, short-term temporary	Construction related mitigation project-by-project implemented by Applicant	Less than Significant
6.2 Air Quality			
6.2-1: Direct Impacts Associated with Air Quality Standards	Potentially Significant, short-term temporary	Construction related mitigation project-by-project implemented by Applicant	Less than Significant
6.2-2: Expose Sensitive Receptors to Substantial Pollutant concentrations	Potential short-term temporary	Construction and/or maintenance related mitigation project-by-project implemented by Applicant	Less than Significant
6.2-3: Create Objectionable Odors Affecting a Substantial Number of People	Potential direct short-term temporary	Construction and/or maintenance related mitigation project-by-project implemented by Applicant	Less than Significant
6.3 Biological Resources			
6.3-1: Substantial Direct/Indirect Adverse Effect to Candidate, sensitive or	Potential substantial adverse effect	Coordination by Applicant with local or regional plans, policies, or regulations and/or DFG or	Less than Significant

Special Status Species		USFWS	
6.3-2; 6.3-3; 6.3-4; 6.3-5: Substantial adverse effect on riparian habitat, interfere with fish passage, conflict with local resource protection, conflict with HCPs of NCCPs	Potentially significant short-term, temporary	Modify proposed implementations to require erosion and sediment control measures project-by-project implemented by Applicant	Less than Significant with mitigation incorporated
6.4 Cultural Resources			
6.4-1: Direct Impacts to Cultural Resources including historic, archaeological sites	Potential direct adverse impacts	Construction related mitigation project-by-project implemented by Applicant, coordination with SHPO	Less than Significant with mitigation incorporated
6.5 Greenhouse Gas Emissions			
6.5-1: Direct impacts associated with GHG emissions	Potential direct temporary short-term impacts	Construction and maintenance related equipment emissions mitigation implemented by Applicant	Less than Significant with mitigation incorporated
6.6 Hazards and Hazardous Materials			
6.6-1: Create a significant hazard via accidental release of hazardous materials	Potential direct temporary short-term impacts	Construction related mitigation project-by-project implemented by Applicant	Less than Significant with mitigation incorporated
6.6-2: Impair emergency response or evacuation	Potential direct temporary short-term impacts	Construction related mitigation project-by-project implemented by Applicant	Less than Significant
6.7 Hydrology and Water Quality			
6.7-1: Violate water quality criteria for pollutants and pathogens Violate ambient natural ocean water quality	Potential direct long-term impacts	Mitigating terms and conditions –Special Protections implemented by Applicant(s)	Less than Significant with mitigation incorporated
6.7-2: Create substantial water quality hazard to marine biota	Potential direct long-term impacts	Mitigating terms and conditions –Special Protections implemented by Applicant(s)	Less than Significant with mitigation incorporated

6.8 Noise			
6.8-1: Exposure to and generation of noise in excess of standards	Potential direct short-term	Construction and maintenance related equipment mitigation implemented by Applicant	Less than Significant with mitigation incorporated
6.9 Public Services			
6.9-1: Substantial adverse physical impacts to police, fire, recreational resources or public facilities	No reasonably foreseeable adverse impact	None required due to less than significant impact	N/A
6.10 Transportation/Traffic			
6.10-1: Adverse impact to transportation and circulation	Potential direct short-term	Construction and/or maintenance related mitigation project-by-project implemented by Applicant	Less than Significant with mitigation incorporated
6.10-2: Inadequate emergency access	Potential indirect short-term temporary	Non required due to less than significant impact	Less than Significant

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GLOSSARY AND ACRONYMS

TERM/ABBREVIATION	DESCRIPTION
Areas of Special Biological Significance (ASBS)	Those areas designated by the State Water Board as ocean areas requiring protection of species or biological communities to the extent that alteration of natural water quality is undesirable. All Areas of Special Biological Significance are also classified as a subset of State Water Quality Protection Areas.
ASBS	Area(s) of Special Biological Significance
At the Point of Discharge(s)	In the surf zone, immediately where runoff from an outfall meets the ocean water (a.k.a. at point zero). For storm water discharges, outfall is defined in 40 CFR 122.26(b)(9).
BLM	Bureau of Land Management
BMPs	Best Management Practices
Caltrans	California Department of Transportation
CBI	Clean Beaches Initiative
CCC	California Coastal Commission
CCA	Critical Coastal Area
CCLEAN	Central Coast Long-term Environmental Assessment Network
CDO	Cease and Desist Order
CEQA	California Environmental Quality Act
COP	California Ocean Plan
CTR	California Toxics Rule
Cu	Copper
CWA	Clean Water Act
CWC	California Water Code
Design Storm	One inch of precipitation per day (for purposes of these Special Protections)
DFG	California Department of Fish and Game
DO	Dissolved Oxygen
FWS	United State Fish and Wildlife Service

TERM/ABBREVIATION	DESCRIPTION
LID	Low Impact Development:
Low Impact Development (LID)	A sustainable practice that benefits water supply and contributes to water quality protection. Unlike traditional storm water management, which collects and conveys storm water runoff through storm drains, pipes, or other conveyances to a centralized storm water facility, LID takes a different approach by using site design and storm water management to maintain the site's pre-development runoff rates and volumes. The goal of LID is to mimic a site's predevelopment hydrology by using design techniques that infiltrate, filter, store, evaporate, and detain runoff close to the source of rainfall.
MARINe	Multi-Agency Rocky Intertidal Network
MEP	Maximum Extent Practicable
MMA	Marine Managed Area
MMs	Management Measures
MS4	Municipal Separate Storm Sewer Systems
Municipal Separate Storm Sewer Systems (MS4)	A municipally-owned storm sewer system regulated under the Phase I or Phase II storm water program implemented in compliance with Clean Water Act section 402(p). Note that an MS4 program's boundaries are not necessarily congruent with the permittee's political boundaries.
Natural Water Quality	Determined by comparison to reference areas agreed upon via the regional monitoring programs(s).
Nonpoint Source (NPS)	Sources of pollution that arise over a comparatively large area rather than from a single point (Non-point pollution sources generally are sources that do not meet the definition of a point source). Non-point source pollution typically results from land runoff, precipitation (except those discharges regulated by an NPDES permit), atmospheric deposition, drainage, seepage, or hydrologic modification. Non-point sources, for purposes of these Special Protections, include storm water discharges that are not required to be regulated under an NPDES permit.
NPDES	National Pollutant Discharge Elimination System
NPS Policy	Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program
OPP	Ocean Protection Projects
Parks and Recreation Facilities	State Parks
Person	"Person" is defined in Water code §13050(c)
Point Source	Defined in Clean Water Act §502(14)
POTWs	Publicly Owned Treatment Works

TERM/ABBREVIATION	DESCRIPTION
PRC	Public Resources Code
Regional Water Board	Regional Water Quality Control Board
SB	Senate Bill
SCCWRP	Southern California Coastal Water Research Project
SCI	San Clemente Island
SCICO	Santa Catalina Island Company
Sheet-Flow	Runoff that flows across land surfaces at a shallow depth relative to the cross-sectional width of the flow. These types of flow may or may not enter a storm drain system before discharge to receiving waters
Significant Difference	Statistically significant difference in the arithmetic means of two distributions of sampling results at the 95 percent confidence level.
SIO	Scripps Institution of Oceanography
SNI	San Nicholas Island
State Water Board	State Water Resources Control Board
Storm Water	Defined in 40 CFR 122.26(b)(13)
Surf Zone	The area between the breaking waves and the shoreline at any one time.
SWAMP	Storm Water Ambient Monitoring Program
SWMP	Storm Water Management Plan/Program
SWQPA	State Water Quality Protected Area
SWPPP	Storm Water Prevention Pollution Plan
TMDL	Total Maximum Daily Load
TSRA	The Sea Ranch Association
U.S. EPA	United States Environmental Protection Agency
Waterfront and Marine Operations	Activities that include boat launch, cleaning, maintenance, recreational, mooring , fishing and related infrastructure
Waste	Defined in Water Code §13050(d)
WDR	Waste Discharge Requirements

Date	ASBS Number	ASBS	Ssampling Agency	Nearest Discharge	Waterbody	Description	Arsenic ug/L	Cadmium ug/L	Chromium ug/L	Copper ug/L	Lead ug/L	Mercury ug/L
5/23/2006	7	King Range	Humboldt County	KNG 104	discharge	Gull Point- Effluent				0.01	0.01	
5/23/2006	7	King Range	Humboldt County	KNG 097	discharge	Sea Court (518) - Effluent				0.01	0.01	
3/4/2004	24	La Jolla	City of San Diego	SDL062	discharge	storm drain La Jolla Shores (sample SD AD2P)	4.24	2.01	3.42	81.20	14.40	0.16
2/19/2006	29	La Jolla	City of San Diego	SDL 157	ocean receiving water	Paseo Grande 01, Mixing Zone-D1 (La Jolla Preserve 01 MZ)	1.16	ND	1.19	7.83	ND	ND
2/19/2006	29	La Jolla	City of San Diego	SDL 165	ocean receiving water	Paseo Dorado 02	1.36	ND	1.77	5.36	2.8	ND
2/19/2006	29	La Jolla	City of San Diego	SDL 165	discharge	Paseo Dorado 02	2.76	ND	1.91	36.6	6.9	ND
2/19/2006	29	La Jolla	City of San Diego	SDL 157	discharge	Paseo Grande 01, Stormdrain-S1 (La Jolla Preserve)	13.7	ND	8.3	31.3	10.2	ND
4/28/2005	29	La Jolla	City of San Diego	SDL 165	discharge	Paseo Grande 01	7.98	ND	10.9	44.7	4.2	not tested
3/23/2005	29	La Jolla	City of San Diego	SDL 165	discharge	Paseo Dorado 02	4.29	ND	13.7	56.1	3.6	not tested
2/19/2006	29	La Jolla	City of San Diego	SDL 165	ocean background water	Paseo Dorado 02	1.22	ND	ND	10.1	ND	ND
	29	La Jolla	City of San Diego	SDL062	discharge	Avenida De La Playa						
	29	La Jolla	City of San Diego	SDL062	discharge	Avenida De La Playa						
	29	La Jolla	City of San Diego	SDL062	discharge	Avenida De La Playa						
	29	La Jolla	City of San Diego	SDL062	discharge	Avenida De La Playa						
	29	La Jolla	City of San Diego	SDL064	discharge	Camino Del Oro						
	29	La Jolla	City of San Diego	SDL064	discharge	Camino Del Oro						
	29	La Jolla	City of San Diego	SDL064	discharge	Camino Del Oro						
	29	La Jolla	City of San Diego	SDL064	discharge	Camino Del Oro						
	29	La Jolla	City of San Diego	SDL165	discharge	El Paseo Grande						
	29	La Jolla	City of San Diego	SDL165	discharge	El Paseo Grande						
	29	La Jolla	City of San Diego	SDL165	discharge	El Paseo Grande						
	29	La Jolla	City of San Diego	SDL165	discharge	El Paseo Grande						
	29	La Jolla	City of San Diego	SDL062	storm drain	storm drain La Jolla Shores						
3/5/2004	24	Laguna Point to Latigo Point	SWRCB	MUG234	stream	Trancas Creek	3.80	0.13	17.00	5.74	0.13	<0.05
4/14/2006	24	Laguna Point to Latigo Point	LA County	MUG 011	discharge	Storm Drain	1	0.2	1	1	1	ND
4/14/2006	24	Laguna Point to Latigo Point	CalTrans	MUG 011	discharge	Edge of Pavement Time Composite	1.6	0.25	4	25	3.3	<0.2
	24	Laguna Point to Latigo Point	Los Angeles County	MUG122	discharge	ocean water influenced by drainage of MUG142-145 (R1)	5.32	0.38	7.01	3.36	0.88	0.07

Date	ASBS Number	ASBS	Ssampling Agency	Nearest Discharge	Waterbody	Description	Nickel ug/L	Selenium ug/L	Silver ug/L	Thallium ug/L	Zinc ug/L	NH3N mg/L
5/23/2006	7	King Range	Humboldt County	KNG 104	discharge	Gull Point- Effluent	0.01				0.01	
5/23/2006	7	King Range	Humboldt County	KNG 097	discharge	Sea Court (518) - Effluent	0.01				0.01	
3/4/2004	24	La Jolla	City of San Diego	SDL062	discharge	storm drain La Jolla Shores (sample SD AD2P)	49.80	8.84	0.15	<0.1	11.30	
2/19/2006	29	La Jolla	City of San Diego	SDL 157	ocean receiving water	Paseo Grande 01, Mixing Zone-D1 (La Jolla Preserve 01 MZ)	2.63	ND	0.19		11.1	0.3
2/19/2006	29	La Jolla	City of San Diego	SDL 165	ocean receiving water	Paseo Dorado 02	2.19	ND	ND	ND	13.5	
2/19/2006	29	La Jolla	City of San Diego	SDL 165	discharge	Paseo Dorado 02	3.5	1.37	ND	ND	77.7	
2/19/2006	29	La Jolla	City of San Diego	SDL 157	discharge	Paseo Grande 01, Stormdrain-S1 (La Jolla Preserve)	9.91	1.13	ND		95.6	0.6
4/28/2005	29	La Jolla	City of San Diego	SDL 165	discharge	Paseo Grande 01	6.46	0.704	ND		76.9	
3/23/2005	29	La Jolla	City of San Diego	SDL 165	discharge	Paseo Dorado 02	9.97	3.88	0.384		188	
2/19/2006	29	La Jolla	City of San Diego	SDL 165	ocean background water	Paseo Dorado 02	2.13	ND	0.17	5.3	5.39	
	29	La Jolla	City of San Diego	SDL062	discharge	Avenida De La Playa						2
	29	La Jolla	City of San Diego	SDL062	discharge	Avenida De La Playa						0.2
	29	La Jolla	City of San Diego	SDL062	discharge	Avenida De La Playa						0
	29	La Jolla	City of San Diego	SDL062	discharge	Avenida De La Playa						0.4
	29	La Jolla	City of San Diego	SDL064	discharge	Camino Del Oro						0
	29	La Jolla	City of San Diego	SDL064	discharge	Camino Del Oro						0
	29	La Jolla	City of San Diego	SDL064	discharge	Camino Del Oro						0.82
	29	La Jolla	City of San Diego	SDL064	discharge	Camino Del Oro						ND
	29	La Jolla	City of San Diego	SDL165	discharge	El Paseo Grande						1
	29	La Jolla	City of San Diego	SDL165	discharge	El Paseo Grande						0
	29	La Jolla	City of San Diego	SDL165	discharge	El Paseo Grande						0.92
	29	La Jolla	City of San Diego	SDL165	discharge	El Paseo Grande						0.207
	29	La Jolla	City of San Diego	SDL062	storm drain	storm drain La Jolla Shores						0.6
3/5/2004	24	Laguna Point to Latigo Point	SWRCB	MUG234	stream	Trancas Creek	7.96	9.24	<0.1	<0.1	10.20	
4/14/2006	24	Laguna Point to Latigo Point	LA County	MUG 011	discharge	Storm Drain	2	0.5	0.5		5	
4/14/2006	24	Laguna Point to Latigo Point	CalTrans	MUG 011	discharge	Edge of Pavement Time Composite	6.8	0.55	<0.5		110	0.46
	24	Laguna Point to Latigo Point	Los Angeles County	MUG122	discharge	ocean water influenced by drainage of MUG142-145 (R1)	7.38	0.76	0.21		4.08	

Date	ASBS Number	ASBS	Ssampling Agency	Nearest Discharge	Waterbody	Description	Arsenic ug/L	Cadmium ug/L	Chromium ug/L	Copper ug/L	Lead ug/L	Mercury ug/L
3/28/2006	24	Laguna Point to Latigo Point	CalTrans	MUG 011	discharge	Edge of Pavement Time Composite	3.8	0.44	13	15	7.5	<0.2
3/2/2004	24	Laguna Point to Latigo Point	SWRCB	MUG 370	discharge	storm drain Zuma Bay Westward Beach Road (R2 - lab rep)	7.75	0.45	31.20	59.10	3.26	<0.05
3/2/2004	24	Laguna Point to Latigo Point	SWRCB	MUG 370	discharge	storm drain Zuma Bay Westward Beach Road (R1 - lab rep)	7.69	0.52	31.70	60.60	3.20	<0.05
3/2/2004	24	Laguna Point to Latigo Point	City fo Malibu	MUG 226	discharge	storm drain east of El Matador Beach (R2 - lab rep)	3.98	0.59	97.00	31.50	6.18	<0.05
4/14/2006	24	Laguna Point to Latigo Point	LA County	MUG 011	ocean receiving water	Receiving Water	5	1	5	5	5	ND
3/28/2006	24	Laguna Point to Latigo Point	CalTrans	MUG 011	ocean receiving water	CalTrans Receiving	51	<1	<5	10	<5	<0.2
4/14/2006	24	Laguna Point to Latigo Point	CalTrans	MUG 011	ocean receiving water	CalTrans Receiving	58	<1	<5	20	<5	<1
4/14/2006	24	Laguna Point to Latigo Point	CalTrans	MUG 002	ocean background water	Background Seawater Grab	60	<1	<5	21	<5	<0.2
	24	Laguna Point to Latigo Point	Los Angeles County	MUG122	discharge	unknown drains east of El Pescador stairs, west of La Piedra						
3/2/2004	24	Lagoon to Latigo Point	SWRCB	MUG 371	ocean receiving water	ocean water at mouth of Zuma creek (sample SAD1070W)	4.82	0.04	4.63	0.26	0.08	0.01
3/2/2004	24	Lagoon to Latigo Point	SWRCB	MUG 371	stream	Zuma Creek Lagoon (surf sample SAD1070B)	2.06	0.31	1.85	0.74	0.11	0.02
3/2/2004	24	Lagoon to Latigo Point	City of Malibu	MUG 226	discharge	storm drain east of El Matador Beach	3.94	0.6	95.80	31.40	6.37	<0.05
3/28/2006	24	Lagoon to Latigo Point	CalTrans	MUG 002	ocean background water	Background Seawater Grab						
2/27/2006	19	Pacific Grove	MBAQ		discharge	Near Shore Wing (NSW) Roof Drain	1.23	0.026	ND	0.17	0.005	0.01
6/15/2006	19	Pacific Grove	Stanford Hopkins Marine Station	PCG 262	ocean receiving water	Location #13	0.955	0.034	0.325	0.589	0.145	ND
6/15/2006	19	Pacific Grove	Stanford Hopkins Marine Station		ocean receiving water	Location #13 Receiving Water (R1)	0.954	0.035	0.355	0.555	0.141	ND
6/15/2006	19	Pacific Grove	Stanford Hopkins Marine Station		ocean receiving water	HOWS	1.183	0.036	0.865	0.204	0.111	ND

Date	ASBS Number	ASBS	Ssampling Agency	Nearest Discharge	Waterbody	Description	Nickel ug/L	Selenium ug/L	Silver ug/L	Thallium ug/L	Zinc ug/L	NH3N mg/L
3/28/2006	24	Laguna Point to Latigo Point	CalTrans	MUG 011	discharge	Edge of Pavement Time Composite	10	2.2	<0.5		57	1.5
3/2/2004	24	Laguna Point to Latigo Point	SWRCB	MUG 370	discharge	storm drain Zuma Bay Westward Beach Road (R2 - lab rep)	14.90	2.42	<0.1		146.00	
3/2/2004	24	Laguna Point to Latigo Point	SWRCB	MUG 370	discharge	storm drain Zuma Bay Westward Beach Road (R1 - lab rep)	15.20	2.58	<0.1		148.00	0.5
3/2/2004	24	Laguna Point to Latigo Point	City fo Malibu	MUG 226	discharge	storm drain east of El Matador Beach (R2 - lab rep)	49.30	1.83	0.19		87.10	
4/14/2006	24	Laguna Point to Latigo Point	LA County	MUG 011	ocean receiving water	Receiving Water	10	2.5	2.5		25	
3/28/2006	24	Laguna Point to Latigo Point	CalTrans	MUG 011	ocean receiving water	CalTrans Receiving	13	<2.5	<2.5		<25	0.19
4/14/2006	24	Laguna Point to Latigo Point	CalTrans	MUG 011	ocean receiving water	CalTrans Receiving	13	<2.5	<2.5		<25	0.16
4/14/2006	24	Laguna Point to Latigo Point	CalTrans	MUG 002	ocean background water	Background Seawater Grab	14	<2.5	<2.5	<2.5	27	
	24	Laguna Point to Latigo Point	Los Angeles County	MUG122	discharge	unknown drains east of El Pescador stairs, west of La Piedra						0.2
3/2/2004	24	Lagoon to Latigo Point	SWRCB	MUG 371	ocean receiving water	ocean water at mouth of Zuma creek (sample SAD1070W)	0.49	0.05	0.24	0.01	4.80	
3/2/2004	24	Lagoon to Latigo Point	SWRCB	MUG 371	stream	Zuma Creek Lagoon (surf sample SAD1070B)	3.47	0.34	0.14	0.01	2.93	
3/2/2004	24	Lagoon to Latigo Point	City of Malibu	MUG 226	discharge	storm drain east of El Matador Beach	49.10	2.13	0.16	<0.1	88.30	
3/28/2006	24	Lagoon to Latigo Point	CalTrans	MUG 002	ocean background water	Background Seawater Grab						
2/27/2006	19	Pacific Grove	MBAQ		discharge	Near Shore Wing (NSW) Roof Drain	0.143	0.02	ND		1.86	190
6/15/2006	19	Pacific Grove	Stanford Hopkins Marine Station	PCG 262	ocean receiving water	Location #13	0.229	0.031	ND	ND	5.112	
6/15/2006	19	Pacific Grove	Stanford Hopkins Marine Station		ocean receiving water	Location #13 Receiving Water (R1)	0.197	0.026	ND		5.047	0.02
6/15/2006	19	Pacific Grove	Stanford Hopkins Marine Station		ocean receiving water	HOWS	0.327	0.02	ND		4.852	

Polynuclear Aromatic

Sample Date	No.	ASBS	Sampling Agency	Site Description		Acenapthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	dibenz(a,h)anthracene	Fluorene	Indeno(1,2,3-cd)pyrene	Phenanthrene	Pyrene	Flouranthene	Total PAH ng/L
3/28/2006	**24**	Laguna Pt to Latigo Pt	CalTrans	Storm Drain	discharge	5	5	2	2	5	10	5	2	5	5	10	5	5		46
3/28/2006	**24**	Laguna Pt to Latigo Pt	CalTrans	Receiving	ocean receiving	5	5	2	2	5	10	5	2	5	5	10	5	5		899
4/14/2006	**24**	Laguna Pt to Latigo Pt	CalTrans	Storm Drain	discharge	5	5	2	2	5	10	5	2	5	5	10	5	5		25.7
4/14/2006	**24**	Laguna Pt to Latigo Pt	CalTrans	Receiving	ocean receiving	5	5	2	2	5	10	5	2	5	5	10	5	5		190
4/14/2006	**24**	Laguna Pt to Latigo Pt	CalTrans	Background	ocean background	5	5	2	2	5	10	5	2	5	5	10	5	5		19.7
4/14/2006	**24**	Laguna Pt to Latigo Pt	L.A. Co.	Storm Drain	discharge	5	5	2	2	5	10	5	2	5	5	10	5	5		14
4/14/2006	**24**	Laguna Pt to Latigo Pt	L.A. Co.	Receiving	ocean receiving	5	5	2	2	5	10	5	2	5	5	10	5	5		66

STATE WATER RESOURCES CONTROL BOARD
RESOLUTION NO. 2012-0012

APPROVING EXCEPTIONS TO THE CALIFORNIA OCEAN PLAN FOR SELECTED DISCHARGES INTO AREAS OF SPECIAL BIOLOGICAL SIGNIFICANCE, INCLUDING SPECIAL PROTECTIONS FOR BENEFICIAL USES, AND CERTIFYING A PROGRAM ENVIRONMENTAL IMPACT REPORT

WHEREAS:

1. The State Water Resources Control Board (State Water Board) adopted the California Ocean Plan (Ocean Plan) on July 6, 1972 and revised the Ocean Plan in 1978, 1983, 1988, 1990, 1997, 2000, 2005, and 2009.

2. The Ocean Plan prohibits the discharge of waste to designated Areas of Special Biological Significance (ASBS).

3. ASBS are designated by the State Water Board as ocean areas requiring protection of species or biological communities to the extent that alteration of natural water quality is undesirable.

4. Under the Marine Managed Areas Improvement Act, all ASBS are designated as a subset of state water quality protection areas and require special protection as determined by the State Water Board pursuant to the Ocean Plan and the Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (Thermal Plan).

5. In state water quality protection areas, waste discharges must be prohibited or limited by special conditions, in accordance with the Porter-Cologne Water Quality Control Act, California Water Code §13000 et seq., and implementing regulations, including the Ocean Plan and Thermal Plan.

6. The Ocean Plan authorizes the State Water Board to grant an exception to Ocean Plan provisions where the board determines that the exception will not compromise protection of ocean waters for beneficial uses and the public interest will be served.

7. On October 18, 2004, the State Water Board notified a number of parties that they must cease the discharge of storm water and nonpoint source waste into ASBS or request an exception to the Ocean Plan.

8. The State Water Board has now received 27 applications for an exception to the Ocean Plan prohibition against waste discharges into an ASBS. The applicants, who are listed in Attachment A to this resolution, discharge storm water and nonpoint source waste into ASBS.

9. The State Water Board finds that granting the requested exceptions will not compromise protection of ocean waters for beneficial uses, provided that the applicants comply with the prohibitions and special conditions that comprise the Special Protections contained in this resolution. The prohibitions and special conditions in the Special Protections, contained in Attachment B to this resolution, are intended to ensure that storm water

and nonpoint source discharges are controlled to protect the beneficial uses of the affected ASBS, including marine aquatic life and habitat, and to maintain natural water quality within ASBS. The Special Protections are also intended to maintain the natural hydrologic cycle and coastal ecology by allowing the flow of clean precipitation runoff into the ocean, while preserving coastal slope stability and preventing anthropogenic erosion.

10. The State Water Board finds that granting the requested exceptions is in the public interest because the various discharges are essential for flood control, slope stability, erosion prevention, and maintenance of the natural hydrologic cycle between terrestrial and marine ecosystems, public health and safety, public recreation and coastal access, commercial and recreational fishing, navigation, and essential military operations (national security).

11. The State Water Board staff conducted scoping meetings on August 1, 8, and 15, 2006. The comment period for CEQA scoping closed August 15, 2006. The State Water Board heard a status report on ASBS at the April 1, 2008 meeting.

12. The State Water Board staff prepared and circulated a Program Environmental Impact Report for the proposed exceptions, in accordance with the California Environmental Quality Act (CEQA) and implementing regulations.

13. The State Water Board held a public hearing on May 18, 2011, to receive comments on the proposed exceptions and the Program Environmental Impact Report. The written comment period ended on May 20, 2011. The State Water Board staff has considered the comments and prepared written response. The State Water Board finds, based on the whole record, including the applications, Draft Program Environmental Impact Report, comments, and responses, that there is no substantial evidence that approval of the exceptions will have a significant effect on the environment because of the terms and conditions incorporated into the project. The Program Environmental Impact Report reflects the State Water Board's independent judgment and analysis.

14. Granting the exceptions is consistent with federal and state antidegradation policies, in 40 C.F.R. §131.12 and State Water Board Resolution No. 68-16, respectively. The terms, special conditions, and prohibitions that comprise these Special Protections will not authorize a lowering of water quality, but rather will improve water quality conditions in the affected ASBS.

15. This resolution only grants an exception from the Ocean Plan prohibition against waste discharges into ASBS to the applicants listed in Attachment A. It does not authorize waste discharges to state waters. In order to legally discharge waste into an ASBS, the applicants must have both coverage under this resolution and an appropriate authorization to discharge. Authorization to discharge for point source waste discharges to navigable waters consists of coverage under the National Pollutant Discharge Elimination System (NPDES) permit program. Nonpoint source discharges of waste must be regulated under waste discharge requirements, a conditional waiver, or a conditional prohibition.

16. The exceptions will be reviewed during the next triennial review of the Ocean Plan. If the State Water Board finds cause to revoke or re-open the exceptions, the board may do so during the triennial review or at any other time. During the next triennial review period staff will also evaluate those aspects of the exception that are successfully protecting beneficial uses, to make recommendations on a potential Ocean Plan amendment to address storm runoff into ASBS.

17. The State Water Board's record of proceedings in this matter is located at 1001 I Street, Sacramento, California, 95814 and the custodian is the Division of Water Quality.

THEREFORE BE IT RESOLVED THAT:

The State Water Board:

1. The State Water Board certifies that the Final EIR has been completed in compliance with CEQA. The State Water Board has reviewed and considered the information contained in these documents, which reflect the State Water Board's independent judgment and analysis.

2. Approves the exceptions to the Ocean Plan prohibition against waste discharges to ASBS for discharges of storm water and nonpoint source waste by the applicants listed in Attachment A to this resolution provided that:

    a. The discharges are covered under an appropriate authorization to discharge waste to the ASBS, such as an NPDES permit and/or waste discharge requirements;
    b. The authorization incorporates all of the Special Protections, contained in Attachment B to this resolution, which are applicable to the discharge; and
    c. Only storm water and nonpoint source waste discharges by the applicants listed in Attachment A to this resolution are covered by this resolution. All other waste discharges to ASBS are prohibited, unless they are covered by a separate, applicable Ocean Plan exception.

3. Authorizes the Executive Director or designee to file the Notice of Determination with the Governor's Office of Planning and Research.

4. Authorizes the Executive Director or designee to transmit the exceptions to the United States Environmental Agency (U.S. EPA) for concurrence.

5. Directs staff to consider development of, and make recommendations for, an Ocean Plan amendment to address storm runoff into ASBS, during the next triennial review period.

6. Directs staff to propose for Board consideration up to $1 million from the Proposition 50 Coastal Nonpoint Source (CNPS) program for additional ASBS Regional Monitoring, starting in the fall of 2012.

7. Directs staff, pending budget authority, to propose for Board consideration the use of CNPS funds (approximately $10 million) in conjunction with the remaining Proposition 84 ASBS funds ($3.6 million) for additional ASBS BMP projects.

CERTIFICATION

The undersigned Clerk to the Board does hereby certify that the foregoing is a full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the State Water Resources Control Board held on March 20, 2012.

AYE:	Chairman Charles R. Hoppin Vice Chair Frances Spivy-Weber Board Member Tam M. Doduc
NAY:	None
ABSENT:	None
ABSTAIN:	None

Jeanine Townsend

Jeanine Townsend
Clerk to the Board

Attachment A – Applicants

Applicant	ASBS
Carmel by the Sea, City of	Carmel Bay
Connolly-Pacific Company	Southeast Santa Catalina Island
Department of Parks and Recreation	Redwoods National Park, Trinidad Head, King Range, Jughandle Cove, Gerstle Cove, James V. Fitzgerald, Año Nuevo, Carmel Bay, Point Lobos, Julia Pfeiffer Burns, Laguna Point to Latigo Point, Irvine Coast
Department of Transportation (CalTrans)	Redwoods National Park, Saunders Reef,James V. Fitzgerald, Año Nuevo, Carmel Bay, Point Lobos, Julia Pfeiffer Burns, Salmon Creek Coast, Laguna Point to Latigo Point, Irvine Coast
Humboldt County	King Range
Humboldt Bay Harbor District	King Range
Irvine Company	Irvine Coast
Laguna Beach, City of	Heisler Park
Los Angeles County	Laguna Point to Latigo Point
Los Angeles County Flood Control District	Laguna Point to Latigo Point
Malibu, City of	Laguna Point to Latigo Point
Marin County	Duxbury Reef
Monterey, City of	Pacific Grove
Monterey, County of	Carmel Bay
Newport Beach, City of, and on behalf of the Pelican Point Homeowners	Robert E. Badham And Irvine Coast
Pacific Grove, City of	Pacific Grove
Pebble Beach Company, and on behalf of the Pebble Beach Stillwater Yacht Club	Carmel Bay
San Diego, City of	La Jolla
San Mateo County	James V. Fitzgerald
Santa Catalina Island Company, and on behalf of the Santa Catalina Island Conservancy	Northwest Santa Catalina Island And Western Santa Catalina Island
Sea Ranch Association	Del Mar Landing
Trinidad, City of	Trinidad Head
Trinidad Rancheria	Trinidad Head
U.S. Dept. of Interior, Point Reyes National Seashore	Point Reyes Headlands, Duxbury Reef
U.S. Dept. of Interior, Redwoods National and State Park	Redwoods National Park
U.S. Dept. of Defense, Air Force	James V. Fitzgerald
U.S. Dept. of Defense, Navy	San Nicolas Island & Begg Rock
U.S. Dept. of Defense, Navy	San Clemente Island

Attachment B - Special Protections for Areas of Special Biological Significance, Governing Point Source Discharges of Storm Water and Nonpoint Source Waste Discharges

I. PROVISIONS FOR POINT SOURCE DISCHARGES OF STORM WATER AND NONPOINT SOURCE WASTE DISCHARGES

The following terms, prohibitions, and special conditions (hereafter collectively referred to as special conditions) are established as limitations on point source storm water and nonpoint source discharges. These special conditions provide Special Protections for marine aquatic life and natural water quality in Areas of Special Biological Significance (ASBS), as required for State Water Quality Protection Areas pursuant to California Public Resources Code Sections 36700(f) and 36710(f). These Special Protections are adopted by the State Water Board as part of the California Ocean Plan (Ocean Plan) General Exception.

The special conditions are organized by category of discharge. The State Water Resources Control Board (State Water Board) and Regional Water Quality Control Boards (Regional Water Boards) will determine categories and the means of regulation for those categories [e.g., Point Source Storm Water National Pollutant Discharge Elimination System (NPDES) or Nonpoint Source].

A. PERMITTED POINT SOURCE DISCHARGES OF STORM WATER

1. General Provisions for Permitted Point Source Discharges of Storm Water

   a. Existing storm water discharges into an ASBS are allowed only under the following conditions:

      (1) The discharges are authorized by an NPDES permit issued by the State Water Board or Regional Water Board;

      (2) The discharges comply with all of the applicable terms, prohibitions, and special conditions contained in these Special Protections; and

      (3) The discharges:

         (i) Are essential for flood control or slope stability, including roof, landscape, road, and parking lot drainage;

         (ii) Are designed to prevent soil erosion;

         (iii) Occur only during wet weather;

         (iv) Are composed of only storm water runoff.

   b. Discharges composed of storm water runoff shall not alter natural ocean water quality in an ASBS.

c. The discharge of trash is prohibited.

d. Only discharges from existing storm water outfalls are allowed. Any proposed or new storm water runoff discharge shall be routed to existing storm water discharge outfalls and shall not result in any new contribution of waste to an ASBS (i.e., no additional pollutant loading). "Existing storm water outfalls" are those that were constructed or under construction prior to January 1, 2005. "New contribution of waste" is defined as any addition of waste beyond what would have occurred as of January 1, 2005. A change to an existing storm water outfall, in terms of re-location or alteration, in order to comply with these special conditions, is allowed and does not constitute a new discharge.

e. Non-storm water discharges are prohibited except as provided below:

(1) The term "non-storm water discharges" means any waste discharges from a municipal separate storm sewer system (MS4) or other NPDES permitted storm drain system to an ASBS that are not composed entirely of storm water.

(2) (i) The following non-storm water discharges are allowed, provided that the discharges are essential for emergency response purposes, structural stability, slope stability or occur naturally:

(a) Discharges associated with emergency fire fighting operations.

(b) Foundation and footing drains.

(c) Water from crawl space or basement pumps.

(d) Hillside dewatering.

(e) Naturally occurring groundwater seepage via a storm drain.

(f) Non-anthropogenic flows from a naturally occurring stream via a culvert or storm drain, as long as there are no contributions of anthropogenic runoff.

(ii) An NPDES permitting authority may authorize non-storm water discharges to an MS4 with a direct discharge to an ASBS only to the extent the NPDES permitting authority finds that the discharge does not alter natural ocean water quality in the ASBS.

(3) Authorized non-storm water discharges shall not cause or contribute to a violation of the water quality objectives in Chapter II of the Ocean Plan nor alter natural ocean water quality in an ASBS.

2. Compliance Plans for Inclusion in Storm Water Management Plans (SWMP) and Storm Water Pollution Prevention Plans (SWPPP).

The discharger shall specifically address the prohibition of non-storm water runoff and the requirement to maintain natural water quality for storm water discharges to an ASBS in an ASBS Compliance Plan to be included in its SWMP or a SWPPP, as appropriate to permit type. If a statewide permit includes a SWMP, then the discharger shall prepare a stand-alone compliance plan for ASBS discharges. The ASBS Compliance Plan is subject to approval by the Executive Director of the State Water Board (statewide permits) or Executive Officer of the Regional Water Board (for permits issued by Regional Water Boards).

a. The Compliance Plan shall include a map of surface drainage of storm water runoff, showing areas of sheet runoff, prioritize discharges, and describe any structural Best Management Practices (BMPs) already employed and/or BMPs to be employed in the future. Priority discharges are those that pose the greatest water quality threat and which are identified to require installation of structural BMPs. The map shall also show the storm water conveyances in relation to other features such as service areas, sewage conveyances and treatment facilities, landslides, areas prone to erosion, and waste and hazardous material storage areas, if applicable. The SWMP or SWPPP shall also include a procedure for updating the map and plan when changes are made to the storm water conveyance facilities.

b. The ASBS Compliance Plan shall describe the measures by which all non-authorized non-storm water runoff (e.g., dry weather flows) has been eliminated, how these measures will be maintained over time, and how these measures are monitored and documented.

c. For Municipal Separate Storm Sewer System (MS4s), the ASBS Compliance Plan shall require minimum inspection frequencies as follows:

(1) The minimum inspection frequency for construction sites shall be weekly during rainy season;

(2) The minimum inspection frequency for industrial facilities shall be monthly during the rainy season;

(3) The minimum inspection frequency for commercial facilities (e.g., restaurants) shall be twice during the rainy season; and

(4) Storm water outfall drains equal to or greater than 18 inches (457 mm) in diameter or width shall be inspected once prior to the beginning of the rainy season and once during the rainy season and maintained to remove trash and other anthropogenic debris.

d. The ASBS Compliance Plan shall address storm water discharges (wet weather flows) and, in particular, describe how pollutant reductions in storm water runoff, that are necessary to comply with these special conditions, will be achieved through BMPs. Structural BMPs need not be installed if the discharger can document to the satisfaction of the State Water Board Executive Director (statewide permits) or Regional Water Board Executive Officer (Regional Water Board permits) that such installation would pose a threat to health or safety. BMPs to control storm water runoff discharges (at the end-of-pipe) during a design storm shall be designed to achieve on average the following target levels:

(1) Table B Instantaneous Maximum Water Quality Objectives in Chapter II of the Ocean Plan; or

(2) A 90% reduction in pollutant loading during storm events, for the applicant's total discharges.

The baseline for these determinations is the effective date of the Exception, except for those structural BMPs installed between January 1, 2005 and adoption of these Special Protections, and the reductions must be achieved and documented within four (4) years of the effective date.

e. The ASBS Compliance Plan shall address erosion control and the prevention of anthropogenic sedimentation in ASBS. The natural habitat conditions in the ASBS shall not be altered as a result of anthropogenic sedimentation.

f. The ASBS Compliance Plan shall describe the non-structural BMPs currently employed and planned in the future (including those for construction activities), and include an implementation schedule. The ASBS Compliance Plan shall include non-structural BMPs that address public education and outreach. Education and outreach efforts must adequately inform the public that direct discharges of pollutants from private property not entering an MS4 are prohibited. The ASBS Compliance Plan shall also describe the structural BMPs, including any low impact development (LID) measures, currently employed and planned for higher threat discharges and include an implementation schedule. To control storm water runoff discharges (at the end-of-pipe) during a design storm, permittees must first consider, and use where feasible, LID practices to infiltrate, use, or evapotranspirate storm water runoff on-site, if LID practices would be the most effective at reducing pollutants from entering the ASBS.

g. The BMPs and implementation schedule shall be designed to ensure that natural water quality conditions in the receiving water are achieved and maintained by either reducing flows from impervious surfaces or reducing pollutant loading, or some combination thereof.

h. If the results of the receiving water monitoring described in IV.B. of these special conditions indicate that the storm water runoff is causing or contributing to an alteration of natural ocean water quality in the ASBS, the discharger shall submit a report to the State Water Board and Regional Water Board within 30 days of receiving the results.

(1) The report shall identify the constituents in storm water runoff that alter natural ocean water quality and the sources of these constituents.

(2) The report shall describe BMPs that are currently being implemented, BMPs that are identified in the SWMP or SWPPP for future implementation, and any additional BMPs that may be added to the SWMP or SWPPP to address the alteration of natural water quality. The report shall include a new or modified implementation schedule for the BMPs.

(3) Within 30 days of the approval of the report by the State Water Board Executive Director (statewide permits) or Regional Water Board Executive Officer (Regional Water Board permits), the discharger shall revise its ASBS Compliance Plan to incorporate any new or modified BMPs that have been or will be implemented, the implementation schedule, and any additional monitoring required.

(4) As long as the discharger has complied with the procedures described above and is implementing the revised SWMP or SWPPP, the discharger does not have to repeat the same procedure for continuing or recurring exceedances of natural ocean water quality conditions due to the same constituent.

(5) The requirements of this section are in addition to the terms, prohibitions, and conditions contained in these Special Protections.

3. Compliance Schedule

a. On the effective date of the Exception, all non-authorized non-storm water discharges (e.g., dry weather flow) are effectively prohibited.

b. Within eighteen (18) months from the effective date of the Exception, the discharger shall submit a draft written ASBS Compliance Plan to the State Water Board Executive Director (statewide permits) or Regional Water Board Executive Officer (Regional Water Board permits) that describes its strategy to comply with these special conditions, including the requirement to maintain natural water quality in the affected ASBS. The ASBS Compliance Plan shall include a description of appropriate non-structural controls and a time schedule to implement structural controls (implementation schedule) to comply with these special conditions for inclusion in the discharger's SWMP or SWPPP, as appropriate to permit type. The final ASBS Compliance Plan, including a description and final schedule for structural controls based on the results of runoff and receiving water monitoring, must be submitted within thirty (30) months from the effective date of the Exception.

c. Within 18 months of the effective date of the Exception, any non-structural controls that are necessary to comply with these special conditions shall be implemented.

d. Within six (6) years of the effective date of the Exception, any structural controls identified in the ASBS Compliance Plan that are necessary to comply with these special conditions shall be operational.

e. Within six (6) years of the effective date of the Exception, all dischargers must comply with the requirement that their discharges into the affected ASBS maintain natural ocean water quality. If the initial results of post-storm receiving water quality testing indicate levels higher than the 85th percentile threshold of reference water quality data and the pre-storm receiving water levels, then the discharger must re-sample the receiving water, pre- and post-storm. If after re-sampling the post-storm levels are still higher than the 85th percentile threshold of reference water quality data, and the pre-storm receiving water levels, for any constituent, then natural ocean water quality is exceeded. See attached Flowchart.

f. The Executive Director of the State Water Board (statewide permits) or Executive Officer of the Regional Water Board (Regional Water Board permits) may only authorize additional time to comply with the special conditions d. and e., above if good cause exists to do so. Good cause means a physical impossibility or lack of funding.

If a discharger claims physical impossibility, it shall notify the Board in writing within thirty (30) days of the date that the discharger first knew of the event or circumstance that caused or would cause it to fail to meet the deadline in d. or e. The notice shall describe the reason for the noncompliance or anticipated noncompliance and specifically refer to this Section of this Exception. It shall describe the anticipated length of time the delay in compliance may persist, the cause or causes of the delay as well as measures to minimize the impact of the delay on water quality, the measures taken or to be taken by the discharger to prevent or minimize the delay, the schedule by which the measures will be implemented, and the anticipated date of compliance. The discharger shall adopt all reasonable measures to avoid and minimize such delays and their impact on water quality.

The discharger may request an extension of time for compliance based on lack of funding. The request for an extension shall require:

1. for municipalities, a demonstration of significant hardship to discharger ratepayers, by showing the relationship of storm water fees to annual household income for residents within the discharger's jurisdictional area, and the discharger has made timely and complete applications for all available bond and grant funding, and either no bond or grant funding is available, or bond and/or grant funding is inadequate; or

2. for other governmental agencies, a demonstration and documentation of a good faith effort to acquire funding through that agency's budgetary process, and a demonstration that funding was unavailable or inadequate.

B. NONPOINT SOURCE DISCHARGES

1. General Provisions for Nonpoint Sources

   a. Existing nonpoint source waste discharges are allowed into an ASBS only under the following conditions:

      (1) The discharges are authorized under waste discharge requirements, a conditional waiver of waste discharge requirements, or a conditional prohibition issued by the State Water Board or a Regional Water Board.

      (2) The discharges are in compliance with the applicable terms, prohibitions, and special conditions contained in these Special Protections.

      (3) The discharges:

         (i) Are essential for flood control or slope stability, including roof, landscape, road, and parking lot drainage;

         (ii) Are designed to prevent soil erosion;

         (iii) Occur only during wet weather;

         (iv) Are composed of only storm water runoff.

   b. Discharges composed of storm water runoff shall not alter natural ocean water quality in an ASBS.

c. The discharge of trash is prohibited.

d. Only existing nonpoint source waste discharges are allowed. “Existing nonpoint source waste discharges” are discharges that were ongoing prior to January 1, 2005. “New nonpoint source discharges” are defined as those that commenced on or after January 1, 2005. A change to an existing nonpoint source discharge, in terms of relocation or alteration, in order to comply with these special conditions, is allowed and does not constitute a new discharge.

e. Non-storm water discharges from nonpoint sources (those not subject to an NPDES Permit) are prohibited except as provided below:

(1) The term “non-storm water discharges” means any waste discharges that are not composed entirely of storm water.

(2) The following non-storm water discharges are allowed, provided that the discharges are essential for emergency response purposes, structural stability, slope stability, or occur naturally:

(i) Discharges associated with emergency fire fighting operations.

(ii) Foundation and footing drains.

(iii) Water from crawl space or basement pumps.

(iv) Hillside dewatering.

(v) Naturally occurring groundwater seepage via a storm drain.

(vi) Non-anthropogenic flows from a naturally occurring stream via a culvert or storm drain, as long as there are no contributions of anthropogenic runoff.

(3) Authorized non-storm water discharges shall not cause or contribute to a violation of the water quality objectives in Chapter II of the Ocean Plan nor alter natural ocean water quality in an ASBS.

f. At the San Clemente Island ASBS, discharges incidental to military training and research, development, test, and evaluation operations are allowed. Discharges incidental to underwater demolition and other in-water explosions are not allowed in the two military closure areas in the vicinity of Wilson Cove and Castle Rock. Discharges must not result in a violation of the water quality objectives, including the protection of the marine aquatic life beneficial use, anywhere in the ASBS.

g. At the San Nicolas Island and Begg Rock ASBS, discharges incidental to military research, development, testing, and evaluation of, and training with, guided missile and other weapons systems, fleet training exercises, small-scale amphibious warfare training, and special warfare training are allowed. Discharges incidental to underwater demolition and other in-water explosions are not allowed. Discharges must not result in a violation of the water quality objectives, including the protection of the marine aquatic life beneficial use, anywhere in the ASBS.

h. All other nonpoint source discharges not specifically authorized above are prohibited.

2. Planning and Reporting

a. The nonpoint source discharger shall develop an ASBS Pollution Prevention Plan, including an implementation schedule, to address storm water runoff and any other nonpoint source discharges from its facilities. The ASBS Pollution Prevention Plan must be equivalent in contents to an ASBS Compliance Plan as described in I (A)(2) in this document. The ASBS Pollution Prevention Plan is subject to approval by the Executive Director of the State Water Board (statewide waivers or waste discharge requirements) or Executive Officer of the Regional Water Board (Regional Water Board waivers or waste discharge requirements).

b. The ASBS Pollution Prevention Plan shall address storm water discharges (wet weather flows) and, in particular, describe how pollutant reductions in storm water runoff that are necessary to comply with these special conditions, will be achieved through Management Measures and associated Management Practices (Management Measures/Practices). Structural BMPs need not be installed if the discharger can document to the satisfaction of the State Water Board Executive Director or Regional Water Board Executive Officer that such installation would pose a threat to health or safety. Management Measures to control storm water runoff during a design storm shall achieve on average the following target levels:

(1) Table B Instantaneous Maximum Water Quality Objectives in Chapter II of the Ocean Plan; or

(2) A 90% reduction in pollutant loading during storm events, for the applicant's total discharges.

The baseline for these determinations is the effective date of the Exception, except for those structural BMPs installed between January 1, 2005 and adoption of these Special Protections, and the reductions must be achieved and documented within four (4) years of the effective date.

c. If the results of the receiving water monitoring described in IV.B. of these special conditions indicate that the storm water runoff or other nonpoint source pollution is causing or contributing to an alteration of natural ocean water quality in the ASBS, the discharger shall submit a report to the State Water Board and the Regional Water Board within 30 days of receiving the results.

(1) The report shall identify the constituents that alter natural water quality and the sources of these constituents.

(2) The report shall describe Management Measures/Practices that are currently being implemented, Management Measures/Practices that are identified in the ASBS Pollution Prevention Plan for future implementation, and any additional Management Measures/Practices that may be added to the Pollution Prevention Plan to address the alteration of natural water quality. The report shall include a new or modified implementation schedule for the Management Measures/Practices.

(3) Within 30 days of the approval of the report by the State Water Board Executive Director (statewide waivers or waste discharge requirements) or Executive Officer of the Regional Water Board (Regional Water Board waivers or waste discharge requirements), the discharger shall revise its ASBS Pollution Prevention Plan to incorporate any new or modified Management Measures/Practices that have been or will be implemented, the implementation schedule, and any additional monitoring required.

(4) As long as the discharger has complied with the procedures described above and is implementing the revised ASBS Pollution Prevention Plan, the discharger does not have to repeat the same procedure for continuing or recurring exceedances of natural water quality conditions due to the same constituent.

(5) The requirements of this section are in addition to the terms, prohibitions, and conditions contained in these Special Protections.

3. Compliance Schedule

a. On the effective date of the Exception, all non-authorized non-storm water discharges (e.g., dry weather flow) are effectively prohibited.

b. Within eighteen (18) months from the effective date of the Exception, the discharger~~s~~ shall submit a draft written ASBS Pollution Prevention Plan to the State Water Board Executive Director (statewide waivers or waste discharge requirements) or Executive Officer of the Regional Water Board (Regional Water Board waivers or waste discharge requirements) that describes its strategy to comply with these special conditions, including the requirement to maintain natural ocean water quality in the affected ASBS. The Pollution Prevention Plan shall include a description of appropriate non-structural controls and a time schedule to implement structural controls to comply with these special conditions for inclusion in the discharger's Pollution Prevention Plan. The final ASBS Pollution Prevention Plan, including a description and final schedule for structural controls based on the results of runoff and receiving water monitoring, must be submitted within thirty (30) months from the effective date of the Exception.

c. Within 18 months of the effective date of the Exception, any non-structural controls that are necessary to comply with these Special Protections shall be implemented.

d. Within six (6) years of the effective date of the Exception, any structural controls identified in the ASBS Pollution Prevention Plan that are necessary to comply with these special conditions shall be operational.

e. Within six (6) years of the effective date of the Exception, all dischargers must comply with the requirement that their discharges into the affected ASBS maintain natural ocean water quality. If the initial results of post-storm receiving water quality testing indicate levels higher than the 85th percentile threshold of reference water quality data and the pre-storm receiving water levels, then the discharger must re-sample the receiving water pre- and post-storm. If after re-sampling the post-storm levels are still higher than the 85th percentile threshold of reference water quality data and the pre-storm receiving water levels, for any constituent, then natural ocean water quality is exceeded. See attached Flowchart.

f. The Executive Director of the State Water Board (statewide waivers or waste discharge requirements) or Executive Officer of the Regional Water Board (Regional Water Board waivers or waste discharge requirements) may only authorize additional time to comply with the special conditions d. and e., above if good cause exists to do so. Good cause means a physical impossibility or lack of funding.

If a discharger claims physical impossibility, it shall notify the Board in writing within thirty (30) days of the date that the discharger first knew of the event or circumstance that caused or would cause it to fail to meet the deadline in d. or e. The notice shall describe the reason for the noncompliance or anticipated noncompliance and specifically refer to this Section of this Exception. It shall describe the anticipated length of time the delay in compliance may persist, the cause or causes of the delay as well as measures to minimize the impact of the delay on water quality, the measures taken or to be taken by the discharger to prevent or minimize the delay, the schedule by which the measures will be implemented, and the anticipated date of compliance. The discharger shall adopt all reasonable measures to avoid and minimize such delays and their impact on water quality.

The discharger may request an extension of time for compliance based on lack of funding. The request for an extension shall require:

1. a demonstration that the discharger has made timely and complete applications for all available bond and grant funding, and either no bond or grant funding is available, or bond and/or grant funding is inadequate; or

2. for governmental agencies, a demonstration and documentation of a good faith effort to acquire funding through that agency's budgetary process, and a demonstration that funding was unavailable or inadequate.

II. ADDITIONAL REQUIREMENTS FOR PARKS AND RECREATION FACILITIES

In addition to the provisions in Section I (A) or I (B), respectively, a discharger with parks and recreation facilities shall comply with the following:

A. The discharger shall include a section in an ASBS Compliance Plan (for NPDES dischargers) or an ASBS Pollution Prevention Plan (for nonpoint source dischargers) to address storm water runoff from parks and recreation facilities.

1. The plan shall identify all pollutant sources, including sediment sources, which may result in waste entering storm water runoff. Pollutant sources include, but are not limited to, roadside rest areas and vistas, picnic areas, campgrounds, trash receptacles, maintenance facilities, park personnel housing, portable toilets, leach fields, fuel tanks, roads, piers, and boat launch facilities.

2. The plan shall describe BMPs or Management Measures/Practices that will be implemented to control soil erosion (both temporary and permanent erosion controls) and reduce or eliminate pollutants in storm water runoff in order to achieve and maintain natural water quality conditions in the affected ASBS. The plan shall include BMPs or

Management Measures/Practices to ensure that trails and culverts are maintained to prevent erosion and minimize waste discharges to ASBS.

3. The plan shall include BMPs or Management Measures/Practices to prevent the discharge of pesticides or other chemicals, including agricultural chemicals, in storm water runoff to the affected ASBS.

4. The plan shall include BMPs or Management Measures/Practices that address public education and outreach. The goal of these BMPs or Management Measures/Practices is to ensure that the public is adequately informed that waste discharges to the affected ASBS are prohibited or limited by special conditions in these Special Protections. The BMPs or Management Measures/Practices shall include signage at camping, picnicking, beach and roadside parking areas, and visitor centers, or other appropriate measures, which notify the public of any applicable requirements of these Special Protections and identify the ASBS boundaries.

5. The plan shall include BMPs or Management Measures/Practices that address the prohibition against the discharge of trash to ASBS. The BMPs or Management Measures/Practices shall include measures to ensure that adequate trash receptacles are available for public use at visitor facilities, including parking areas, and that the receptacles are adequately maintained to prevent trash discharges into the ASBS. Appropriate measures include covering trash receptacles to prevent trash from being wind blown and periodically emptying the receptacles to prevent overflows.

6. The plan shall include BMPs or Management Measures/Practices to address runoff from parking areas and other developed features to ensure that the runoff does not alter natural water quality in the affected ASBS. BMPs or Management Measures/Practices shall include measures to reduce pollutant loading in runoff to the ASBS through installation of natural area buffers (LID), treatment, or other appropriate measures.

B. Maintenance and repair of park and recreation facilities must not result in waste discharges to the ASBS. The practice of road oiling must be minimized or eliminated, and must not result in waste discharges to the ASBS.

III. ADDITIONAL REQUIREMENTS – WATERFRONT AND MARINE OPERATIONS

In addition to the provisions in Section I (A) or I (B), respectively, a discharger with waterfront and marine operations shall comply with the following:

A. For discharges related to waterfront and marine operations, the discharger shall develop a Waterfront and Marine Operations Management Plan (Waterfront Plan). This plan shall contain appropriate Management Measures/Practices to address nonpoint source pollutant discharges to the affected ASBS.

1. The Waterfront Plan shall contain appropriate Management Measures/Practices for any waste discharges associated with the operation and maintenance of vessels, moorings, piers, launch ramps, and cleaning stations in order to ensure that beneficial uses are protected and natural water quality is maintained in the affected ASBS.

2. For discharges from marinas and recreational boating activities, the Waterfront Plan shall include appropriate Management Measures, described in The Plan for California's Nonpoint Source Pollution Control Program, for marinas and recreational boating, or equivalent practices, to ensure that nonpoint source pollutant discharges do not alter natural water quality in the affected ASBS.

3. The Waterfront Plan shall include Management Practices to address public education and outreach to ensure that the public is adequately informed that waste discharges to the affected ASBS are prohibited or limited by special conditions in these Special Protections. The management practices shall include appropriate signage, or similar measures, to inform the public of the ASBS restrictions and to identify the ASBS boundaries.

4. The Waterfront Plan shall include Management Practices to address the prohibition against trash discharges to ASBS. The Management Practices shall include the provision of adequate trash receptacles for marine recreation areas, including parking areas, launch ramps, and docks. The plan shall also include appropriate Management Practices to ensure that the receptacles are adequately maintained and secured in order to prevent trash discharges into the ASBS. Appropriate Management Practices include covering the trash receptacles to prevent trash from being windblown, staking or securing the trash receptacles so they don't tip over, and periodically emptying the receptacles to prevent overflow.

5. The discharger shall submit its Waterfront Plan to the by the State Water Board Executive Director (statewide waivers or waste discharge requirements) or Executive Officer of the Regional Water Board (Regional Water Board waivers or waste discharge requirements) within six months of the effective date of these special conditions. The Waterfront Plan is subject to approval by the State Water Board Executive Director or the Regional Water Board Executive Officer, as appropriate. The plan must be fully implemented within 18 months of the effective date of the Exception.

B. The discharge of chlorine, soaps, petroleum, other chemical contaminants, trash, fish offal, or human sewage to ASBS is prohibited. Sinks and fish cleaning stations are point source discharges of wastes and are prohibited from discharging into ASBS. Anthropogenic accumulations of discarded fouling organisms on the sea floor must be minimized.

C. Limited-term activities, such as the repair, renovation, or maintenance of waterfront facilities, including, but not limited to, piers, docks, moorings, and breakwaters, are authorized only in accordance with Chapter III.E.2 of the Ocean Plan.

D. If the discharger anticipates that the discharger will fail to fully implement the approved Waterfront Plan within the 18 month deadline, the discharger shall submit a technical report as soon as practicable to the State Water Board Executive Director or the Regional Water Board Executive Officer, as appropriate. The technical report shall contain reasons for failing to meet the deadline and propose a revised schedule to fully implement the plan.

E. The State Water Board or the Regional Water Board may, for good cause, authorize additional time to comply with the Waterfront Plan. Good cause means a physical impossibility or lack of funding.

If a discharger claims physical impossibility, it shall notify the Board in writing within thirty (30) days of the date that the discharger first knew of the event or circumstance that caused or would cause it to fail to meet the deadline in Section III.A.5. The notice shall describe the reason for the noncompliance or anticipated noncompliance and specifically refer to this Section of this Exception. It shall describe the anticipated length of time the delay in compliance may persist, the cause or causes of the delay as well as measures to minimize the impact of the delay on water quality, the measures taken or to be taken by the discharger to prevent or minimize the delay, the schedule by which the measures will be implemented, and the anticipated date of compliance. The discharger shall adopt all reasonable measures to avoid and minimize such delays and their impact on water quality. The discharger may request an extension of time for compliance based on lack of funding. The request for an extension shall require:

1. a demonstration of significant hardship by showing that the discharger has made timely and complete applications for all available bond and grant funding, and either no bond or grant funding is available, or bond and/or grant funding is inadequate.

2. for governmental agencies, a demonstration and documentation of a good faith effort to acquire funding through that agency's budgetary process, and a demonstration that funding was unavailable or inadequate.

IV. MONITORING REQUIREMENTS

Monitoring is mandatory for all dischargers to assure compliance with the Ocean Plan. Monitoring requirements include both: (A) core discharge monitoring, and (B) ocean receiving water monitoring. The State and Regional Water Boards must approve sampling site locations and any adjustments to the monitoring programs. All ocean receiving water and reference area monitoring must be comparable with the Water Boards' Surface Water Ambient Monitoring Program (SWAMP).

Safety concerns: Sample locations and sampling periods must be determined considering safety issues. Sampling may be postponed upon notification to the State and Regional Water Boards if hazardous conditions prevail.

Analytical Chemistry Methods: All constituents must be analyzed using the lowest minimum detection limits comparable to the Ocean Plan water quality objectives. For metal analysis, all samples, including storm water effluent, reference samples, and ocean receiving water samples, must be analyzed by the approved analytical method with the lowest minimum detection limits (currently Inductively Coupled Plasma/Mass Spectrometry) described in the Ocean Plan.

A. CORE DISCHARGE MONITORING PROGRAM

1. General sampling requirements for timing and storm size:

   Runoff must be collected during a storm event that is greater than 0.1 inch and generates runoff, and at least 72 hours from the previously measurable storm event. Runoff samples shall be collected during the same storm and at approximately the same time when post-storm receiving water is sampled, and analyzed for the same constituents as receiving water and reference site samples (see section IV B) as described below.

2. Runoff flow measurements

   a. For municipal/industrial storm water outfalls in existence as of December 31, 2007, 18 inches (457mm) or greater in diameter/width (including multiple outfall pipes in combination having a width of 18 inches, runoff flows must be measured or calculated, using a method acceptable to and approved by the State and Regional Water Boards.

   b. This will be reported annually for each precipitation season to the State and Regional Water Boards.

3. Runoff samples – storm events

   a. For outfalls equal to or greater than 18 inches (0.46m) in diameter or width:

      (1) samples of storm water runoff shall be collected during the same storm as receiving water samples and analyzed for oil and grease, total suspended solids, and, within the range of the southern sea otter indicator bacteria or some other measure of fecal contamination; and

      (2) samples of storm water runoff shall be collected and analyzed for critical life stage chronic toxicity (one invertebrate or algal species) at least once during each storm season when receiving water is sampled in the ASBS.

      (3) If an applicant has no outfall greater than 36 inches, then storm water runoff from the applicant's largest outfall shall be further collected during the same storm as receiving water samples and analyzed for Ocean Plan Table B metals for protection of marine life, Ocean Plan polynuclear aromatic hydrocarbons (PAHs), current use pesticides (pyrethroids and OP pesticides), and nutrients (ammonia, nitrate and phosphates).

   b. For outfalls equal to or greater than 36 inches (0.91m) in diameter or width:

      (1) samples of storm water runoff shall be collected during the same storm as receiving water samples and analyzed for oil and grease, total suspended solids, and, within the range of the southern sea otter indicator bacteria or some other measure of fecal contamination; and

      (2) samples of storm water runoff shall be further collected during the same storm as receiving water samples and analyzed for Ocean Plan Table B metals for protection of marine life, Ocean Plan polynuclear aromatic hydrocarbons (PAHs), current use pesticides (pyrethroids and OP pesticides), and nutrients (ammonia, nitrate and phosphates); and

      (3) samples of storm water runoff shall be collected and analyzed for critical life stage chronic toxicity (one invertebrate or algal species) at least once during each storm season when receiving water is sampled in the ASBS.

b. For an applicant not participating in a regional monitoring program [see below in Section IV (B)] in addition to (a.) and (b.) above, a minimum of the two largest outfalls or 20 percent of the larger outfalls, whichever is greater, shall be sampled (flow weighted composite samples) at least three times annually during wet weather (storm event) and analyzed for all Ocean Plan Table A constituents, Table B constituents for marine aquatic life protection (except for toxicity, only chronic toxicity for three species shall be required), DDT, PCBs, Ocean Plan PAHs, OP pesticides, pyrethroids, nitrates, phosphates, and Ocean Plan indicator bacteria. For parties discharging to ASBS in more than one Regional Water Board region, at a minimum, one (the largest) such discharge shall be sampled annually in each Region.

4. The Executive Director of the State Water Board (statewide permits) or Executive Officer of the Regional Water Board (Regional Water Board permits) may reduce or suspend core monitoring once the storm runoff is fully characterized. This determination may be made at any point after the discharge is fully characterized, but is best made after the monitoring results from the first permit cycle are assessed.

B. Ocean Receiving Water and Reference Area Monitoring Program

In addition to performing the Core Discharge Monitoring Program in Section II.A above, all applicants having authorized discharges must perform ocean receiving water monitoring. In order to fulfill the requirements for monitoring the physical, chemical, and biological characteristics of the ocean receiving waters within their ASBS, dischargers may choose either (1) an individual monitoring program, or (2) participation in a regional integrated monitoring program.

1. Individual Monitoring Program: The requirements listed below are for those dischargers who elect to perform an individual monitoring program to fulfill the requirements for monitoring the physical, chemical, and biological characteristics of the ocean receiving waters within the affected ASBS. In addition to Core Discharge Monitoring, the following additional monitoring requirements shall be met:

   a. Three times annually, during wet weather (storm events), the receiving water at the point of discharge from the outfalls described in section (IV)(A)(3)(c) above shall be sampled and analyzed for Ocean Plan Table A constituents, Table B constituents for marine aquatic life, DDT, PCBs, Ocean Plan PAHs, OP pesticides, pyrethroids, nitrates, phosphates, salinity, chronic toxicity (three species), and Ocean Plan indicator bacteria.

      The sample location for the ocean receiving water shall be in the surf zone at the point of discharges; this must be at the same location where storm water runoff is sampled. Receiving water shall be sampled prior to (pre-storm) and during (or immediately after) the same storm (post storm). Post storm sampling shall be during the same storm and at approximately the same time as when the runoff is sampled. Reference water quality shall also be sampled three times annually and analyzed for the same constituents pre-storm and post-storm, during the same storm seasons when receiving water is sampled. Reference stations will be determined by the State Water Board's Division of Water Quality and the applicable Regional Water Board(s).

   b. Sediment sampling shall occur at least three times during every five (5) year period. The subtidal sediment (sand or finer, if present) at the discharge shall be sampled and analyzed for Ocean Plan Table B constituents for marine aquatic life, DDT, PCBs, PAHs, pyrethroids, and OP pesticides. For sediment toxicity testing, only an acute toxicity test using the amphipod *Eohaustorius estuarius* must be performed.

c. A quantitative survey of intertidal benthic marine life shall be performed at the discharge and at a reference site. The survey shall be performed at least once every five (5) year period. The survey design is subject to approval by the Regional Water Board and the State Water Board's Division of Water Quality. The results of the survey shall be completed and submitted to the State Water Board and Regional Water Board at least six months prior to the end of the permit cycle.

d. Once during each five (5) year period, a bioaccumulation study shall be conducted to determine the concentrations of metals and synthetic organic pollutants at representative discharge sites and at representative reference sites. The study design is subject to approval by the Regional Water Board and the State Water Board's Division of Water Quality. The bioaccumulation study may include California mussels (*Mytilus californianus*) and/or sand crabs (*Emerita analoga* or *Blepharipoda occidentalis*). Based on the study results, the Regional Water Board and the State Water Board's Division of Water Quality, may adjust the study design in subsequent permits, or add or modify additional test organisms (such as shore crabs or fish), or modify the study design appropriate for the area and best available sensitive measures of contaminant exposure.

e. Marine Debris: Representative quantitative observations for trash by type and source shall be performed along the coast of the ASBS within the influence of the discharger's outfalls. The design, including locations and frequency, of the marine debris observations is subject to approval by the Regional Water Board and State Water Board's Division of Water Quality.

f. The monitoring requirements of the Individual Monitoring Program in this section are minimum requirements. After a minimum of one (1) year of continuous water quality monitoring of the discharges and ocean receiving waters, the Executive Director of the State Water Board (statewide permits) or Executive Officer of the Regional Water Board (Regional Water Board permits) may require additional monitoring, or adjust, reduce or suspend receiving water and reference station monitoring. This determination may be made at any point after the discharge and receiving water is fully characterized, but is best made after the monitoring results from the first permit cycle are assessed.

2. Regional Integrated Monitoring Program: Dischargers may elect to participate in a regional integrated monitoring program, in lieu of an individual monitoring program, to fulfill the requirements for monitoring the physical, chemical, and biological characteristics of the ocean receiving waters within their ASBS. This regional approach shall characterize natural water quality, pre- and post-storm, in ocean reference areas near the mouths of identified open space watersheds and the effects of the discharges on natural water quality (physical, chemical, and toxicity) in the ASBS receiving waters, and should include benthic marine aquatic life and bioaccumulation components. The design of the ASBS stratum of a regional integrated monitoring program may deviate from the otherwise prescribed individual monitoring approach (in Section IV.B.1) if approved by the State Water Board's Division of Water Quality and the Regional Water Boards.

a. Ocean reference areas shall be located at the drainages of flowing watersheds with minimal development (in no instance more than 10% development), and shall not be located in CWA Section 303(d) listed waterbodies or have tributaries that are 303(d) listed. Reference areas shall be free of wastewater discharges and anthropogenic non-storm water runoff. A minimum of low threat storm runoff discharges (e.g. stream highway overpasses and campgrounds) may be allowed on a case-by-case basis. Reference areas shall be located in the same region as the ASBS receiving water monitoring occurs. The reference areas for each Region are subject to approval by the participants in the regional monitoring program and the State Water Board's Division of Water Quality and the applicable Regional Water Board(s). A minimum of three ocean reference water samples must be collected from each station, each from a separate storm during the same storm season that receiving water is sampled. A minimum of one reference location shall be sampled for each ASBS receiving water site sampled per responsible party. For parties discharging to ASBS in more than one Regional Water Board region, at a minimum, one reference station and one receiving water station shall be sampled in each region.

b. ASBS ocean receiving water must be sampled in the surf zone at the location where the runoff makes contact with ocean water (i.e. at "point zero"). Ocean receiving water stations must be representative of worst-case discharge conditions (i.e. co-located at a large drain greater than 36 inches, or if drains greater than 36 inches are not present in the ASBS then the largest drain greater than18 inches.) Ocean receiving water stations are subject to approval by the participants in the regional monitoring program and the State Water Board's Division of Water Quality and the applicable Regional Water Board(s). A minimum of three ocean receiving water samples must be collected during each storm season from each station, each from a separate storm. A minimum of one receiving water location shall be sampled in each ASBS per responsible party in that ASBS. For parties discharging to ASBS in more than one Regional Water Board region, at a minimum, one reference station and one receiving water station shall be sampled in each region.

c. Reference and receiving water sampling shall commence during the first full storm season following the adoption of these special conditions, and post-storm samples shall be collected during the same storm event when storm water runoff is sampled. Sampling shall occur in a minimum of two storm seasons. For those ASBS dischargers that have already participated in the Southern California Bight 2008 ASBS regional monitoring effort, sampling may be limited to only one storm season.

d. Receiving water and reference samples shall be analyzed for the same constituents as storm water runoff samples. At a minimum, constituents to be sampled and analyzed in reference and discharge receiving waters must include oil and grease, total suspended solids, Ocean Plan Table B metals for protection of marine life, Ocean Plan PAHs, pyrethroids, OP pesticides, ammonia, nitrate, phosphates, and critical life stage chronic toxicity for three species. In addition, within the range of the southern sea otter, indicator bacteria or some other measure of fecal contamination shall be analyzed.

3. Waterfront and Marine Operations: In addition to the above requirements for ocean receiving water monitoring, additional monitoring must be performed for marinas and boat launch and pier facilities:

   a. For all marina or mooring field operators, in mooring fields with 10 or more occupied moorings, the ocean receiving water must be sampled for Ocean Plan indicator bacteria, residual chlorine, copper, zinc, grease and oil, methylene blue active substances (MBAS), and ammonia nitrogen.

(1) For mooring field operators opting for an individual monitoring program (Section IV.B.1 above), this sampling must occur weekly (on the weekend) from May through October.

(2) For mooring field operators opting to participate in a regional integrated monitoring program (Section IV.B.2 above), this sampling must occur monthly from May through October on a high use weekend in each month. The Water Boards may allow a reduction in the frequency of sampling, through the regional monitoring program, after the first year of monitoring.

b. For all mooring field operators, the subtidal sediment (sand or finer, if present) within mooring fields and below piers shall be sampled and analyzed for Ocean Plan Table B metals (for marine aquatic life beneficial use), acute toxicity, PAHs, and tributyltin. For sediment toxicity testing, only an acute toxicity test using the amphipod *Eohaustorius estuarius* must be performed. This sampling shall occur at least three times during a five (5) year period. For mooring field operators opting to participate in a regional integrated monitoring program, the Water Boards may allow a reduction in the frequency of sampling after the first sampling effort's results are assessed.

Glossary

At the point of discharge(s) – Means in the surf zone immediately where runoff from an outfall meets the ocean water (a.k.a., at point zero).

Areas of Special Biological Significance (ASBS) – Those areas designated by the State Water Board as ocean areas requiring protection of species or biological communities to the extent that alteration of natural water quality is undesirable. All Areas of Special Biological Significance are also classified as a subset of State Water Quality Protection Areas.

Design storm – For purposes of these Special Protections, a design storm is defined as the volume of runoff produced from one inch of precipitation per day or, if this definition is inconsistent with the discharger's applicable storm water permit, then the design storm shall be the definition included in the discharger's applicable storm water permit.

Development – Relevant to reference monitoring sites, means urban, industrial, agricultural, grazing, mining, and timber harvesting land uses.

Higher threat discharges - Permitted storm drains discharging equal to or greater than 18 inches, industrial storm drains, agricultural runoff discharged through an MS4, discharges associated with waterfront and marina operations (e.g., piers, launch ramps, mooring fields, and associated vessel support activities, except for passive discharges defined below), and direct discharges associated with commercial or industrial activities to ASBS.

Low Impact Development (LID) – A sustainable practice that benefits water supply and contributes to water quality protection. Unlike traditional storm water management, which entails collecting and conveying storm water runoff through storm drains, pipes, or other conveyances to a centralized storm water facility, LID focuses on using site design and storm water management to maintain the site's pre-development runoff rates and volumes. The goal of LID is to mimic a site's predevelopment hydrology by using design techniques that infiltrate, filter, store, evaporate, and detain runoff close to the source of rainfall.

Marine Operations – Marinas or mooring fields that contain slips or mooring locations for 10 or more vessels.

Management Measure (MM) - Economically achievable measures for the control of the addition of pollutants from various classes of nonpoint sources of pollution, which reflect the greatest degree of pollutant reduction achievable through the application of the best available nonpoint pollution control practices, technologies, processes, siting criteria, operating methods, or other alternatives. For example, in the "marinas and recreational boating" land-use category specified in the Plan for California's Nonpoint Source Pollution Control Program (NPS Program Plan) (SWRCB, 1999), "boat cleaning and maintenance" is considered a MM or the source of a specific class or type of NPS pollution.

Management Practice (MP) - The practices (e.g., structural, non-structural, operational, or other alternatives) that can be used either individually or in combination to address a specific MM class or classes of NPS pollution. For example, for the "boat cleaning and maintenance" MM, specific MPs can include, but are not limited to, methods for the selection of environmentally sensitive hull paints or methods for cleaning/removal of hull copper anti-fouling paints.

Municipal Separate Storm Sewer System (MS4) – A municipally-owned storm sewer system regulated under the Phase I or Phase II storm water program implemented in compliance with Clean Water Act section 402(p). Note that an MS4 program's boundaries are not necessarily congruent with the permittee's political boundaries.

Natural Ocean Water Quality - The water quality (based on selected physical, chemical and biological characteristics) that is required to sustain marine ecosystems, and which is without apparent human influence, *i.e.*, an absence of significant amounts of: (a) man-made constituents (*e.g.,* DDT); (b) other chemical (*e.g.,* trace metals), physical (temperature/thermal pollution, sediment burial), and biological (*e.g.*, bacteria) constituents at concentrations that have been elevated due to man's activities above those resulting from the naturally occurring processes that affect the area in question; and (c) non-indigenous biota (*e.g.,* invasive algal bloom species) that have been introduced either deliberately or accidentally by man. Discharges "*shall not alter natural ocean water quality*" as determined by a comparison to the range of constituent concentrations in reference areas agreed upon via the regional monitoring program(s). If monitoring information indicates that *natural ocean water quality* is not maintained, but there is sufficient evidence that a discharge is not contributing to the alteration of natural water quality, then the Regional Water Board may make that determination. In this case, sufficient information must include runoff sample data that has equal or lower concentrations for the range of constituents at the applicable reference area(s).

Nonpoint source – Nonpoint pollution sources generally are sources that do not meet the definition of a point source. Nonpoint source pollution typically results from land runoff, precipitation, atmospheric deposition, agricultural drainage, marine/boating operations or hydrologic modification. Nonpoint sources, for purposes of these Special Protections, include discharges that are not required to be regulated under an NPDES permit.

Non-storm water discharge – Any runoff that is not the result of a precipitation event. This is often referred to as "dry weather flow."

Non-structural control – A Best Management Practice that involves operational, maintenance, regulatory (e.g., ordinances) or educational activities designed to reduce or eliminate pollutants in runoff, and that are not structural controls (i.e. there are no physical structures involved).

Physical impossibility - Means any act of God, war, fire, earthquake, windstorm, flood or natural catastrophe; unexpected and unintended accidents not caused by discharger or its employees' negligence; civil disturbance, vandalism, sabotage or terrorism; restrain by court order or public authority or agency; or action or non-action by, or inability to obtain the necessary authorizations or approvals from any governmental agency other than the permittee.

Representative sites and monitoring procedures – Are to be proposed by the discharger, with appropriate rationale, and subject to approval by Water Board staff.

Sheet-flow – Runoff that flows across land surfaces at a shallow depth relative to the cross-sectional width of the flow. These types of flow may or may not enter a storm drain system before discharge to receiving waters.

Storm Season – Also referred to as rainy season, means the months of the year from the onset of rainfall during autumn until the cessation of rainfall in the spring.

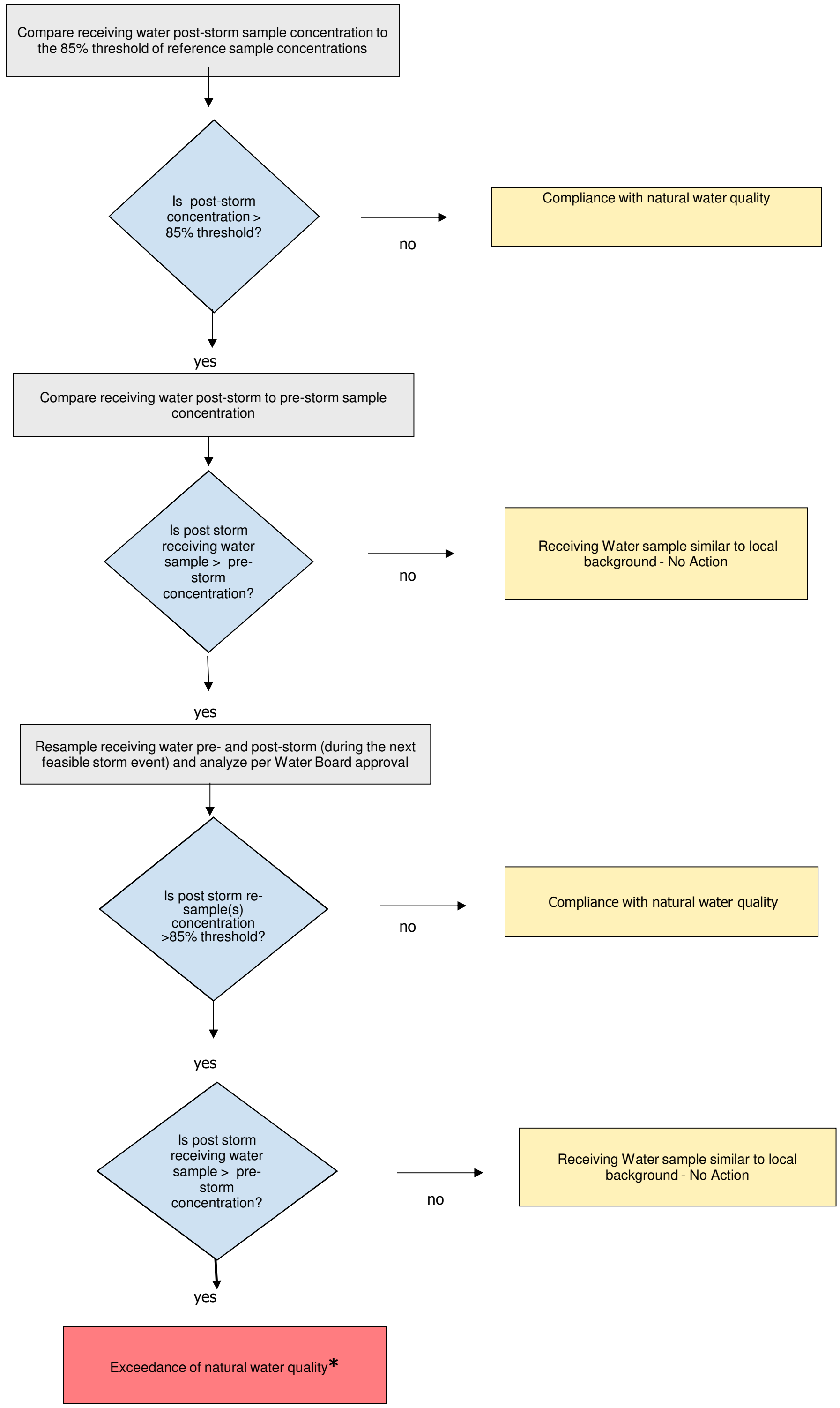
Structural control – A Best Management Practice that involves the installation of engineering solutions to the physical treatment or infiltration of runoff.

Surf Zone - The surf zone is defined as the submerged area between the breaking waves and the shoreline at any one time.

Surface Water Ambient Monitoring Program (SWAMP) comparable – Means that the monitoring program must 1) meet or exceed 2008 SWAMP Quality Assurance Program Management Plan (QAPP) Measurement Quality Objectives, or 2) have a Quality Assurance Project Plan that has been approved by SWAMP; in addition data must be formatted to match the database requirements of the SWAMP Information Management System. Adherence to the measurement quality objectives in the Southern California Bight 2008 ASBS Regional Monitoring Program QAPP and data base management comprises being SWAMP comparable.

Waterfront Operations - Piers, launch ramps, and cleaning stations in the water or on the adjacent shoreline.

Attachment 1
Special Protections Sections I(A)(3)(e) and I(B)(3)(e)
Flowchart to Determine Compliance with Natural Water Quality



*** When an exceedance of natural water quality occurs, the discharger must comply with section I.A.2.h (for permitted storm water) or section I.B.2.c (for nonpoint sources). Note, when sampling data is available, end-of-pipe effluent concentrations will be considered by the Water Boards in making this determination.**

Characterization of the rocky intertidal ecological communities associated with southern California Areas of Special Biological Significance

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Introduction

The regulatory environment

The California Ocean Plan defines water quality objectives for State waters and is the basis of regulation of discharges to marine environment. In 1972 there was recognition that certain areas had biological communities with ecological value or that were fragile. These areas were deemed to deserve enhanced protection to preserve and maintain natural (not affected by anthropogenic influences) water quality. These areas were designated Areas of Special Biological Significance (ASBS). As a result, regulations were enacted to prohibit discharges into ASBS as well as to any nearby waters that could affect the natural water quality in ASBS. In 1974 the State Water Board (SWB) designated 33 ASBS. An additional area was designated in 1975; there have been no subsequent designations.

ASBS have been designated to protect marine species or biological communities from an undesirable alteration in natural water quality. Furthermore ASBS provide intrinsic value or recognized value to man for scientific study, commercial use, recreational use, or esthetic reasons. Consistent with previous versions of the Ocean Plan, the 2009 Ocean Plan states: "Waste shall not be discharged to areas designated as being of special biological significance. Discharges shall be located a sufficient distance from such designated areas to assure maintenance of natural water quality conditions in these areas." This absolute waste discharge prohibition in the Ocean Plan stands, unless an "exception" is granted. The requirements for an exception are included in the Ocean Plan. When granting exceptions the State Water Board must determine that the public interest is served, and that protections of beneficial uses are not compromised. Despite the prohibition against waste discharges to ASBS, in 2003 there were approximately 1,658 outfalls to these marine water quality protected areas (SCCWRP 2003). As a result, the State Water Board has initiated regulatory actions, establishing special protections through the Ocean Plan's exception process.

The key attribute that underlies the ASBS water quality regulations is the standard of "natural water quality". The logic of the standard is that natural water quality is attainable using limited spatial regulations (prohibition of discharges in some areas) and essential for certain biological communities. Unfortunately, at least for southern California ASBS, coastal waters are no longer pristine. This is not simply due to discharges, as even if land based discharges were to be eliminated, aerial contaminants and pollutants carried by oceanic currents would influence water quality conditions.

Since a definition of natural water quality did not exist, a committee of scientists, termed the ASBS Natural Water Quality Committee, was formed to provide such a definition for the State Water Board. In 2010 the ASBS Natural Water Quality Committee provided the State Water Board with its findings (Dickson 2010), including an operational definition of natural water quality with the following criteria. These criteria address the two tenets of ASBS protections.

1) It should be possible to define a *reference* area or areas for each ASBS that currently approximate *natural water quality* and that are expected to exhibit the likely natural variability that would be found in that ASBS,

2) Any detectable human influence on the water quality must not hinder the ability of marine life to respond to natural cycles and processes. Such criteria will ensure that the beneficial uses identified by the Ocean Plan are protected for future generations.

This operational definition of natural water quality allows for the assessment of biological impacts related to water quality in ASBS and it provides the basic design elements for the assessment. In particular the use of reference areas for each ASBS allows for control of natural and temporal variability in biological communities.

The ecological environment

Because most discharges are into intertidal areas (defined as that area between low and high tides), there has been concern that impacts would be primarily manifested in ecological communities in sandy beach and rocky intertidal systems. Ecological communities in sandy beach habitats are extraordinarily dynamic (McLachlan 1993, Defeo 2008) and attribution of change to anthropogenic causes is quite difficult, mainly due to low statistical power. Species associated with rocky intertidal areas are also dynamic, but much less so than those in or on sandy beaches. As a result, attribution of the cause of change is easier for species or communities associated with rocky intertidal habitats (Littler and Murray 1975, Minchinton and Raimondi, 2005, Conway-Cranos and Raimondi 2007, Pinedo et al. 2007, Arevalo et al. 2007).

Within rocky intertidal communities, species have a variety of life histories that affect the assessment of potential causes of change. Shorter lived species like *Chthamalus*, *Ulva* and *Porphyra* often are associated with disturbance, while longer lived species like *Balanus*, fucoid algae and mussels tend to be associated with more stable environments. Hence, communities with higher cover of the more ephemeral species are often considered to be indicative of recent or ongoing perturbation. Clearly, perturbations can be due to both natural and anthropogenic causes and hence the design of the sampling program is critical for separating these two general mechanisms of change.

Here we report on a project designed to: (1) characterize the ecological community living on rocky intertidal habitats near discharges inside southern California ASBS, and at reference areas far from discharges and, (2) use the comparison between ASBS discharge and reference areas as a means to assess the likelihood that differences in ecological community structure that may be due to water quality degradation within ASBS.

Methods

Comprehensive sampling of ecological communities on rocky intertidal habitats was done using protocols developed by the coastal biodiversity surveys (http://cbsurveys.ucsc.edu/). The general approach is described below.

Site selection: ASBS and Reference – Based on the operational definition of natural water quality described above, along with the regulations prohibiting discharge in ASBS, we selected sites as follows. Sites were selected within ASBS that (1) had sufficient rocky intertidal habitat to be suited for sampling (as described below) and, (2) were located near to active discharge. Reference sites were selected following guideline (1) but instead of requiring proximity to an active discharge, we only used sites that were not near an active discharge. In addition we matched reference sites to discharge sites to control for spatial variance

The sampling procedure used was identical to that used by the coastal biodiversity survey (CBS) program housed at UCSC and administered by Peter Raimondi. In order to be cost-efficient, data from sites previously sampled by the CBS program were used in the analyses. New sampling was done to supplement existing data.

Selecting an appropriate location within a site - Within a site, the ideal location to do a CBS is on a bench that 1) is at least 30m wide, 2) gently slopes from the high to low zone, and most importantly 3) contains a representative sample of the intertidal community of the entire site. If it is not possible to find a contiguous 30m stretch of coastline, the survey can be split between two adjacent benches. When this is done, the survey should be divided as evenly as possible between the two benches.

***Set-Up* -** Once an appropriate area of shoreline was selected, it was sampled using a series of parallel transect lines extending from the high zone to the low zone. To facilitate the setup of these lines, two permanent 30m horizontal baselines (parallel to the ocean) were first established. The upper baseline was placed in the high zone above the upper limit of the organisms, while the lower baseline, which should be parallel to the upper baseline, was established farther down the shore. Depending on the amount of beach traffic or site regulations, the ends of these lines were permanently marked with either hex or carriage bolts.

Once these two baselines were established, parallel transect lines were run down the shore every three meters along the upper base line. To insure that these lines were parallel, they should intersect the appropriate meter mark on the lower baseline. In general the transect lines were allowed to follow the contours of the bench. When necessary, rocks were placed along the lines to prevent them from being shifted by heavy winds. It was noted where each transect crossed the lower baseline.

To facilitate resurveys of the site, a map was drawn of the site showing the location of the bolts relative to notable landmarks or other, pre-existing permanent plots. Photographs were also taken that include prominent visual reef characteristics for orientation (e.g. a large crack). The distance and bearing between the baseline endbolts were measured. When possible, measurements were also taken between the endbolts and any pre-existing permanent plots. Other pertinent information, such as the compass heading of the vertical transects, the sampling interval, weather conditions, site complications, and problems with taxonomic identification, was also recorded. All such information was used to make the mapping of the site more spatially explicit.

In addition to the spatial information described above, we also collected information about the site including bench type, relief, slope, extent of habitat and characteristics of surrounding coast. This information can be used to provide a spatial context for the site.

***Point-Contact Surveys* -** Each vertical transect was sampled using the point intercept method. An average of 100 points were sampled on each transect line. Hence, for example the interval between points would be 20cm for a 20m long transect, and 10cm for a 10m long transect. The basis of this design was to ensure that there was a similar density of sampled points per vertical unit of tidal elevation for all sites. For each point two types of data were collected: data that were used to determine relative abundance (% cover), and data that were used to describe spatial distributions. The relative abundance data were collected by identifying all taxa that fell directly under each point, including rock, sand, and tar. If there was layering of species, the taxa occupying the different layers were identified and assigned a letter; A for the top layer, B for the second layer, and C for the third. (Note: each layer must be a different taxa). If the point fell on an epibiont living on a host species, the epibiont was noted. Also recorded was whether the species under the point was in a pool, on cobble, or on boulders. A total of up to three taxa were identified under each point.

If fewer than three taxa were recorded under a point, then the next one or two species closest to that point were also noted. These 'nearby' species had to differ from those found under the point, and must fall within a circle centered over the point with a radius half the length of the sampling interval.

***Mobile Invertebrate Surveys* -** Although point-contact surveys are good at determining the abundance of spatially common species, particularly sessile species, they do not sample rare or spatially uncommon species very well. Because most mobile species are not spatially common, their abundances were sampled in 50 x 50 cm quadrats placed at three locations along each transect. Each transect was first divided into three zones; the low zone, defined as the area below the mussel zone, the mid-zone (including mussels and rock weeds, and the high zone (usually dominated by barnacles and littorines). Within each zone a quadrat was randomly placed on the transect, and all mobile species found within the quadrat were identified and counted. Sub-sampling was used when there was more than one hundred individuals of one species in a quadrat. If a quadrat landed in a deep pool or in an area dominated by sand, a new location within the defined zone was selected.

Vouchers–We collected field vouchers for all species that could not be identified in the field. Voucher samples were labeled with the date, site, name of sampler, transect line on which it was found.

***Specific hypotheses tested* -** The general goal of this project was to compare the ecological communities in ASBS and reference locations. To do this we developed the following specific (null) hypotheses

1) Species richness will not vary as function of site type (ASBS, Reference)
2) Community composition of sessile species will not vary as a function of site type
3) Community composition of mobile species will not vary as a function of site type
4) An integrated assessment of both mobile and sessile species will not identify particular sites as being substantially different from the expectation based on all sites. This is a way to look at specific sites rather than site types.

For questions 1-3 two forcing (independent) variables were used in the statistical approaches. First – whether the sites was considered to be an ASBS site (near to a discharge) or a reference site (that could also be in an ASBS). Second – we imposed a geographical group structure to match ASBS sites with appropriate reference sites (Figure 1). Point contact (mainly sessile or sedentary organisms) and Quadrat data (mobile organisms) were evaluated using a PERMANOVA approach to compare communities between ASBS and reference sites after accounting for geography. Species Richness was assessed using ANOVA. For hypotheses 1-3 we set the critical p-value at 0.05 (null hypothesis not rejected unless $p<0.05$).

For hypothesis 4 we generated site similarity matrices (using Bray Curtis values) then calculated Mahalanobis distances using values from the two matrices. Mahalanobis distances are the distance from a multivariate centroid accounting for the covariance structure among variables. Small values indicate that that sample is similar to a hypothetical typical sample, while large distances indicate samples very different from the hypothetical typical sample. Prediction limits (of the Mahalanobis distance) were used to assess the likelihood of inclusion of samples. For example, an 80% prediction limit would contain 80% of samples drawn from a pool of samples coming from the same population. This differs from confidence limits, which are used to assess the inclusion likelihood of means of samples from a population.

Results

Sites sampled and site attributes – Sampling locations are shown in Figure 1. Description of site metadata and site characteristics are in tables 1 and 2 respectively.

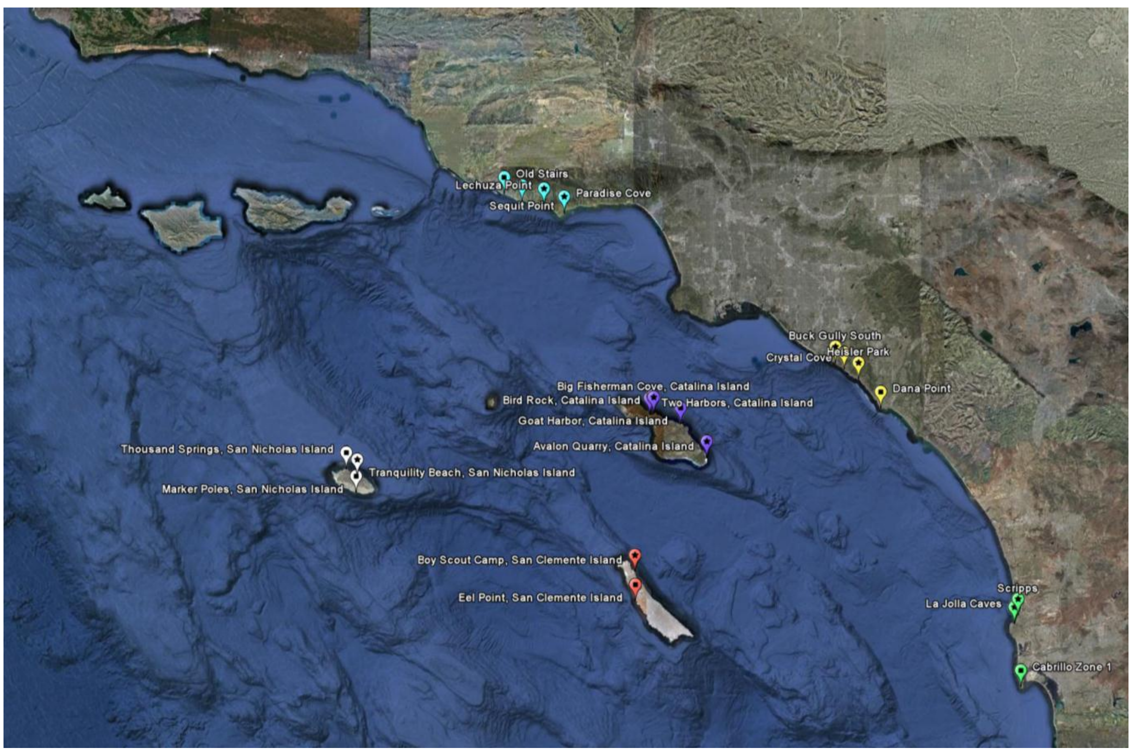

Figure 1: Map of sampling locations. Colors indicate geographic groups. Within each pointer the symbol represents site type: Star = Discharge site in ASBS, Square = reference site.

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1. **Primary Bench Type:** describes the dominant geology of the site
    a. **bedrock:** the primary bench type is consolidated bedrock at this site
    b. **bedrock/boulders:** the primary bench type is a mixture of consolidated bedrock and boulder fields at this site
    c. **bedrock/sand:** the primary bench type is a mixture of consolidated bedrock and sandy beach at this site
    d. **bedrock/boulders/sand:** the primary bench type is a mixture of consolidated bedrock, boulder fields, and sandy beach at this site
    e. **boulders:** the primary bench type is boulder fields at this site
2. **Slope:** describes the slope of the coastline at the site
    a. **0-5 degrees:** the slope of this site is between 0-5 degrees
    b. **5-15 degrees** the slope of this site is between 5-15 degrees
3. **Relief:** describes the rugosity of the site
    a. **high:** the relief of the site consists of extremely uneven terrain, containing many deep cracks and folds, such as in some mixed consolidated bedrock and boulder fields
    b. **moderate:** the relief of the site consists of moderately uneven terrain, containing few cracks and folds, such as in boulder or cobble fields and some consolidated bedrock
    c. **low:** the relief of the site consists of flat terrain, such as a sandy beach
4. **Extent:** describes the length of the intertidal area at the site, from the land to the ocean
    a. **long:** the extent of the site is greater than 15 meters
    b. **intermediate:** the extent of the site is between 5-15 meters
    c. **short:** the extent of the site is less than 5 meters
5. **Surrounding Coast:** describes the geology of the area surrounding the site
    a. **bedrock:** the surrounding coast is consolidated bedrock at this site
    b. **bedrock/boulders:** the surrounding coast is a mixture of consolidated bedrock and boulder fields at this site
    c. **bedrock/sand:** the surrounding coast is a mixture of consolidated bedrock and sandy beach at this site
    d. **bedrock/boulders/sand:** the surrounding coast is a mixture of consolidated bedrock, boulder fields, and sandy beach at this site
    e. **bedrock/boulders/cobble:** the surrounding coast is a mixture of consolidated bedrock, boulder fields, and cobble beach at this site
    f. **boulders/sand:** the surrounding coast is a mixture of boulder fields and sandy beach at this site
    g. **boulders/cobble/sand:** the surrounding coast is a mixture of boulder fields, cobble beach, and sandy beach at this site
    h. **boulders:** the surrounding coast is boulder fields at this site
    i. **sand:** the surrounding coast is sandy beach at this site
6. **Species Richness:** a count of the total number of species found at a given site, using existing protocols.

Table 1: Metadata for site attributes. Page 1.

Group	Attributes of Site	Buck Gully South	Crystal Cove	Heisler Park	Dana Point
1	Primary Bench Type	bedrock/boulders	bedrock	bedrock/sand	bedrock/boulders
	Slope	0-5 degrees	0-5 degrees	0-5 degrees	0-5 degrees
	Relief	moderate	low	moderate	moderate
	Extent	long	long	long	long
	Surrounding coast	bedrock/boulders/sand	bedrock/boulders/sand	bedrock/boulders/sand	bedrock/boulders/sand
	Species Richness	70	81 (2001); 74 (2003); 75 (2004)	71	71 (2001); 72 (2006); 73 (2010)
	Species of Special Interest (P for present)				
	Haliotis spp				
	Lottia gigantea	P	P	P	P
	Phyllospadix spp		P	P	P
	Invasive species				
	Sargassum muticum	P	P	P	P
	Sargassum agardhianum		P		P
	Caulacanthus ustulatus	P	P	P	P

Group	Attributes of Site	Scripps	La Jolla Caves	Cabrillo Zone I
2	Primary Bench Type	bedrock/boulders/sand	bedrock/boulders/sand	bedrock/boulders
	Slope	0-5 degrees	0-5 degrees	0-5 degrees
	Relief	moderate	low	moderate
	Extent	long	long	long
	Surrounding coast	boulders/sand	boulders/cobble/sand	bedrock/boulders/sand
	Species Richness	73 (2002); 83 (2006); 81 (2010)	59	69 (2002); 84 (2004); 76 (2009)
	Species of Special Interest (P for present)			
	Haliotis spp			
	Lottia gigantea	P		P
	Phyllospadix spp	P	P	P
	Invasive species			
	Sargassum muticum	P	P	P
	Sargassum agardhianum	P	P	
	Caulacanthus ustulatus	P	P	P

Group	Attributes of Site	Old Stairs	Sequit Pt	Lechuza Pt	Paradise Cove
3	Primary Bench Type	bedrock/boulders/sand	bedrock	bedrock/sand	bedrock/sand
	Slope	5-15 degrees	0-5 degrees	5-15 degrees	5-15 degrees
	Relief	moderate	moderate	moderate	low
	Extent	long	long	long	intermediate
	Surrounding coast	boulders/sand	bedrock/boulders/sand	bedrock/sand	sand
	Species Richness	49 (2001); 44 (2008)	50	54	70 (2001); 61 (2006); 61 (2010)
	Species of Special Interest (P for present)				
	Haliotis spp				
	Lottia gigantea	P	P	P	P
	Phyllospadix spp			P	P
	Invasive species				
	Sargassum muticum				
	Sargassum agardhianum				
	Caulacanthus ustulatus				P

Group	Attributes of Site	Thousand Springs SNI	Tranquility Beach SNI	Marker Poles SNI
4	Primary Bench Type	bedrock/boulders	bedrock	bedrock
	Slope	5-15 degrees	0-5 degrees	0-5 degrees
	Relief	moderate	moderate	moderate
	Extent	intermediate	long	long
	Surrounding coast	bedrock/boulders/sand	bedrock/boulders/sand	bedrock/sand
	Species Richness	65 (2003); 70 (2007)	70	75 (2003); 69 (2007)
	Species of Special Interest (P for present)			
	Haliotis spp	P		P
	Lottia gigantea	P		P
	Phyllospadix spp	P	P	P
	Invasive species			
	Sargassum muticum	P	P	
	Sargassum agardhianum			
	Caulacanthus ustulatus		P	

Group	Attributes of Site	Bird Rock CI	Big Fisherman Cove CI	Two Harbors CI	Goat Harbor CI	Avalon Quarry CI
5	Primary Bench Type	bedrock	bedrock	bedrock/boulders	bedrock/boulders	boulders
	Slope	5-15 degrees	5-15 degrees	5-15 degrees	5-15 degrees	5-15 degrees
	Relief	moderate	moderate	moderate	moderate	moderate
	Extent	intermediate	intermediate	intermediate	intermediate	intermediate
	Surrounding coast	bedrock/boulders	bedrock/boulders	bedrock/boulders/sand	bedrock/boulders/cobble	boulders
	Species Richness	60 (2002); 84 (2004); 75 (2007)	68	75	50	53
	Species of Special Interest (P for present)					
	Haliotis spp			P		
	Lottia gigantea	P				
	Phyllospadix spp					
	Invasive species					
	Sargassum muticum	P	P	P		P
	Sargassum agardhianum	P	P			
	Caulacanthus ustulatus		P	P	P	

Group	Attributes of Site	Boy Scout Camp SCLI	Eel Pt. SCLI
6	Primary Bench Type	bedrock/boulders	bedrock
	Slope	5-15 degrees	5-15 degrees
	Relief	moderate	moderate
	Extent	intermediate	long
	Surrounding coast	bedrock/boulders	bedrock/boulders
	Species Richness	46	69
	Species of Special Interest (P for present)		
	Haliotis spp		
	Lottia gigantea		P
	Phyllospadix spp		P
	Invasive species		
	Sargassum muticum		P
	Sargassum agardhianum	P	
	Caulacanthus ustulatus		

Table 2: Site characteristics. See table 1 for attribute descriptions. P indicates presence.

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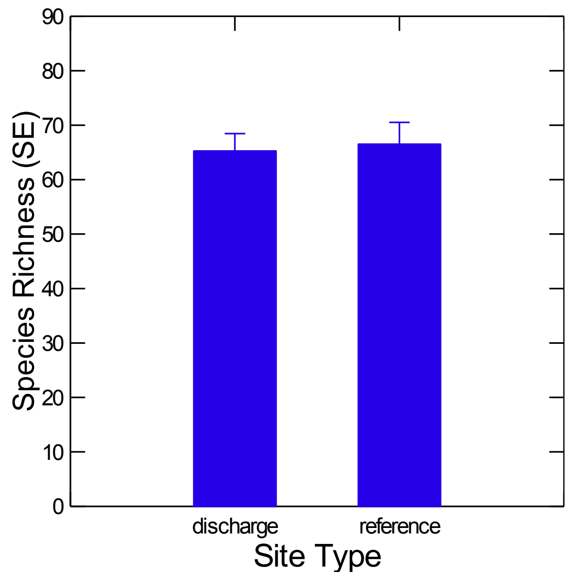
Species Richness Analysis

There was no effect on species richness that was associated with geographic grouping, Site Type or interaction between Site Type and Geographic Group (see table 2) indicating no difference between ASBS discharge and reference sites (Table 3 and Figure 2).

Analysis of Variance - Species Richness					
Source	Type III SS	df	Mean Squares	F-Ratio	p-Value
Site Type	42.387821	1	42.387821	0.400752	0.544369
Group	852.98689	5	170.597378	1.612896	0.260699
Group * Site Type	323.85331	5	64.770662	0.612368	0.694525
Error	846.16667	8	105.770833		

Table 3: ANOVA results for species richness.



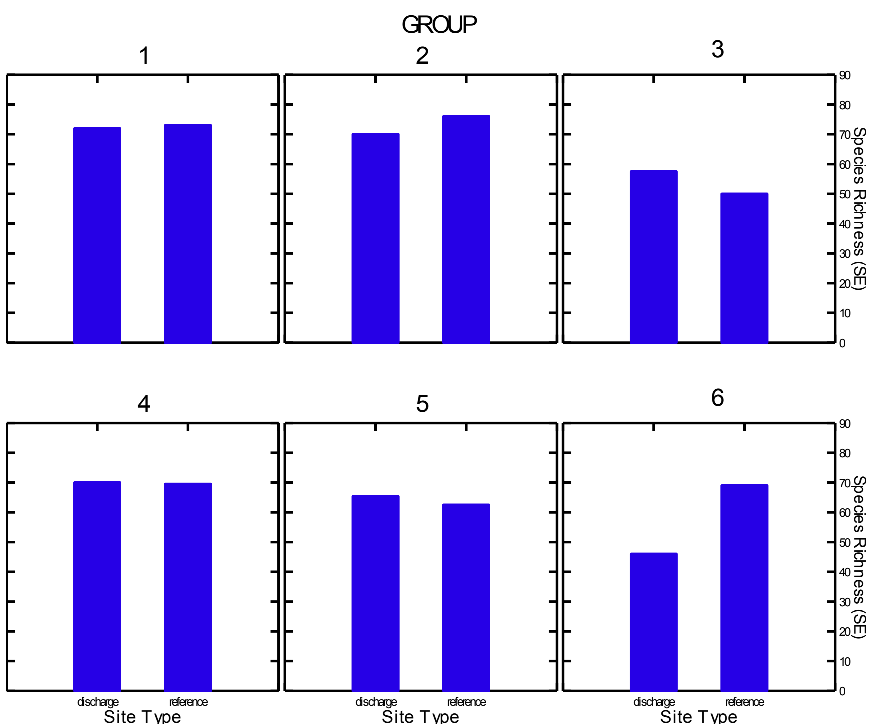


Figure 2: Top – Species richness as a function of site type. Bottom – Species richness as a function of geographic group and site type.

Community composition of sessile species

There was a large effect of geography (Gr=Group), which reflects the biogeography of the bight. There was no significant effect of either Site Type (Si) or any evidence of an interaction between Site Type and Group, indicating no difference between ASBS discharge and reference sites (Table 4, Figure 3). The results are shown below in the PERMANOVA table and MDS plot. (Groups are shown as numbers).

Source	df	SS	MS	Pseudo-F	P(perm)
Si	1	1172.7	1172.7	1.0723	0.401
Gr	5	15015	3002.9	2.7457	0.001
SixGr	5	5813.1	1162.6	1.063	0.38
Res	9	9843.3	1093.7		
Total	20	33160			

Table 4: PERMANOVA table for effect of site type and geographic group on the community composition of sessile species

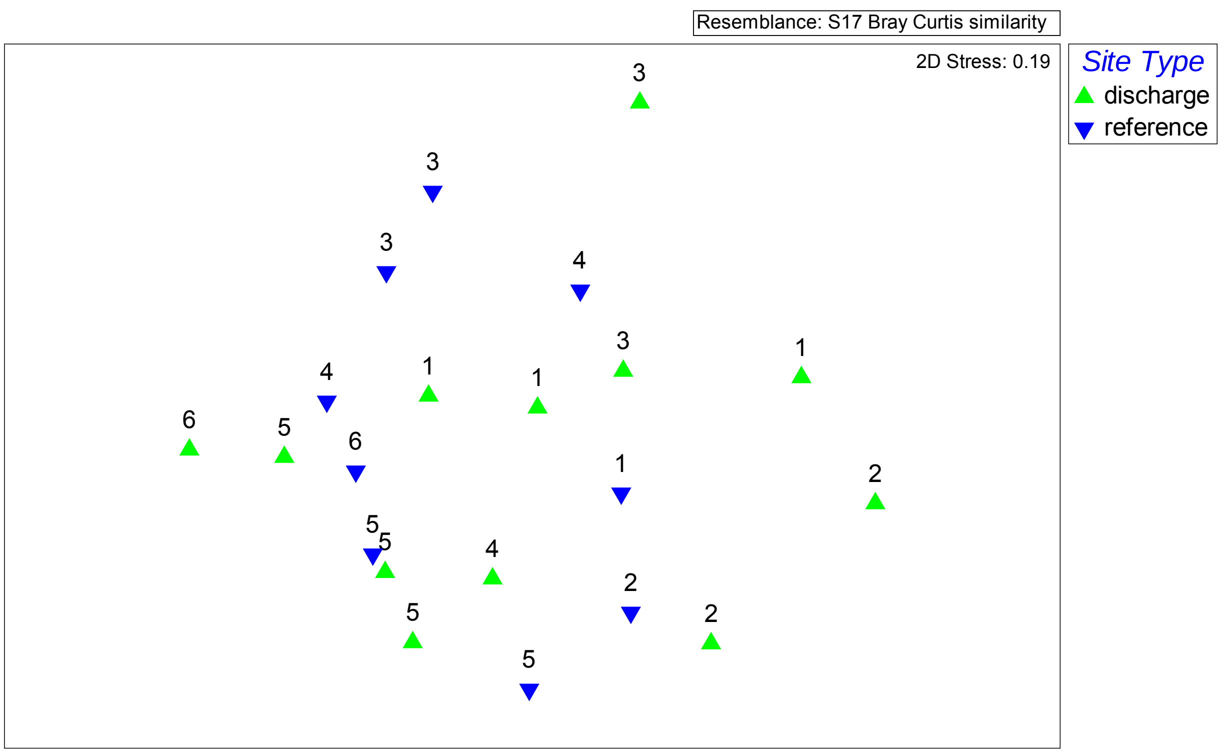


Figure 3: Multidimensional Scaling (MDS) figure for sessile species community composition. Numbers indicate geographic group.

Community composition of mobile species

There was a large effect of geography (Gr=Group), which reflects the biogeography of the bight. There was no significant effect of either Site Type (Si) or any evidence of an interaction between Site Type and Group, indicating no difference between ASBS discharge and reference sites (Table 5, Figure 4).

Source	df	SS	MS	Pseudo-F	P(perm)
Si	1	1355.8	1355.8	1.1773	0.293
Gr	5	10369	2073.8	1.8007	0.006
SixGr	5	5573.7	1114.7	0.96794	0.537
Res	9	10365	1151.7		
Total	20	28240			

Table 5: PERMANOVA table for effect of site type and geographic group on the community composition of mobile species.

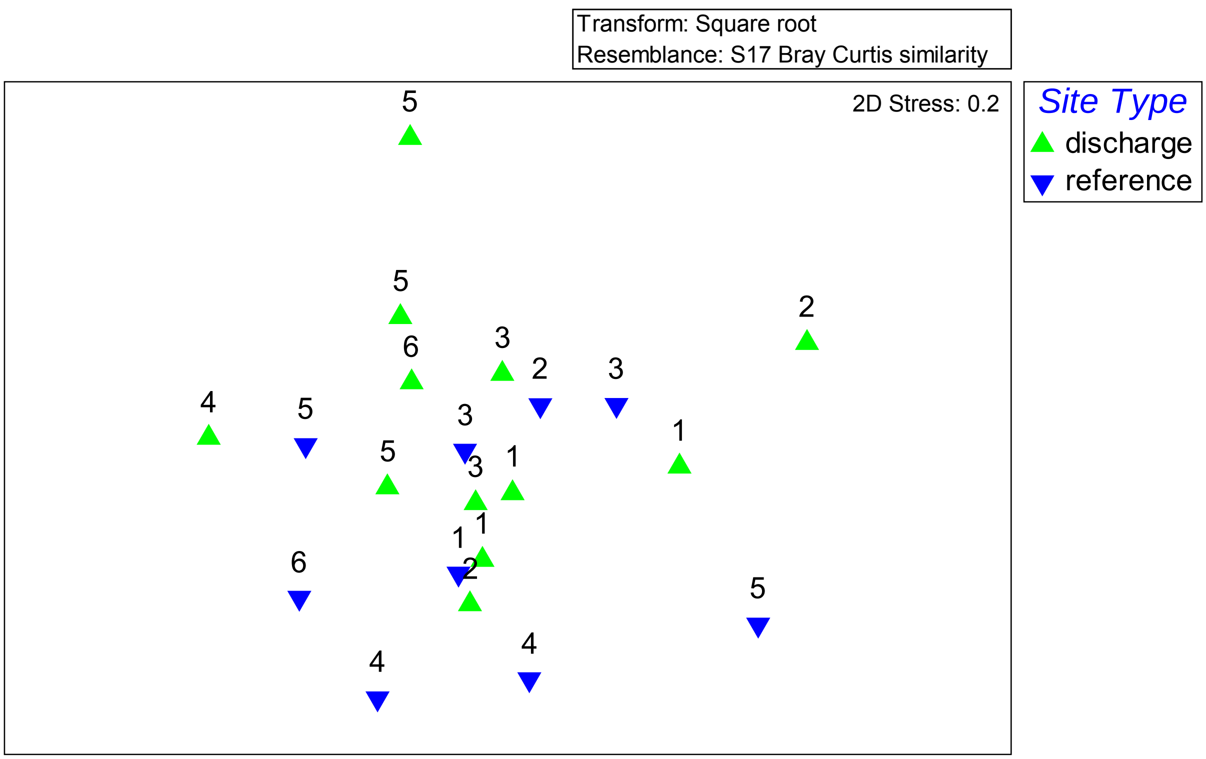


Figure 4: Multidimensional Scaling (MDS) figure for mobile species community composition. Numbers indicate geographic group.

While the PERMANOVA and MDS results are useful in a statistical assessment of the effect of discharges on intertidal communities, they don't convey information about the communities. Figures and tables showing species abundances are in APPENDIX 1 and 2.

An integrated assessment of both mobile and sessile species

In order to assess the relationships among sites when mobile and sedentary species were jointly considered, we calculated the prediction limit on site specific Mahalanobis distances (Figure 5). Two prediction limits are shown: 80 and 95%. Two sites, La Jolla Caves and Lechuza Point exceed the 95% prediction limit. An additional two sites, Avalon Quarry and Crystal Cove, exceed the 80% prediction limit. All four sites are discharge sites (ASBS).

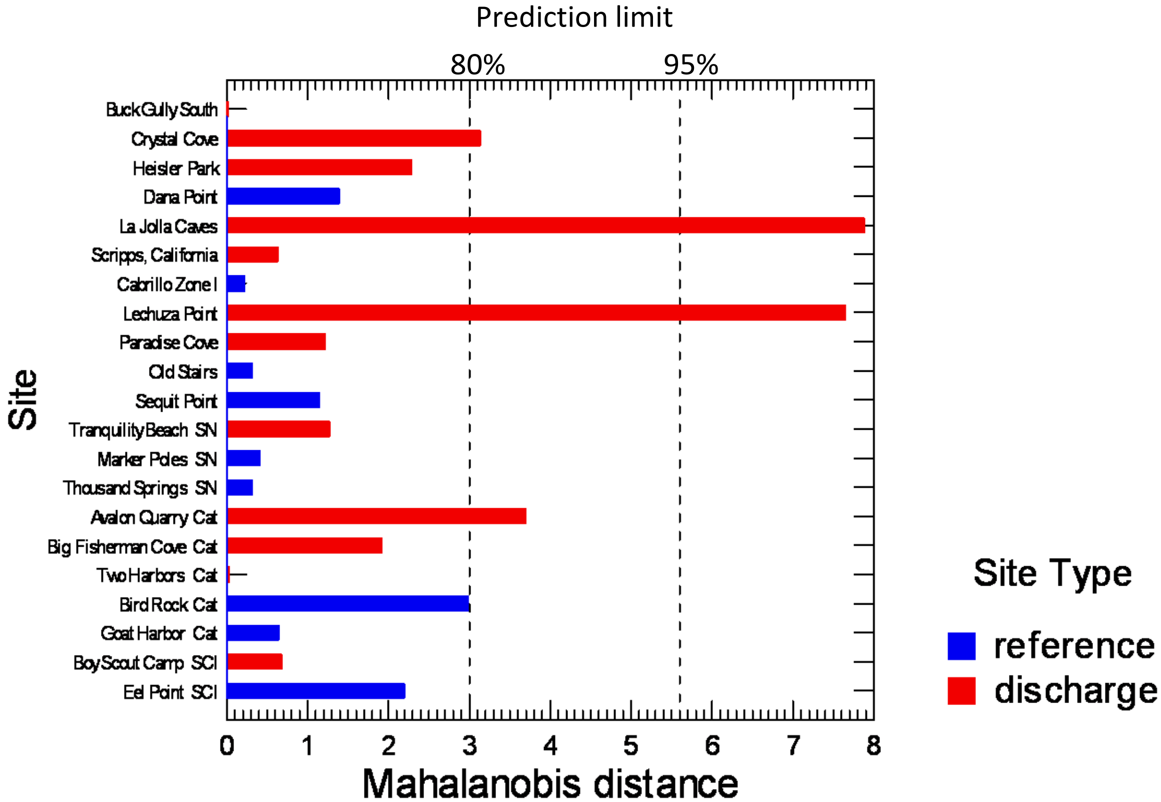


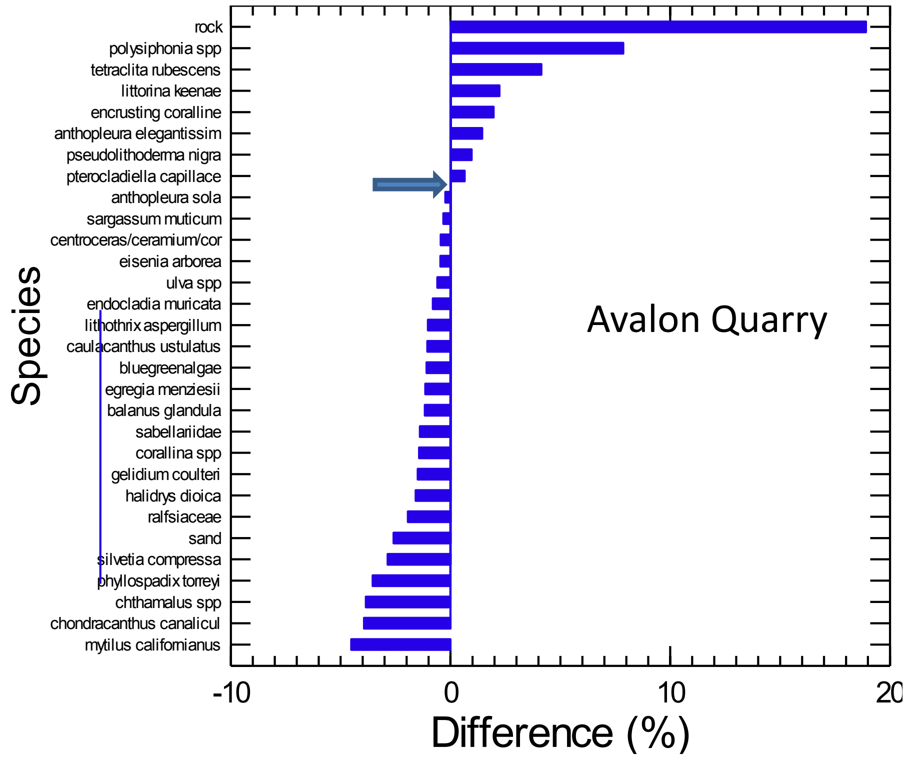
Figure 5: Mahalanobis distances for all sample sites. 80% and 95% prediction limits are also shown.

There is no way to specifically attribute the differences at these four sites to the effects of the discharge, however these results clearly indicate that the biological communities at these sites are different from that expected based on the regional analysis. Further analysis and field assays may help clarify the cause of these differences. In the figures shown below (Figures 6-9 and in appendix 1) the source of the differences can be seen. In these figures the biological communities at the four sites that exceeded the 80% prediction limit are compared to the 'expected' biological community, represented by the average across all sites.

There are several general points that can be made based on results.

(1) For all four sites and types of organisms (sessile, mobile) more species have below average than above average abundances.
(2) Avalon Quarry has a relatively impoverished biological community (particularly for mobile species) that is indicative of high levels of disturbance or impairment.

(3) Crystal Cove's sessile community is representative of an established bedrock community, although there is a high cover of the invasive species *Caulicanthus*. By contrast the mobile community is impoverished.
(4) La Jolla Caves is relatively species poor site. It's biological community is dominated by 'disturbance tolerant" species, which is an indication of natural or anthropogenic disturbance. It also has high representation of invasive species (*Sargassum and Caulicanthus*).
(5) Lechuza's community is characteristic of a sand influenced site with intermittent emergent rock



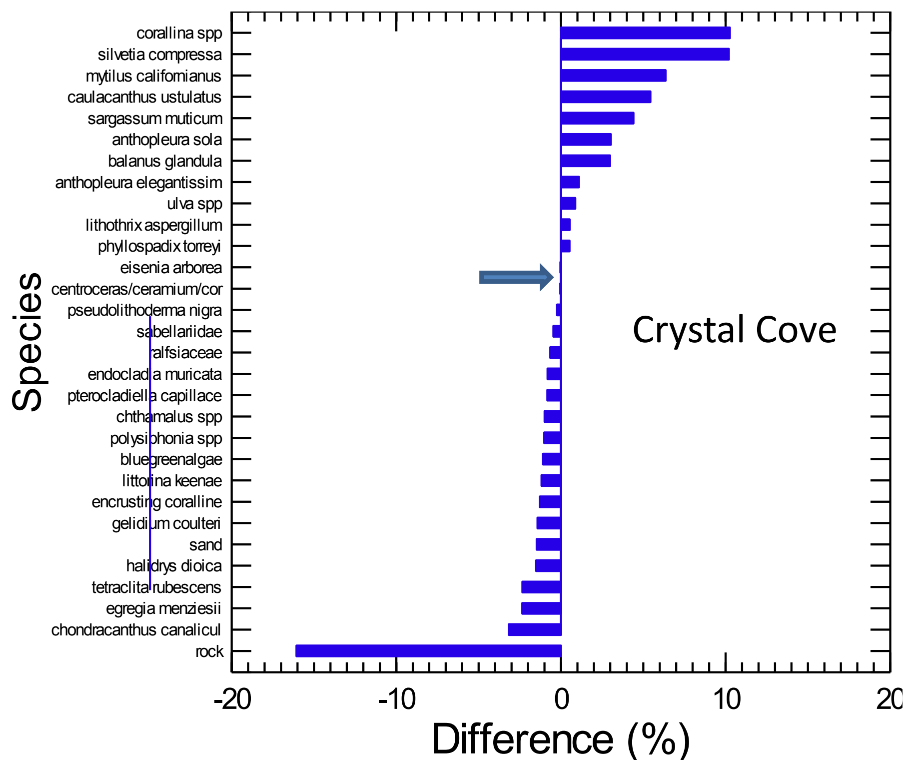
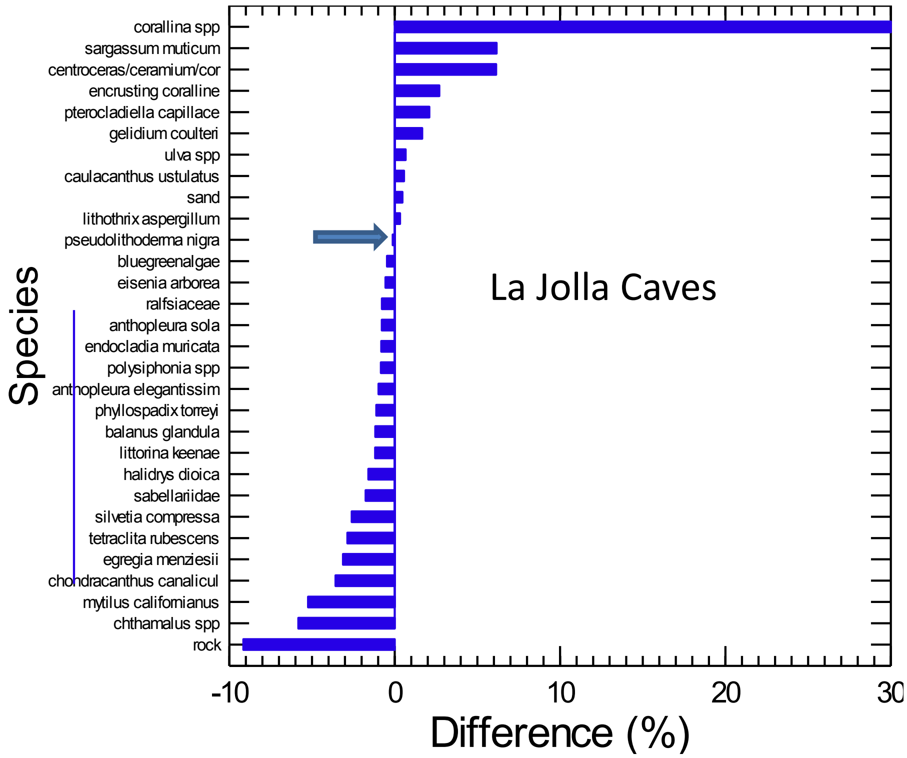


Figure 6: Differences in percent cover between specific sites (labeled) and expected values based on averages across all sites. Arrow indicates the transition between positive and negative differences.



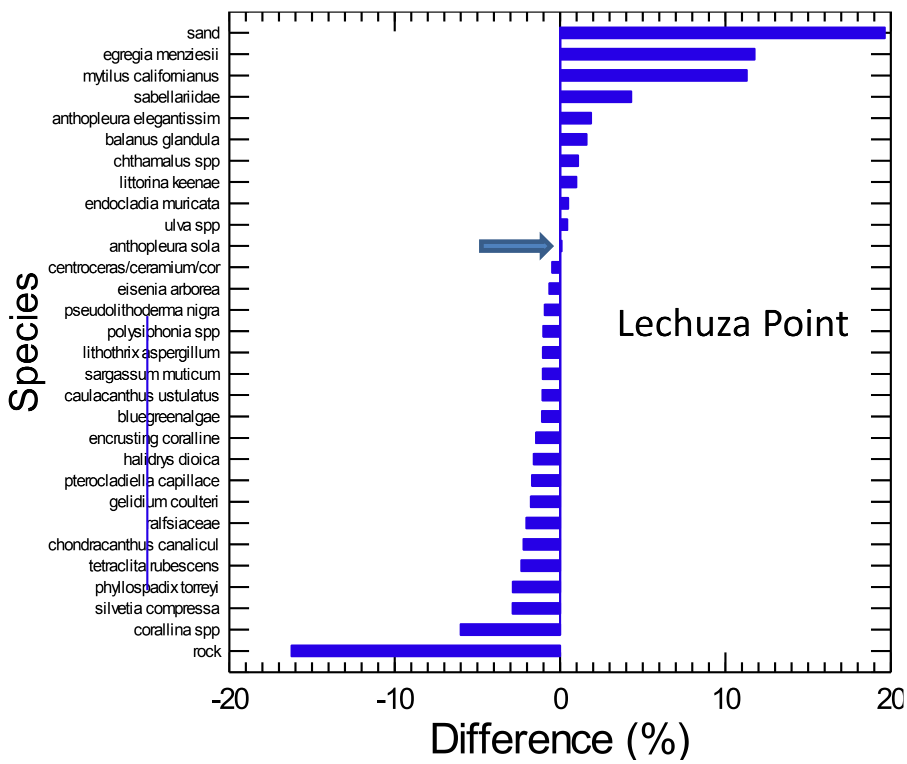
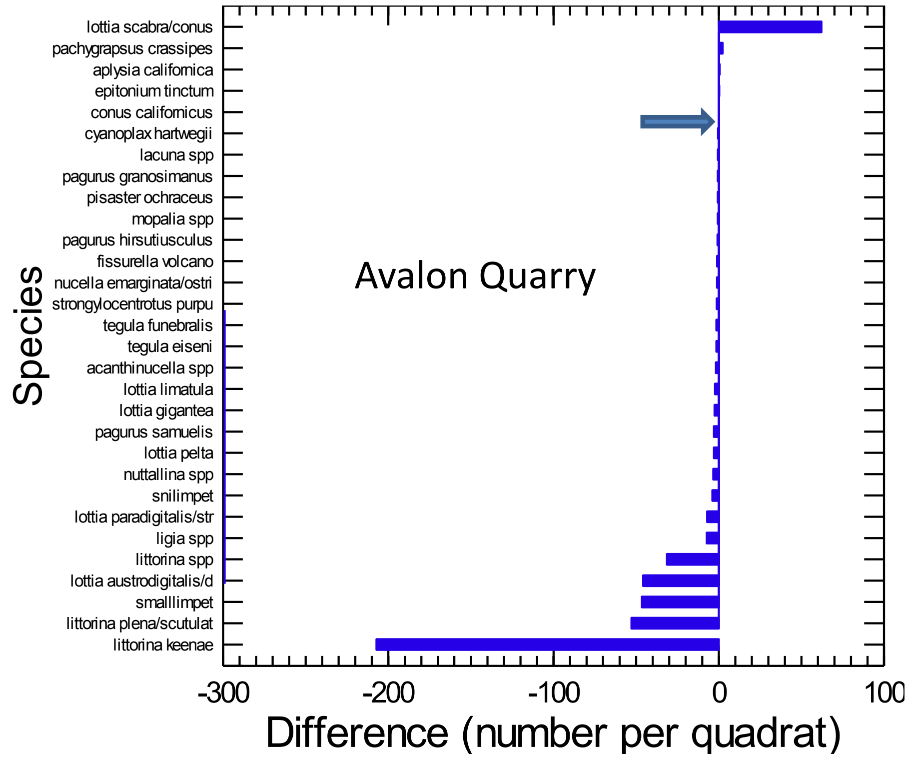


Figure 7: Differences in percent cover between specific sites (labeled) and expected values based on averages across all sites. Arrow indicates the transition between positive and negative differences.



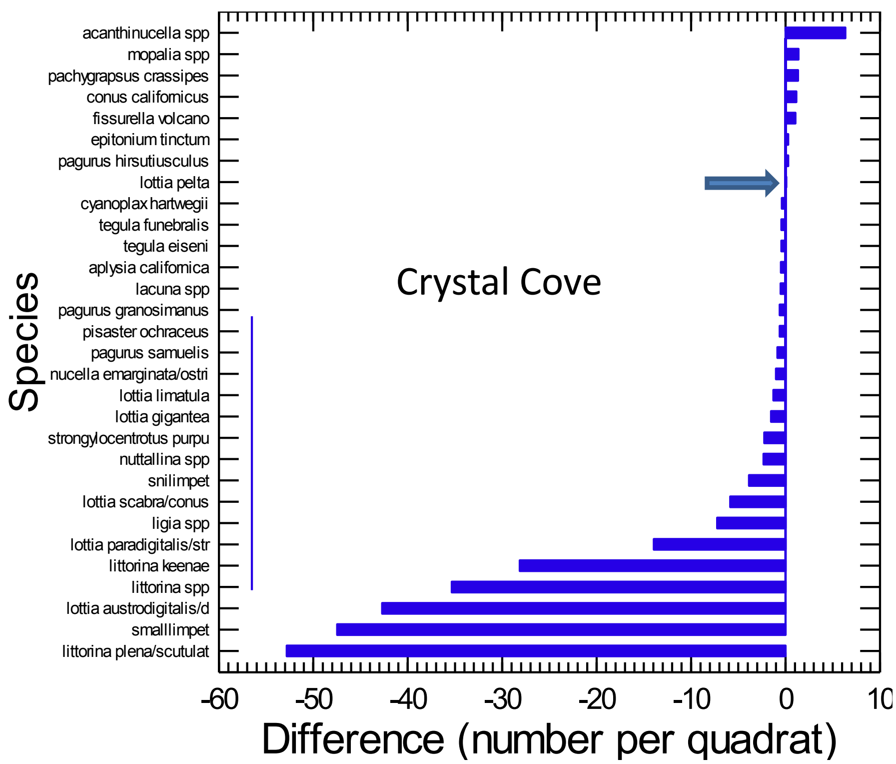


Figure 8: Differences in counts per quadrat between specific sites (labeled) and expected values based on averages across all sites. Arrow indicates the transition between positive and negative differences.

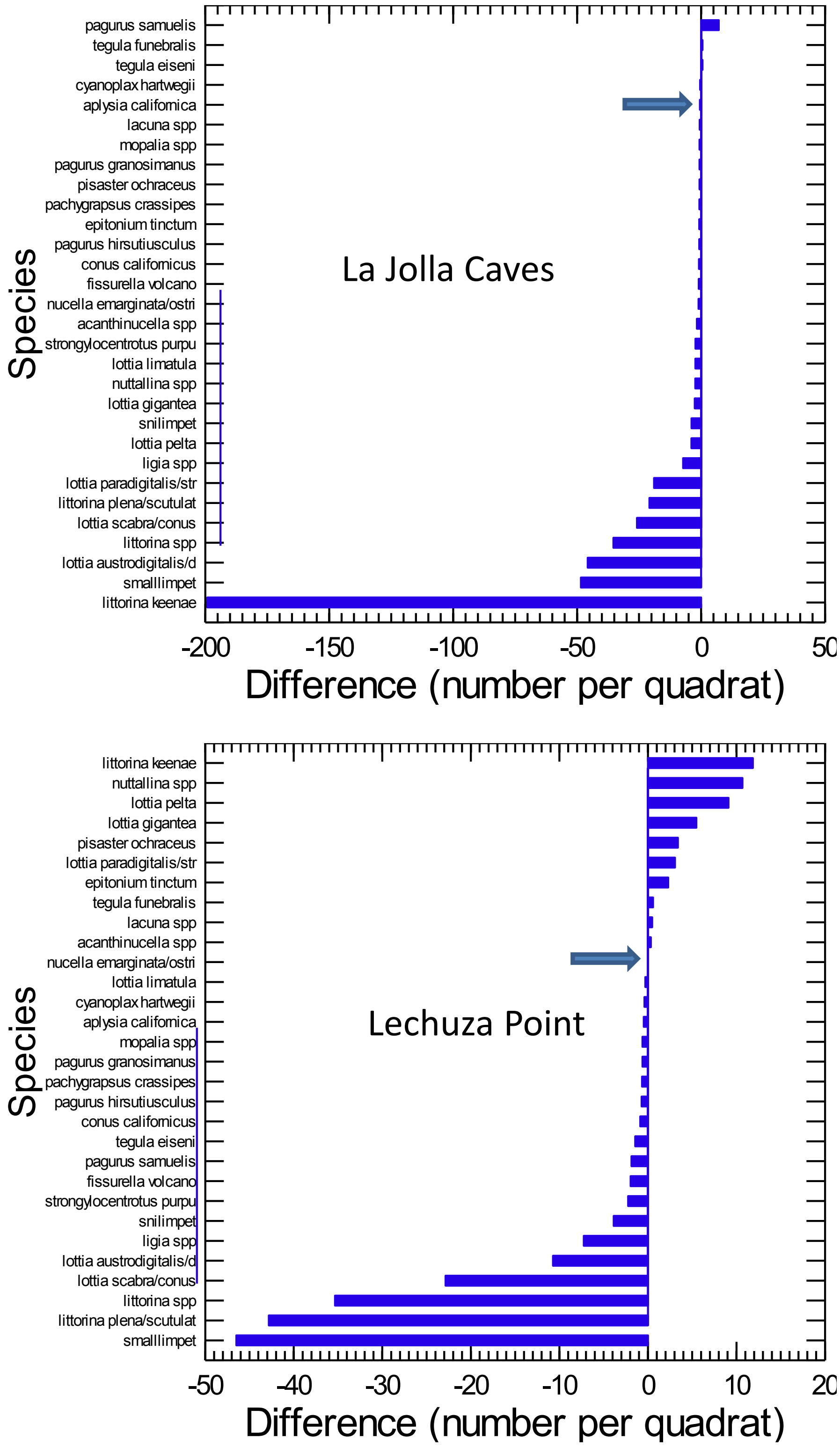


Figure 9: Differences in counts per quadrat between specific sites (labeled) and expected values based on averages across all sites. Arrow indicates the transition between positive and negative differences.

Discussion

There are many natural local (site scale) drivers of community structure including rock type, bedding orientation, sand influence, orientation of the rock surface to the prevailing swell direction, local swell height and period and upwelling. There are also many local human-induced drivers of community structure that do not involve discharges. These include collecting, trampling and non-point source pollution. The integration of these factors is the background driver of community structure against which the effect of discharge is measured. In this study we used a sampling program designed to minimize this integrated driver. We found that that there was no general difference in species richness or biological communities at discharge versus reference sites. This was also true when accounting for biogeographic differences present in the southern California Bight. These results strongly support the idea that there is no common impact associated with discharges. In part, this is consistent with earlier work (Blanchette, Raimondi, Littler), which showed considerable spatial variability in the biological communities in this region. The figures in Appendix 2 also show the tremendous spatial variability among biological communities.

While there was no indication of a general and similar impact of discharges on biological communities there was an indication that specific locations might be affected by compromised water quality. Using an analytical approach designed to assess site specific effects, we found that four sites exceeded the 80% prediction limit and 2 exceeded the 95% limit for community similarity (Figure 5). This means that they were substantially different from what would be expected based on all the rest of the sites. All 4 sites were associated with discharges and each characterized with lower than expected abundances of both mobile and sessile species as well as species composition different from expected. One has to be cautious in interpreting results of any community assessment, particularly when they come from surveys rather than experiments. No matter how carefully a survey is designed, there is no way to completely control for the contributions of extraneous factors. In such situations it is often useful to examine the details of the results to look for consistencies or deviations from patterns that would be expected under the posed hypothesis.

In this study we can look at the species composition associated with the four sites that differ from the expected species composition. The general question is whether the biological community is affected by discharge of water and associated components. Given a difference then specific expectations need to be evaluated. Here the specific expectations consistent with an impact due to compromised water quality are (Arevelo et al. 2007, Pineda et al. 2007):

1) Generally decreased abundance of species compared to reference areas. This expectation is true for all four sites
2) Communities characterized by disturbance associated species. This is true for Avalon Quarry, La Jolla Caves and Lechuza Point.
3) Of those communities characterized by disturbance associated species, there should be no other obvious of the pattern of species. This is true for Avalon Quarry and La Jolla Caves. By contrast, Lechuza Point has considerable sand influence, which is a clear driver of disturbance associated communities.

Based on the match between pattern and expectations, we can conclude that Avalon Quarry and La Jolla Caves are sites that are possibly affected by compromised water quality associated with discharges.

In addition to biological information collected from discharge and reference sites, water quality has been recently sampled as part of an ongoing program at The Southern California Coastal Water Research Project (SCCWRP). Results of this sampling relevant to this study are listed below:

1) Like biological communities, water quality near ASBS discharges following storm event was similar to the water quality observed near discharges at reference sites, no laboratory toxicity was observed any ASBS following storm events.
2) Lechuza Point is located in ASBS 25; while no water quality information was collected specifically near Lechuza Point discharge, water quality in ASBS 25 exceeded reference-based thresholds in 35% of the analyses conducted.
3) La Jolla Caves is located in ASBS 29; while no water quality information was collected specifically near La Jolla Caves discharge, water quality in ASBS 29 exceeded reference-based thresholds in 5% of the analyses conducted.
4) Crystal Cove is located in ASBS 33; water quality information was collected near Crystal Cove discharge, water quality in ASBS 25 exceeded reference-based thresholds in 15% of the analyses conducted.
5) No water quality information is available for Avalon Quarry

In summary, this project provided the first condition report for the rocky intertidal zone in Southern California Areas of Special Biological Significance and serves as a good trigger for focused additional work. In particular we recommend that water quality assessments be made concurrently with biological sampling at the discharge and reference areas for the Avalon Quarry and La Jolla Caves. Such additional and spatially explicit sampling should allow a more robust determination of the likelihood that discharge related impacts “hinder the ability of marine life to respond to natural cycles and processes” which by definition would be not be protective of the beneficial use of these areas.

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Minchinton T. and P. Raimondi. 2007. Effect of Temporal and Spatial Separation of Samples on Estimation of Impacts. MMS OCS Study 2005-002. Coastal Research Center, Marine Science Institute, University of California, Santa Barbara, California. MMS Cooperative Agreement number 14-35-0001-30758. 85 pages.

Pinedo S, M Garcia, M Paola Satta, M de Torres, E Ballesteros. 2007. Rocky-shore communities as indicators of water quality: A case study in the Northwestern Mediterranean, Marine Pollution Bulletin, Volume 55, Issues 1-6. Pages 126-135,

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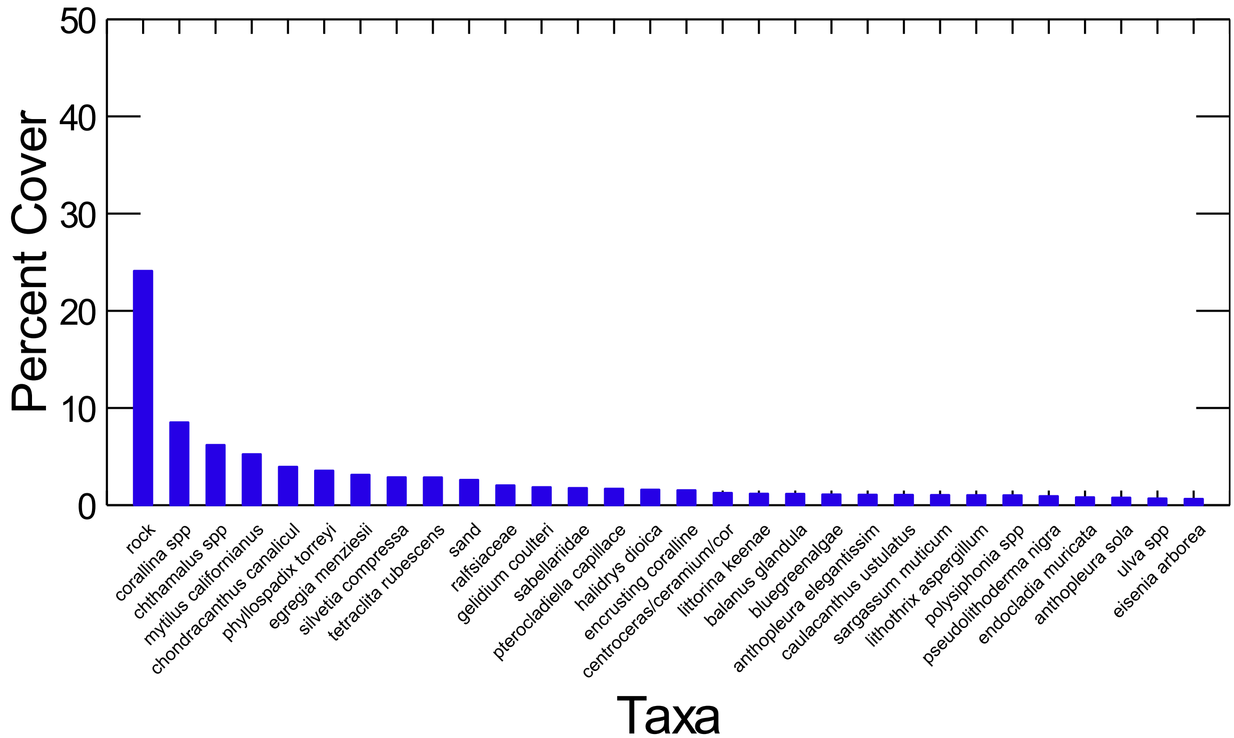
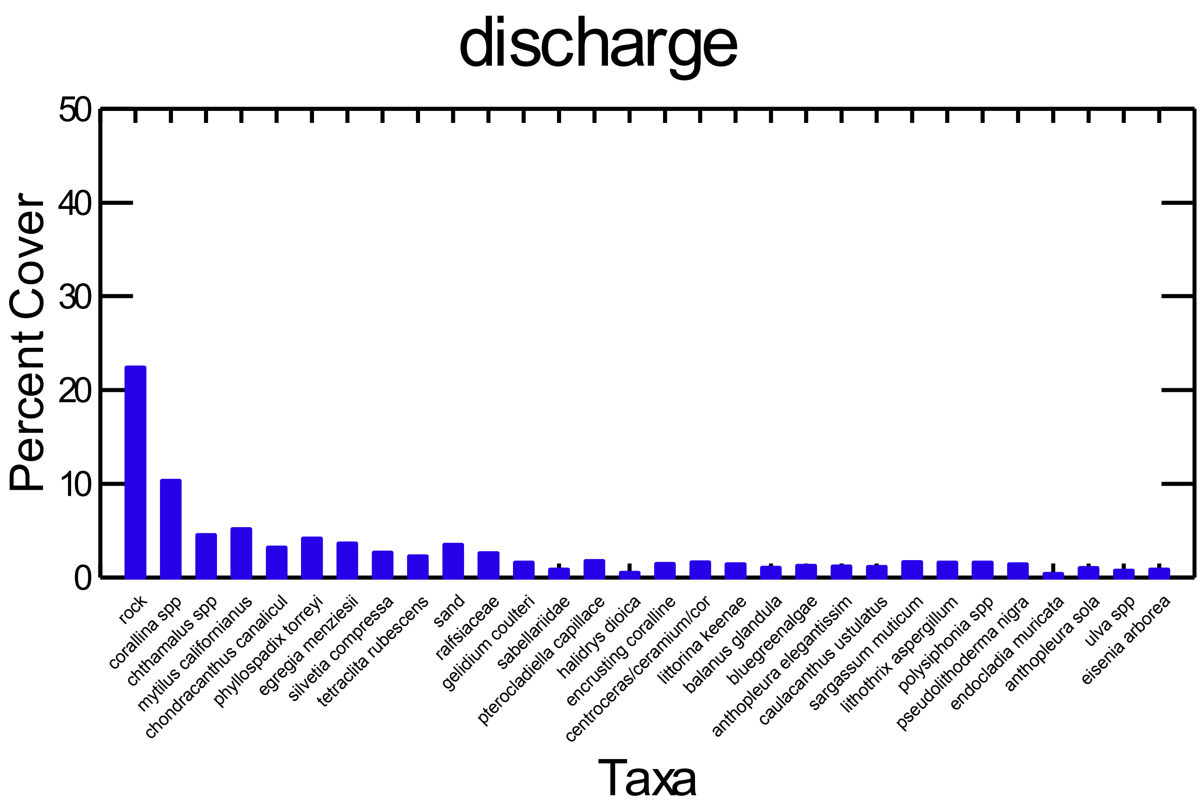
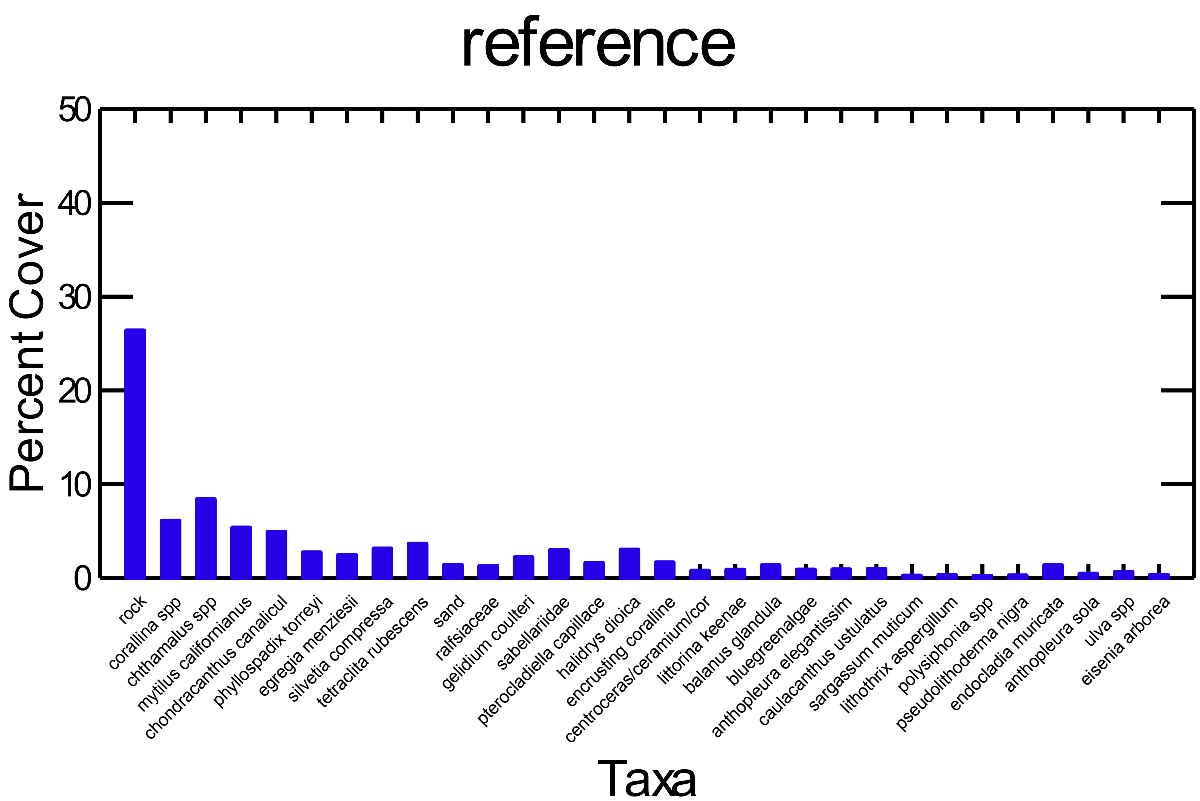
Appendix 1: additional figures

All sites – Point Contact (most common species)

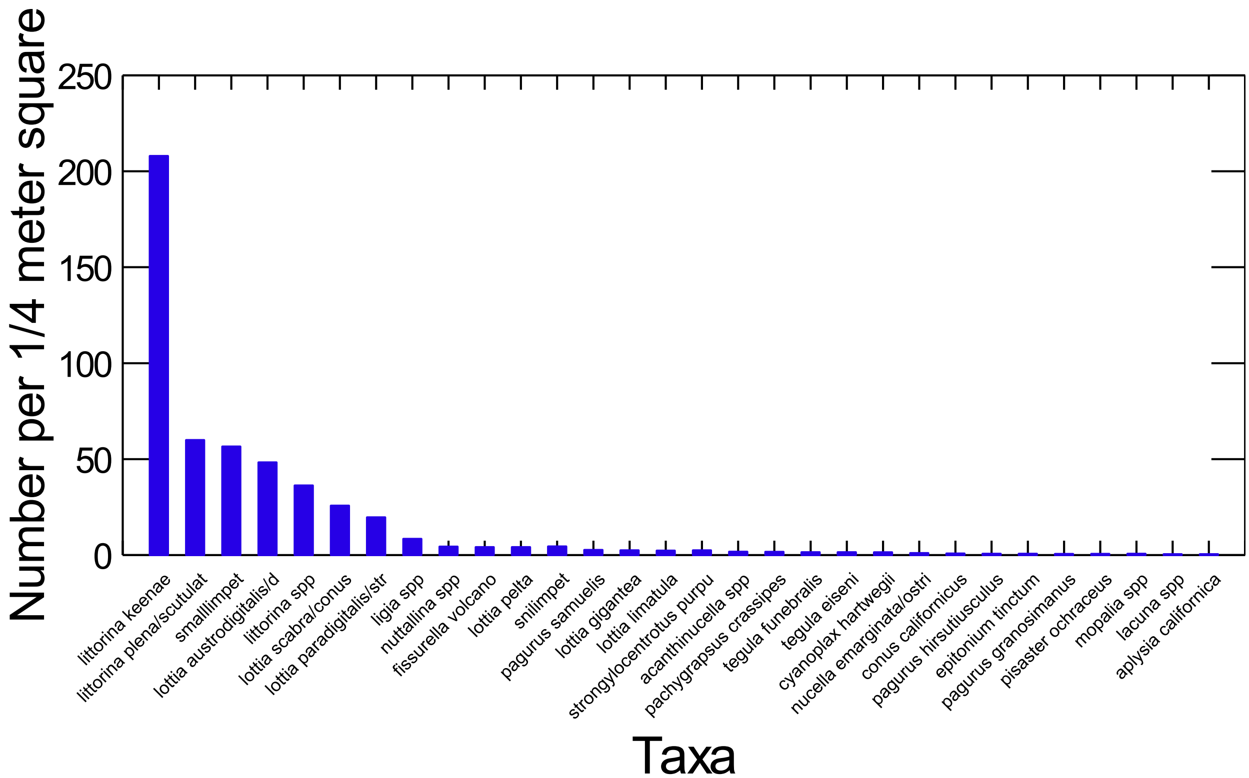


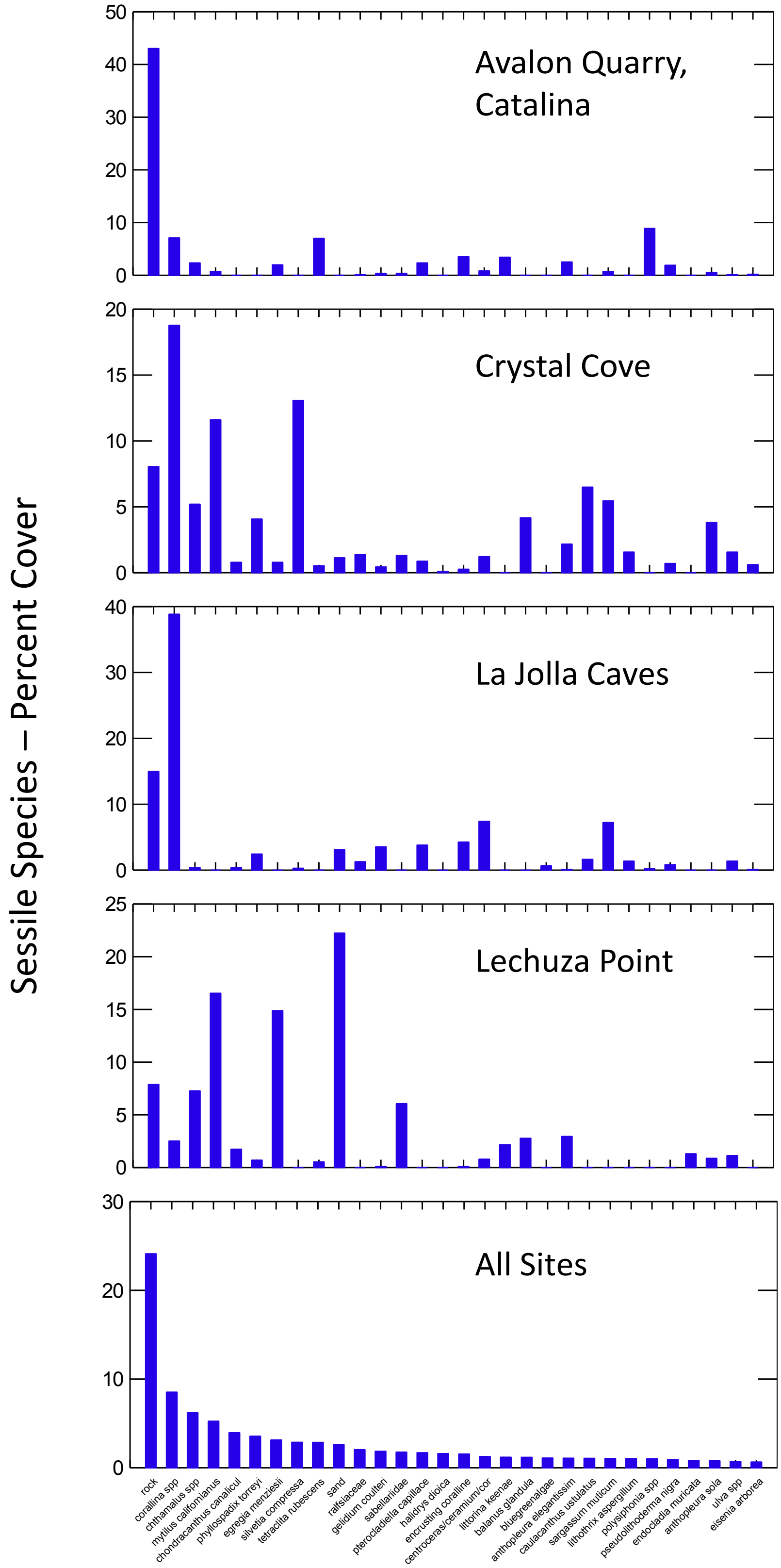
Across all sites – Point Contact (most common species)



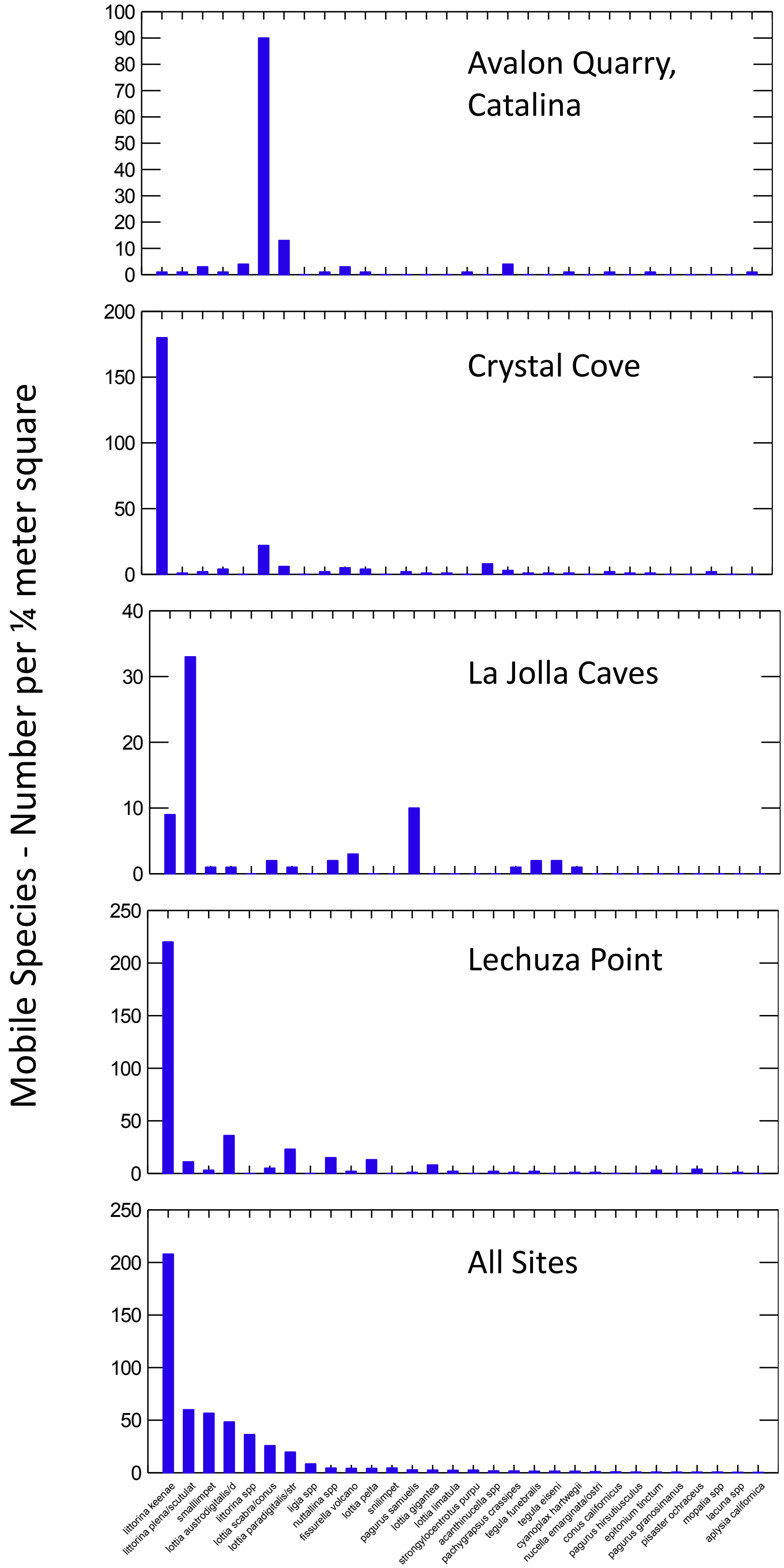


All sites – Mobile Species (most common species)





Percent cover of the most common sessile species across all sites and at the four sites that exceeded the prediction limit (Figure 5). Note differences in scale.



Density of most common mobile species across all sites and at the four sites that exceeded the prediction limit (Figure 5). Note differences in scale.

Appendix 2: Site locations, descriptions, pictures and site specific cover and density of species

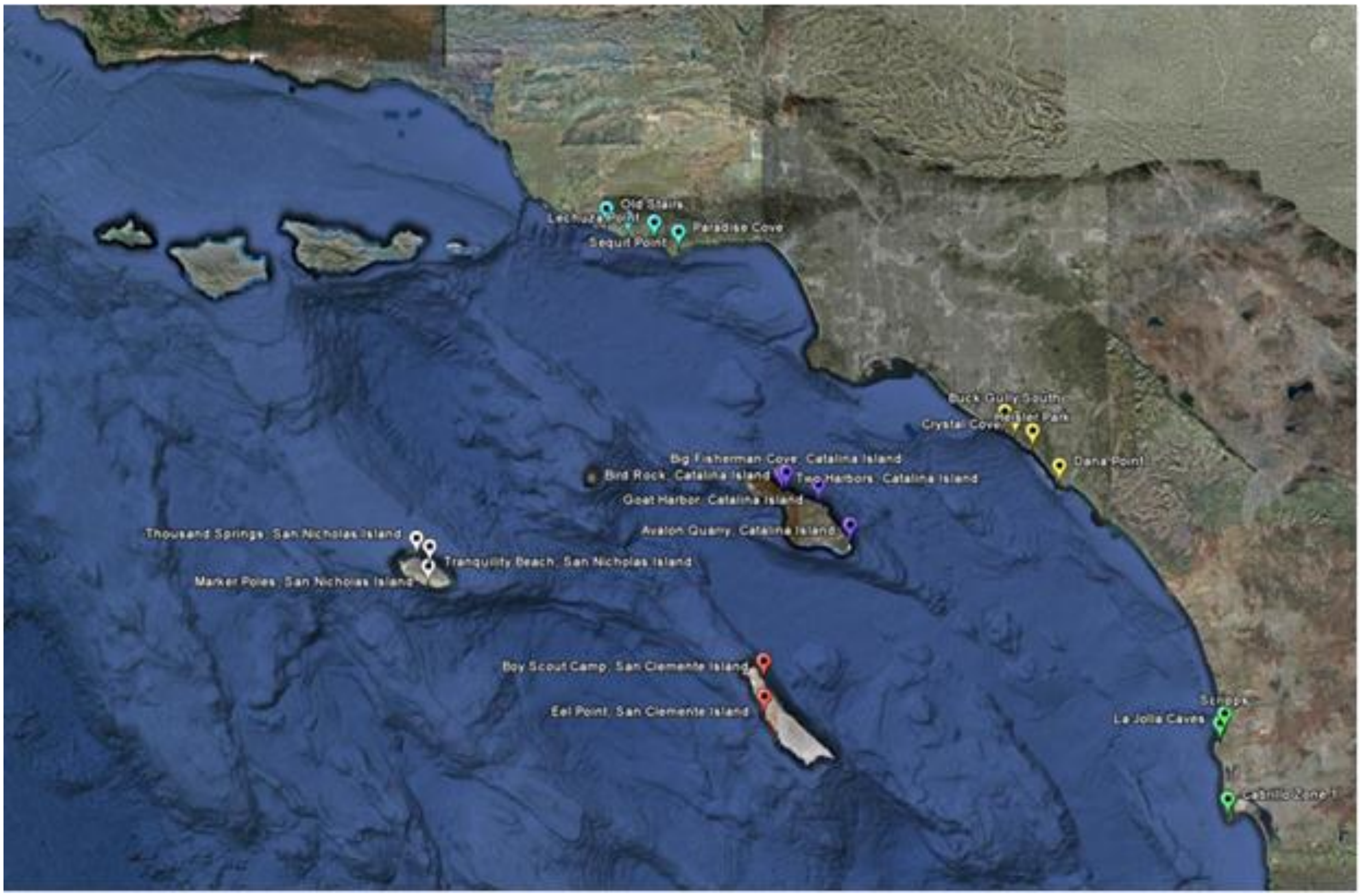


Figure A2-1: locations of ASBS and reference sites

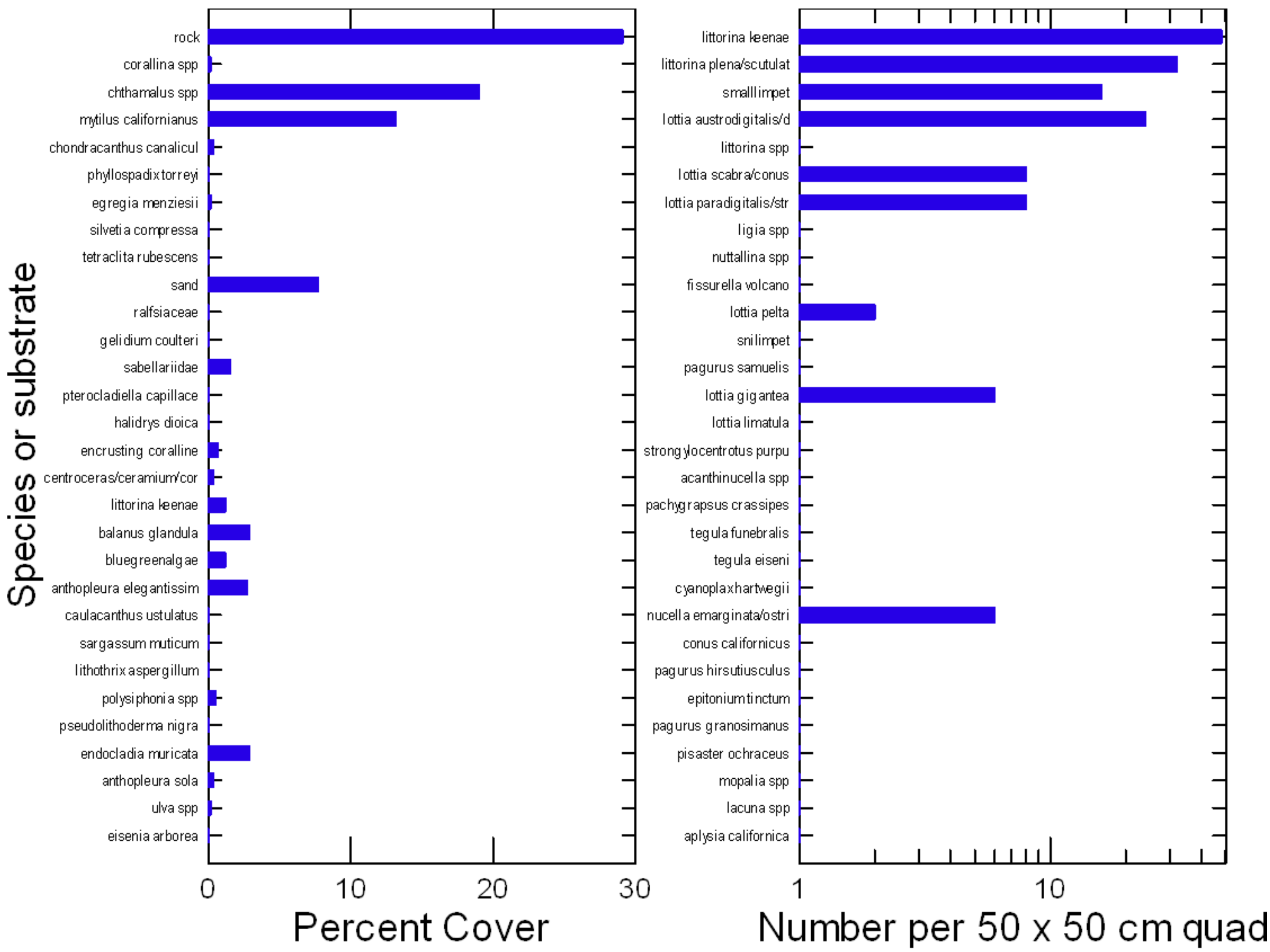
Magu Lagoon to Latigo Point

★ Discharge site in ASBS
■ Reference Site

Old Stairs is comprised of bedrock, boulders and sand with moderate relief. The surrounding coast is made up of boulders and sand. The survey area is divided into two sections. The up coast section is 6 meters wide and 20meters long.

The downcoast section is 21meters wide and 20meters long.

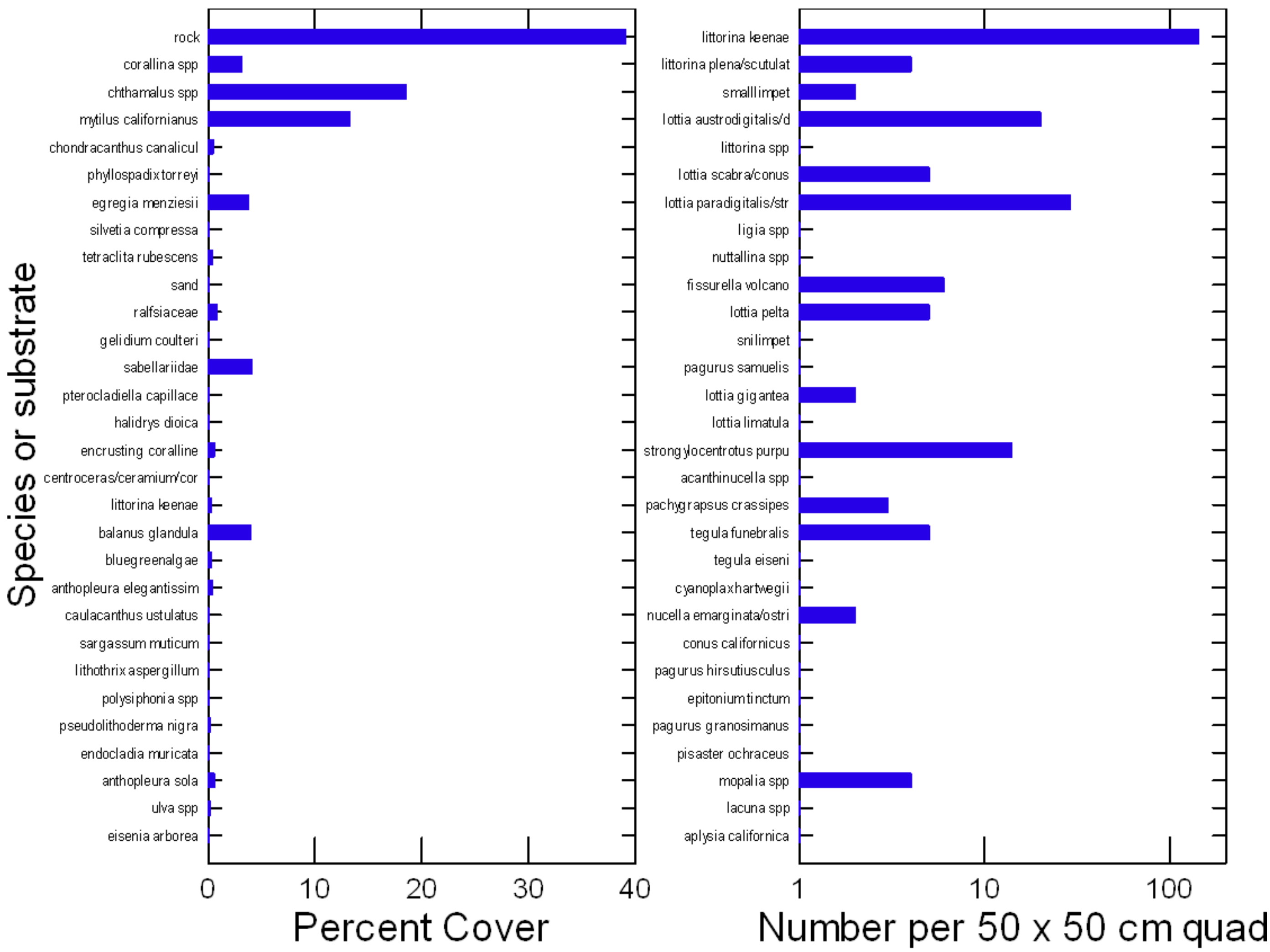
Old Stairs



Percent cover (from point contact surveys) and density (from mobile species surveys). Species order is based on ranking across all sites.

Sequit Point is comprised of bedrock with moderate relief. The surrounding coast is made up of bedrock, boulders and sand. The survey area is 20meters wide and 25meters long.

Sequit Point



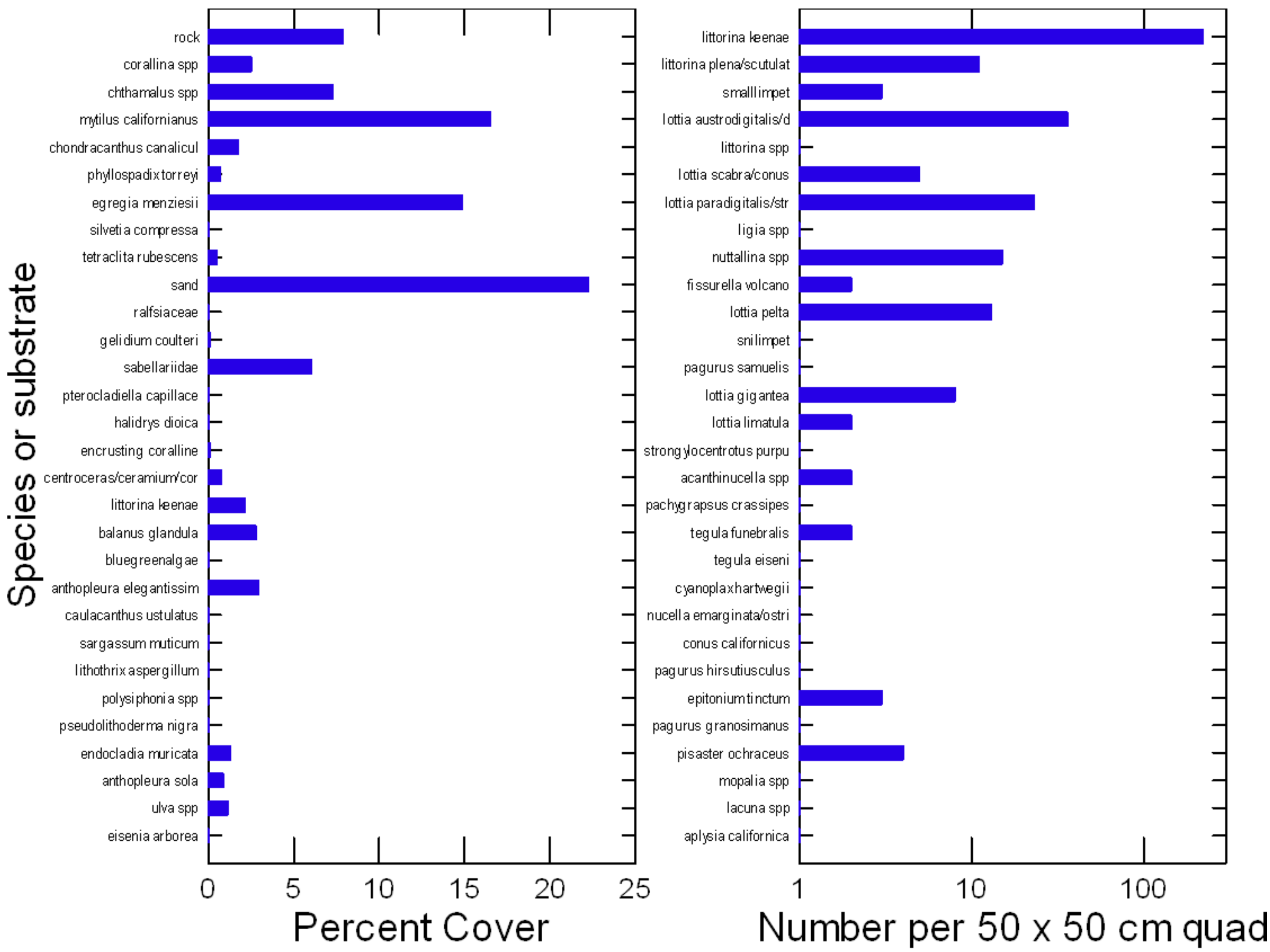
Percent cover (from point contact surveys) and density (from mobile species surveys). Species order is based on ranking across all sites.

Lechuza Point is comprised of bedrock and sand with moderate relief. The surrounding coast is made up of bedrock and sand. The survey area is divided into two sections. The upcoast section is 14meters wide and 45meters long. The biological community at this site differs from that expected based on other sites in the region. It is likely that this is due to the influence of sand burial and scour at the site.

The downcoast section is 4meters wide and 30meters long.

The nearest storm water discharge pipe is 25meters from survey bolt OT1.

Lechuza Point

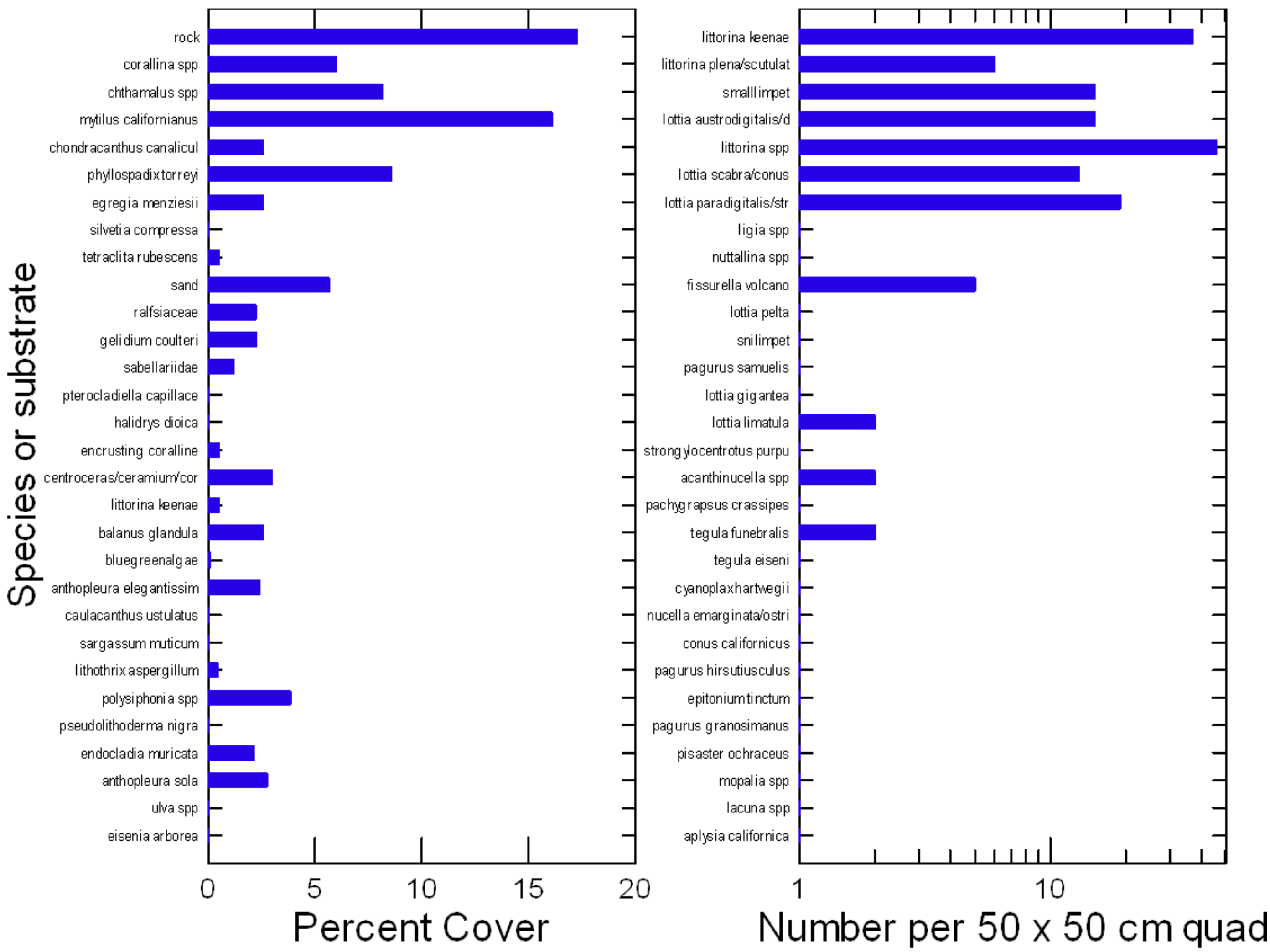


Percent cover (from point contact surveys) and density (from mobile species surveys). Species order is based on ranking across all sites.

Paradise Cove is comprised of bedrock and sand with low relief. The surrounding coast is made up of sand. The survey area is divided into two sections. The upcoast section is 12meters wide and 10meters long. The downcoast section is 15meters wide and 10meters long.

The nearest storm water discharge pipe (MUG379) is approximately 20meters from survey bolt R2.

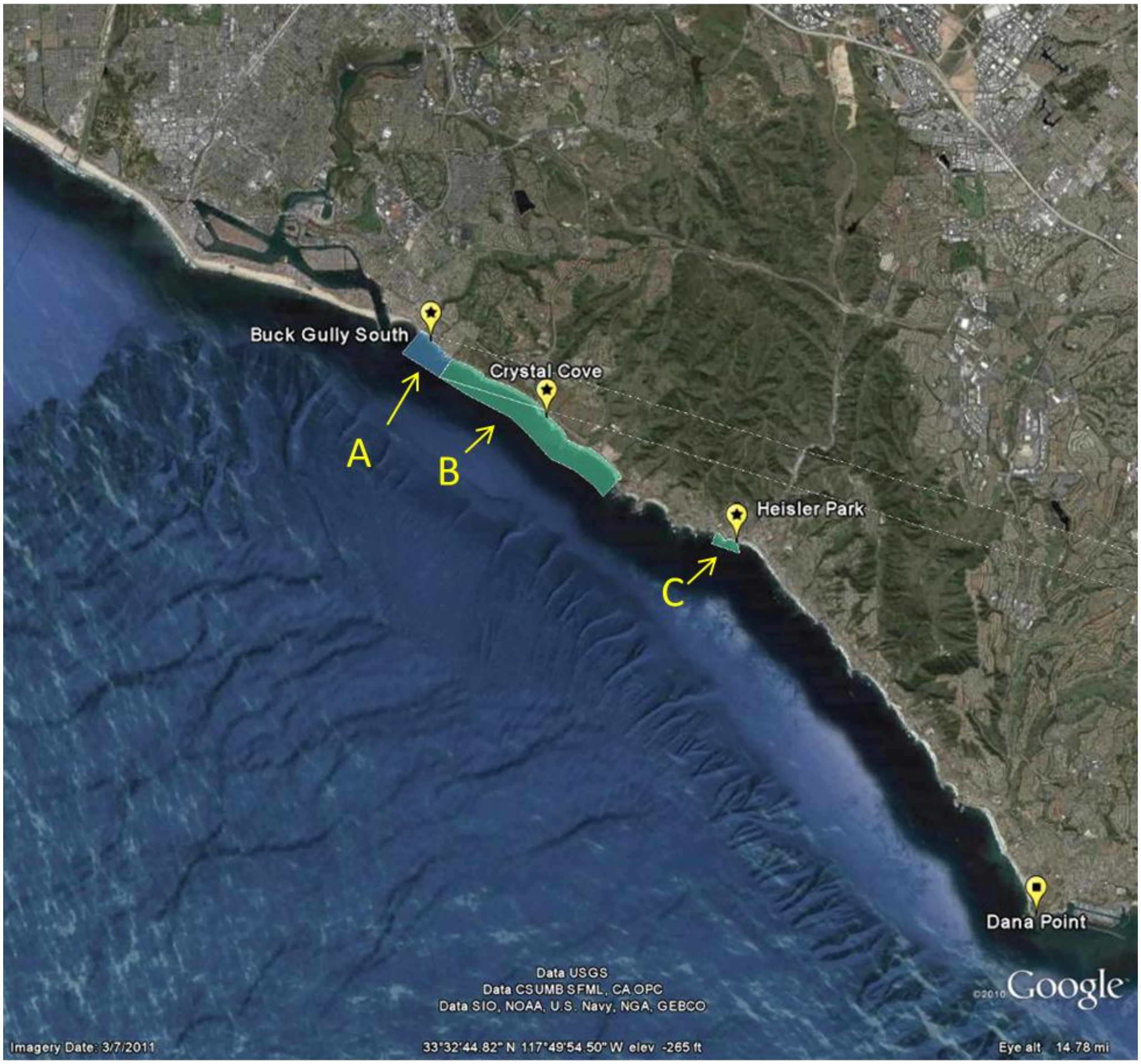
Paradise Cove



Percent cover (from point contact surveys) and density (from mobile species surveys). Species order is based on ranking across all sites.

RB-AR 7112

Newport Beach marine life refuge (A), Irvine Coast marine life refuge (B) and Heisler Park ecologicial reserve (C)



★ Discharge site in ASBS

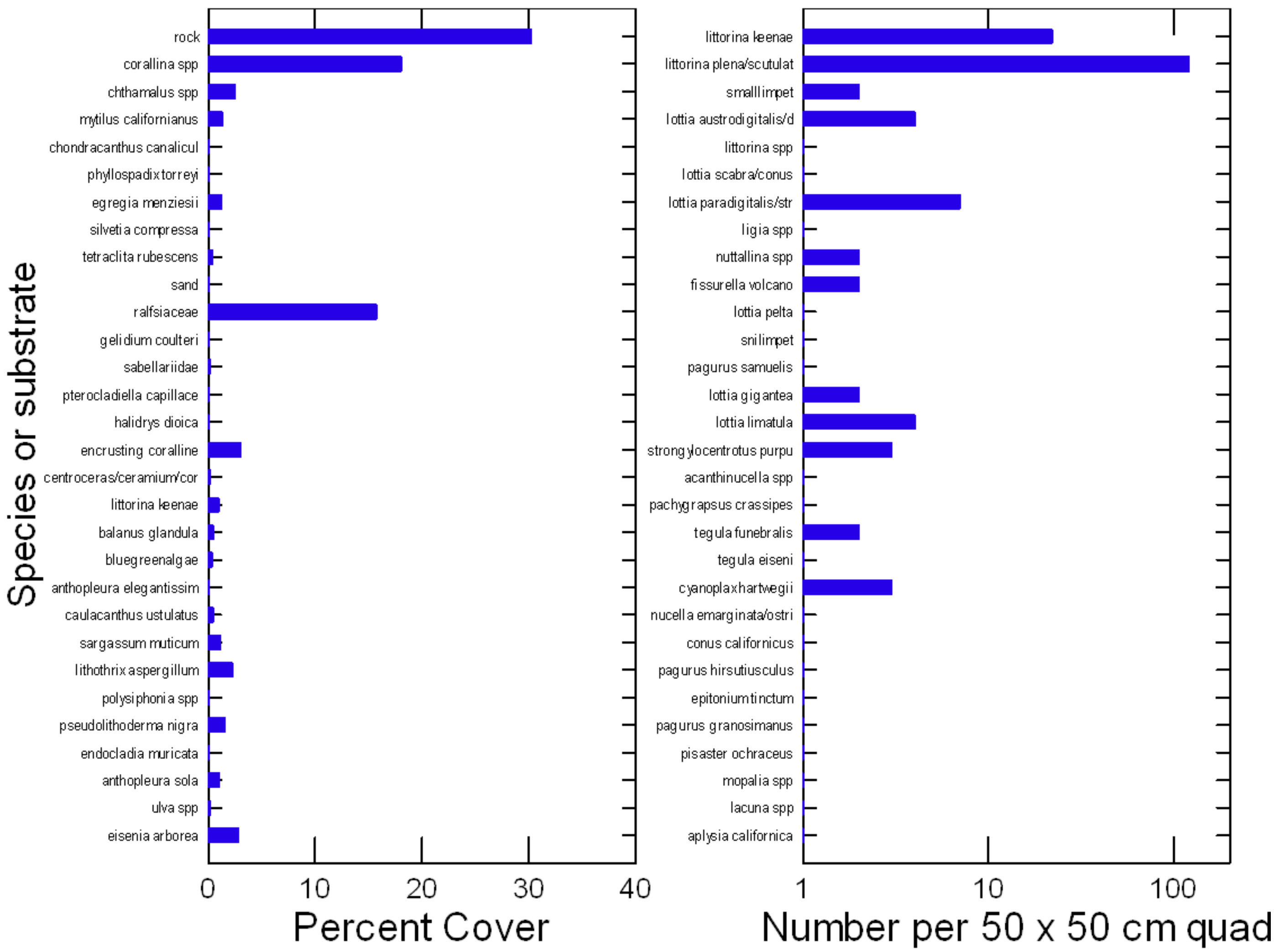
■ Reference Site

Buck Gulley South is comprised of bedrock and boulders with moderate relief. The surrounding coast is made up of bedrock, boulders and sand. The survey area is 30meters wide and 35meters long.

The nearest storm water discharge pipe (NEW016) is 5meters from survey bolt OT2.

RB-AR 7114

Buck Gully, south

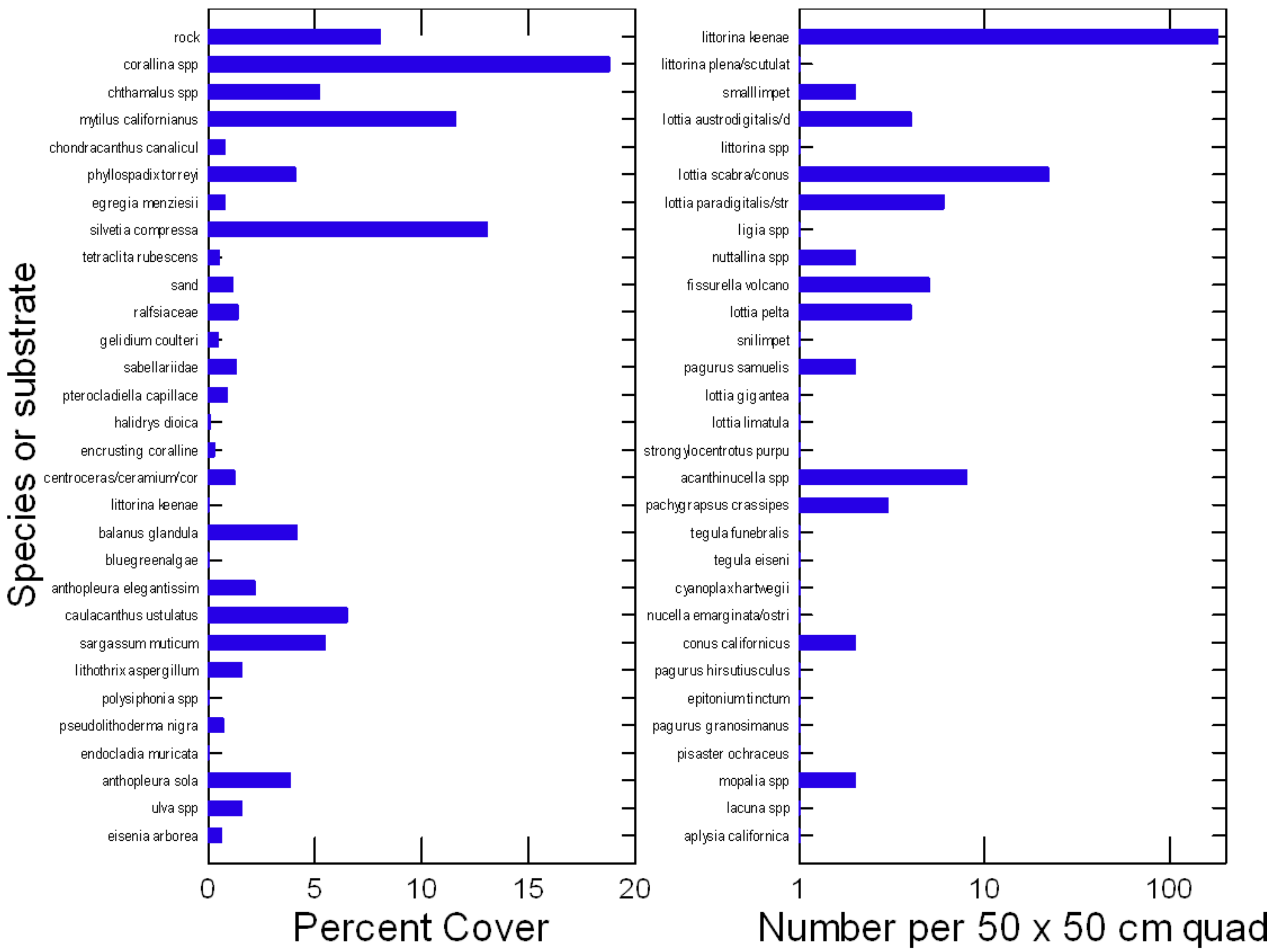


Percent cover (from point contact surveys) and density (from mobile species surveys). Species order is based on ranking across all sites.

RB-AR 7115

Crystal Cove is comprised of bedrock with low relief. The surrounding coast is made up of bedrock, boulders and sand. The survey area is 30meters wide and 35meters long. There is some sand influence at this site. The biological community, particularly mobile species differed considerably from that expected based on other sites in the region.

Crystal Cove

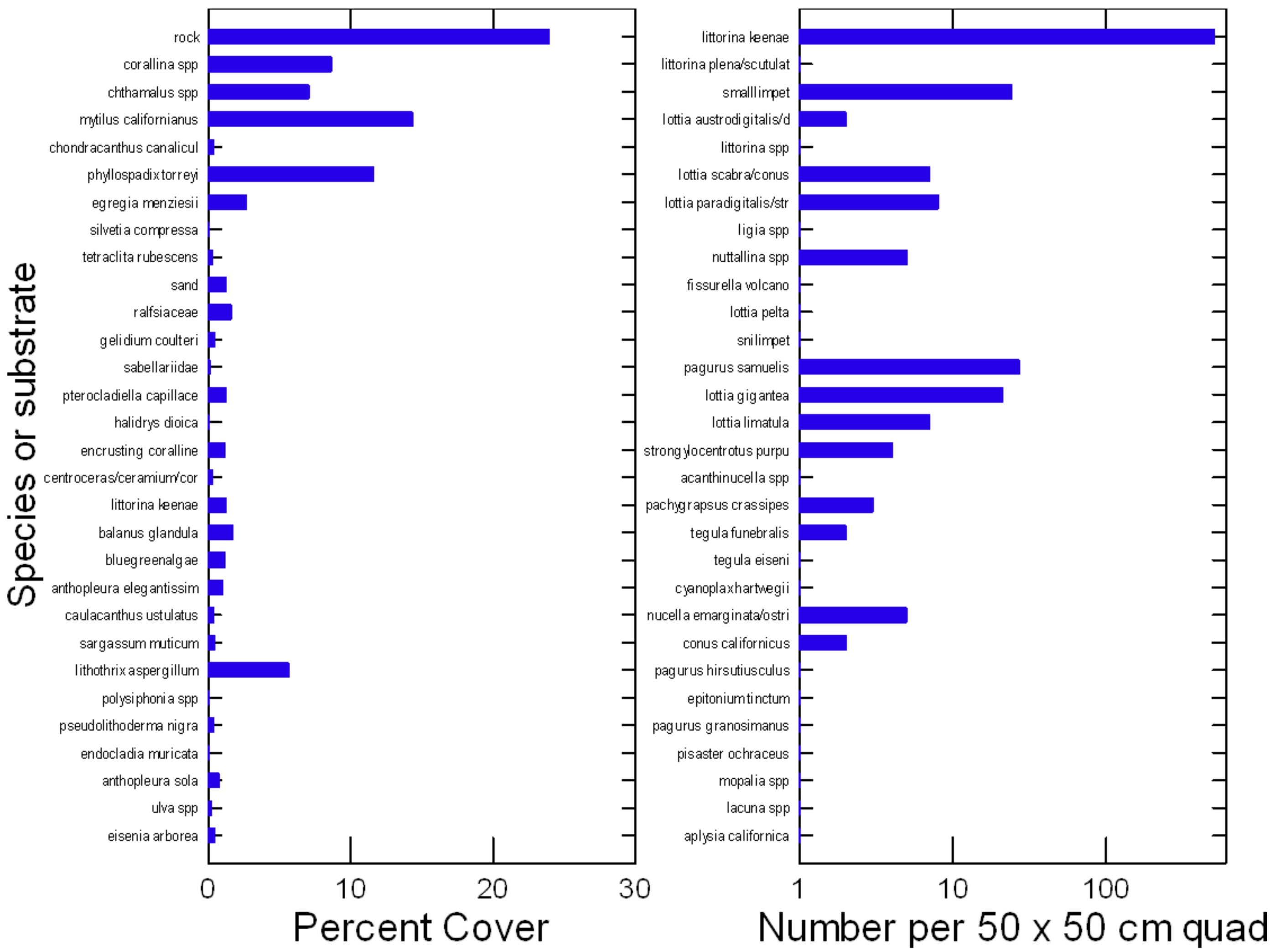


Percent cover (from point contact surveys) and density (from mobile species surveys). Species order is based on ranking across all sites.

Heisler Park is comprised of bedrock and sand with moderate relief. The surrounding coast is made up of bedrock, boulders and sand. The survey area is 20meters wide and 35meters long.

The nearest storm water discharge pipe (HSL013) is 52meters from survey bolt OT1.

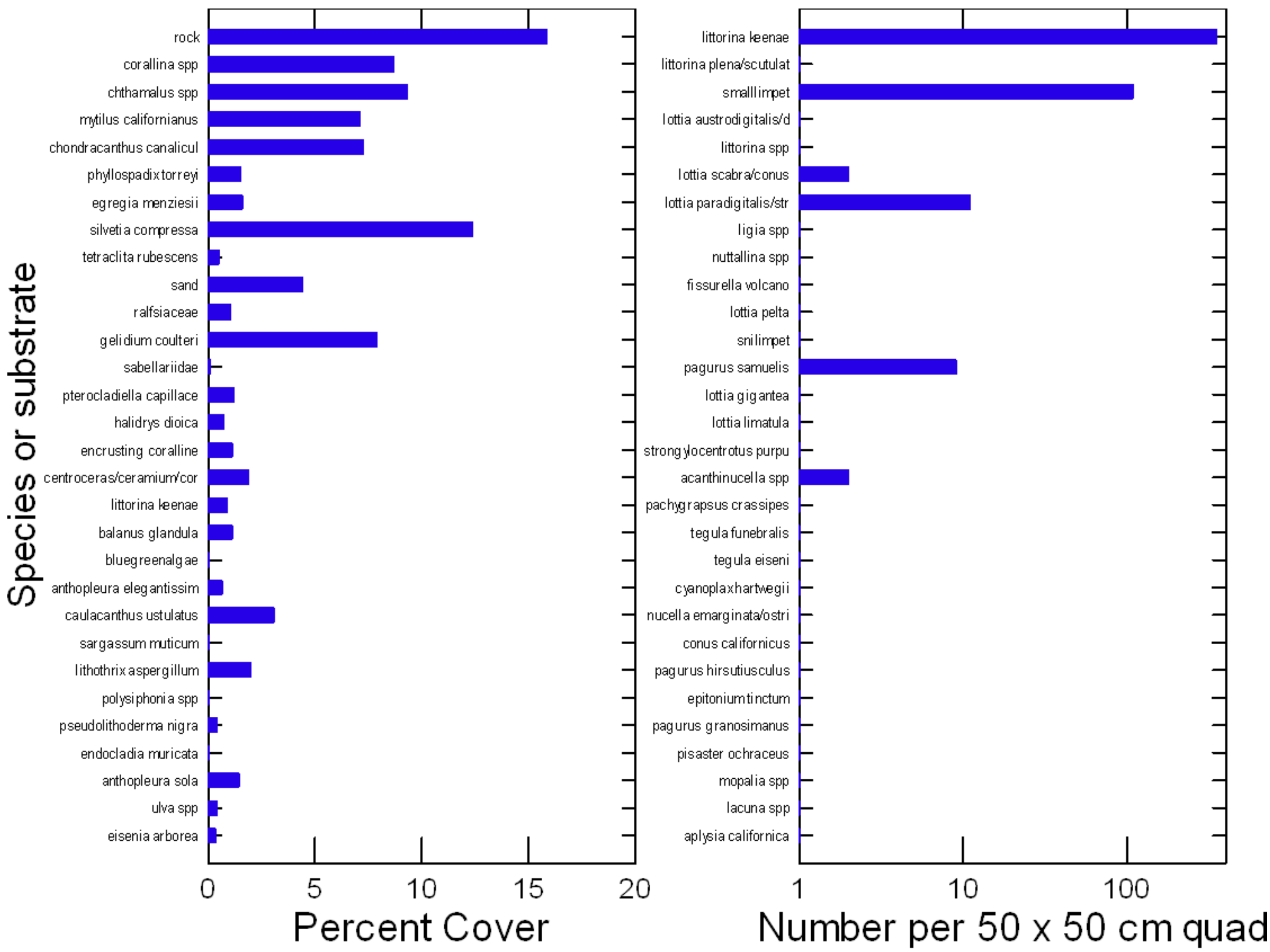
Heisler Park



Percent cover (from point contact surveys) and density (from mobile species surveys). Species order is based on ranking across all sites.

Dana Point is comprised of bedrock and boulders with moderate relief. The surrounding coast is made up of bedrock, boulders and sand. The survey area is 30meters wide and 29meters long.

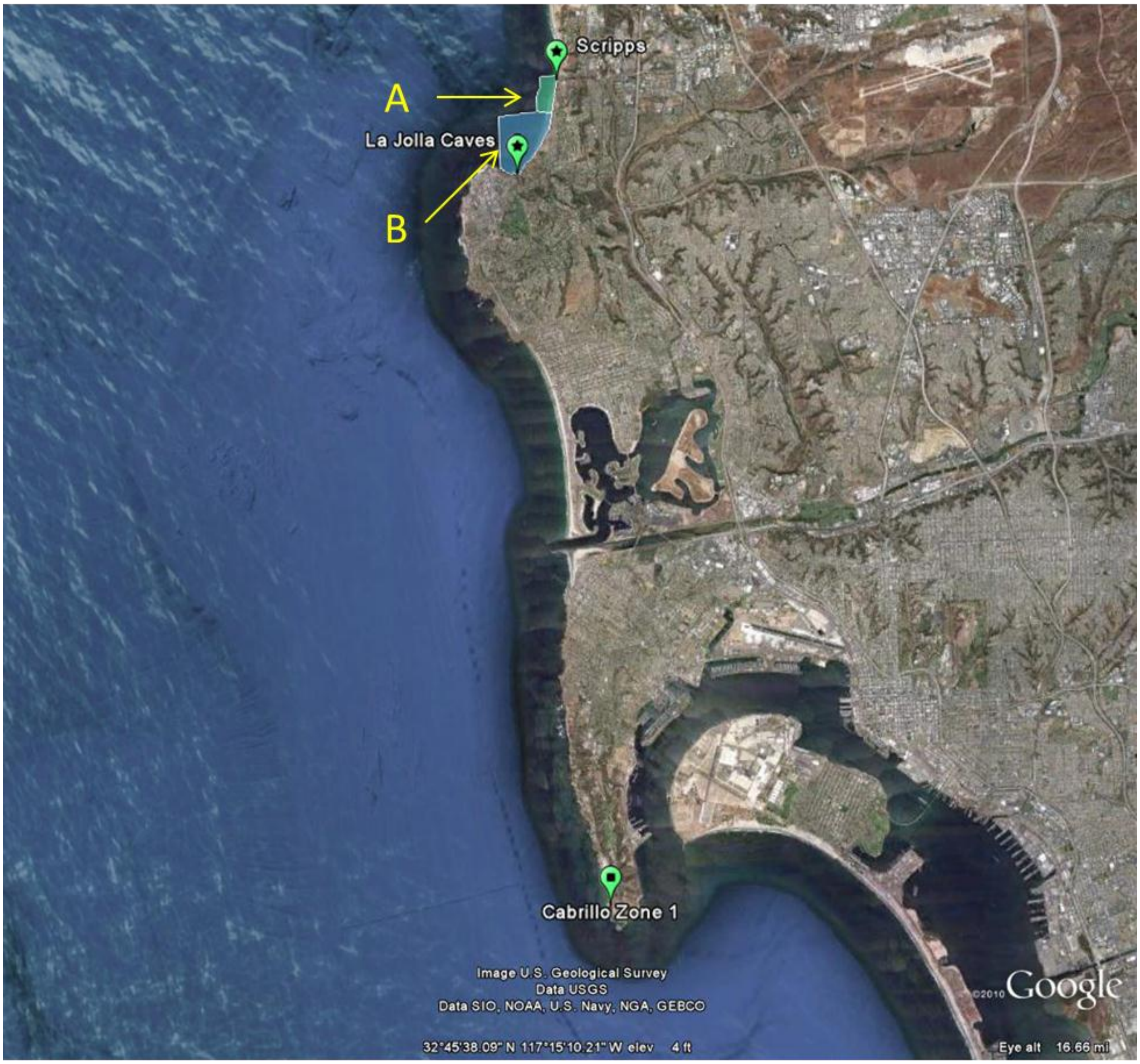
Dana Point



Percent cover (from point contact surveys) and density (from mobile species surveys). Species order is based on ranking across all sites.

RB-AR 7121

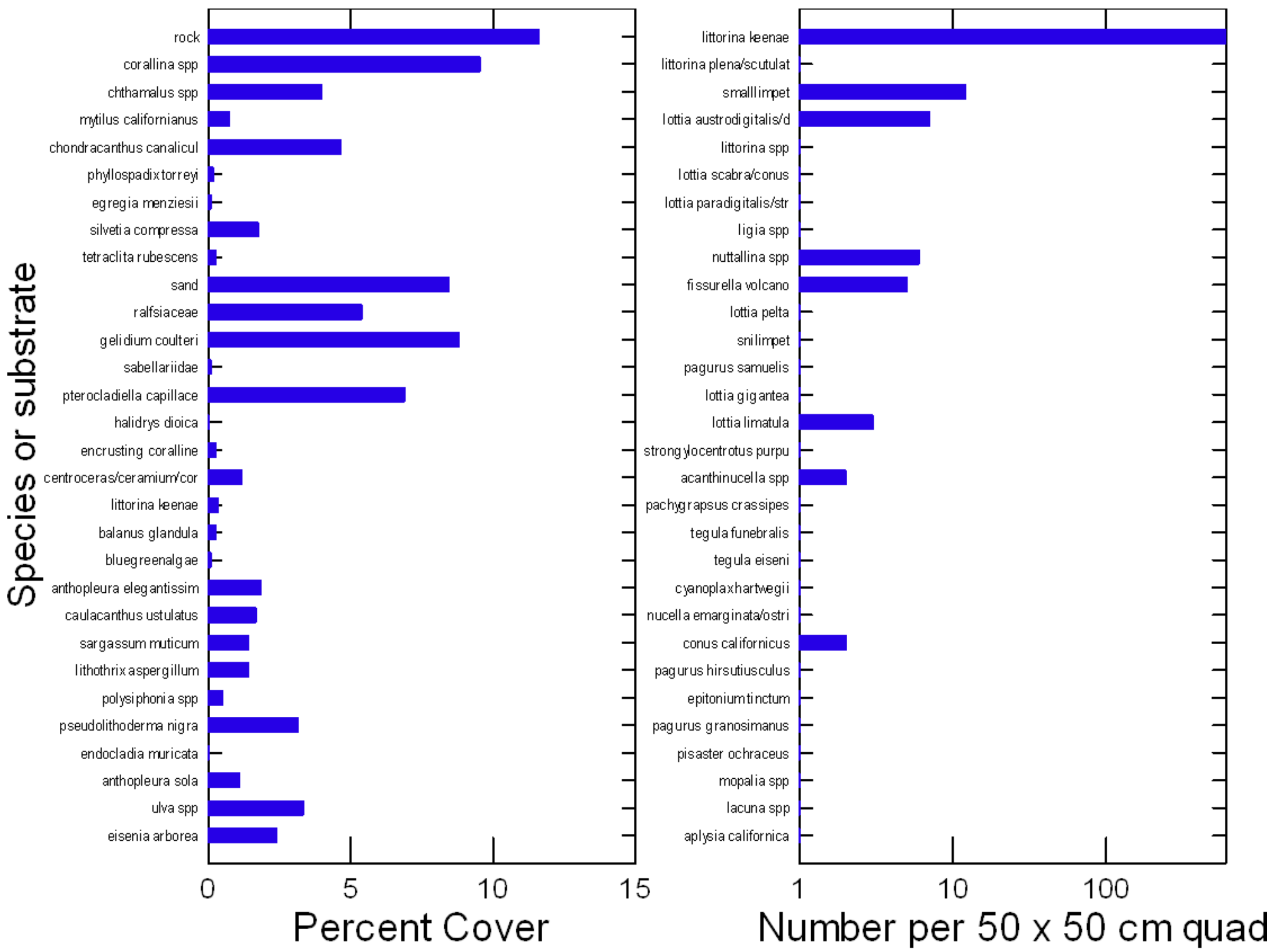
San Diego marine Life reserve (A) and San Diego-La Jolla ecological reserve (B)



★ Discharge site in ASBS
■ Reference Site

Scripps is comprised of bedrock, boulders and sand with moderate relief. The surrounding coast is made up of boulders and sand. The survey area is 29.6meters wide and 45meters long.

Scripps

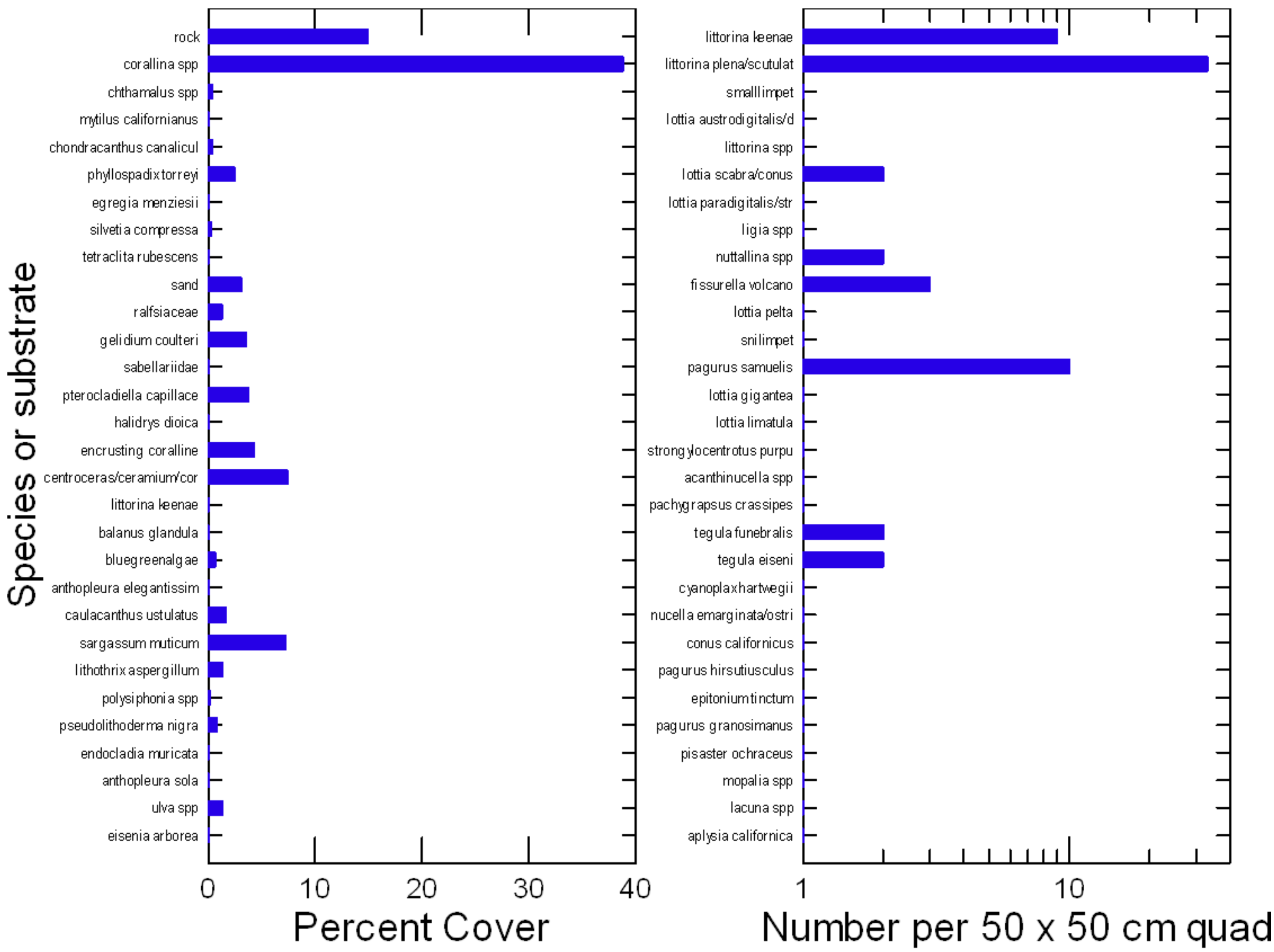


Percent cover (from point contact surveys) and density (from mobile species surveys). Species order is based on ranking across all sites.

La Jolla Caves is comprised of bedrock, boulders and sand with low relief. The surrounding coast is made up of boulders, cobble and sand. The survey area is 30meters wide and 50meters long. This site differed greatly from expected based on other sites in the region.

The nearest storm water discharge pipe (SDL186) is approximately 50meters from survey bolt OT1.

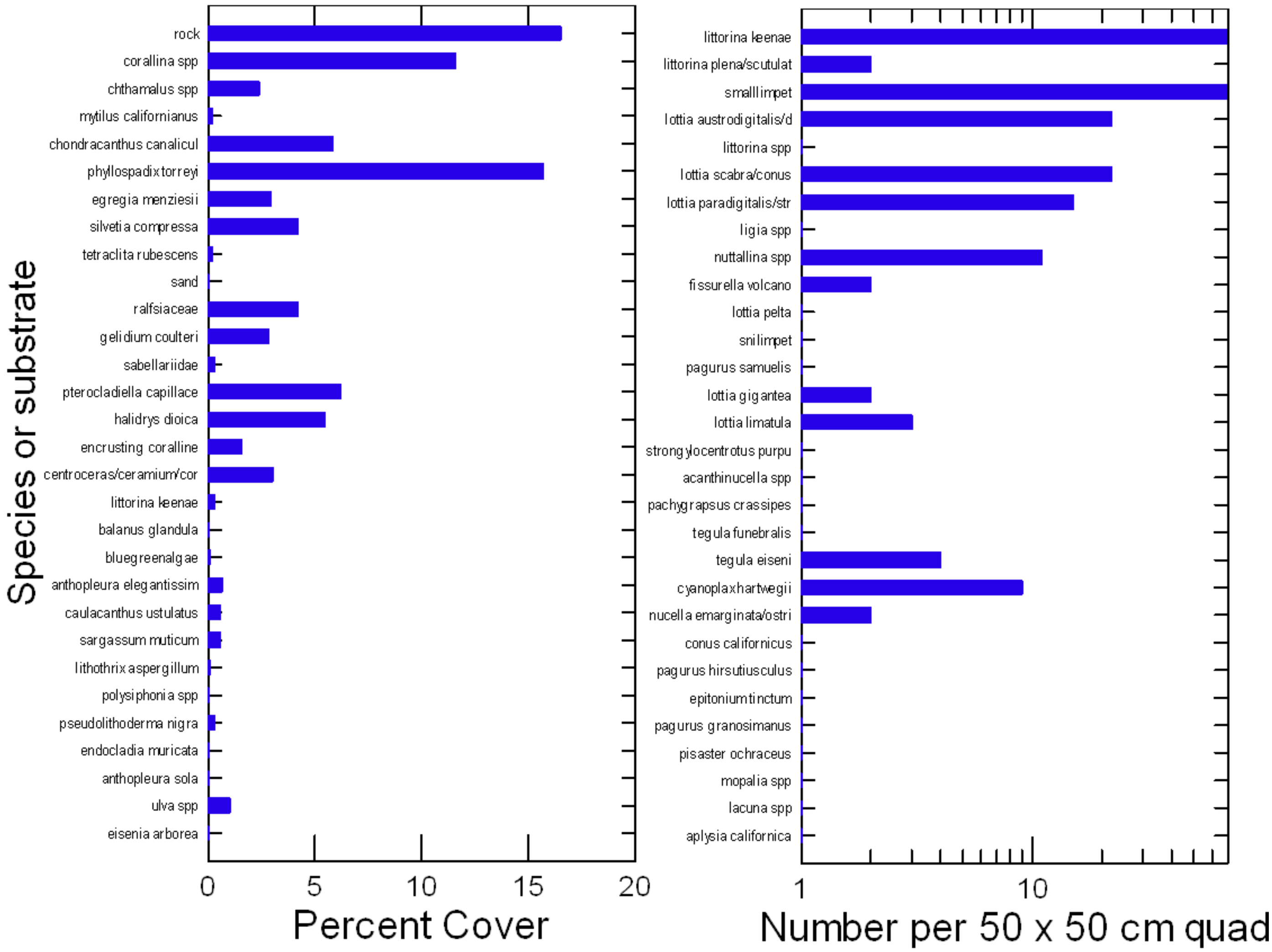
La Jolla Caves



Percent cover (from point contact surveys) and density (from mobile species surveys). Species order is based on ranking across all sites.

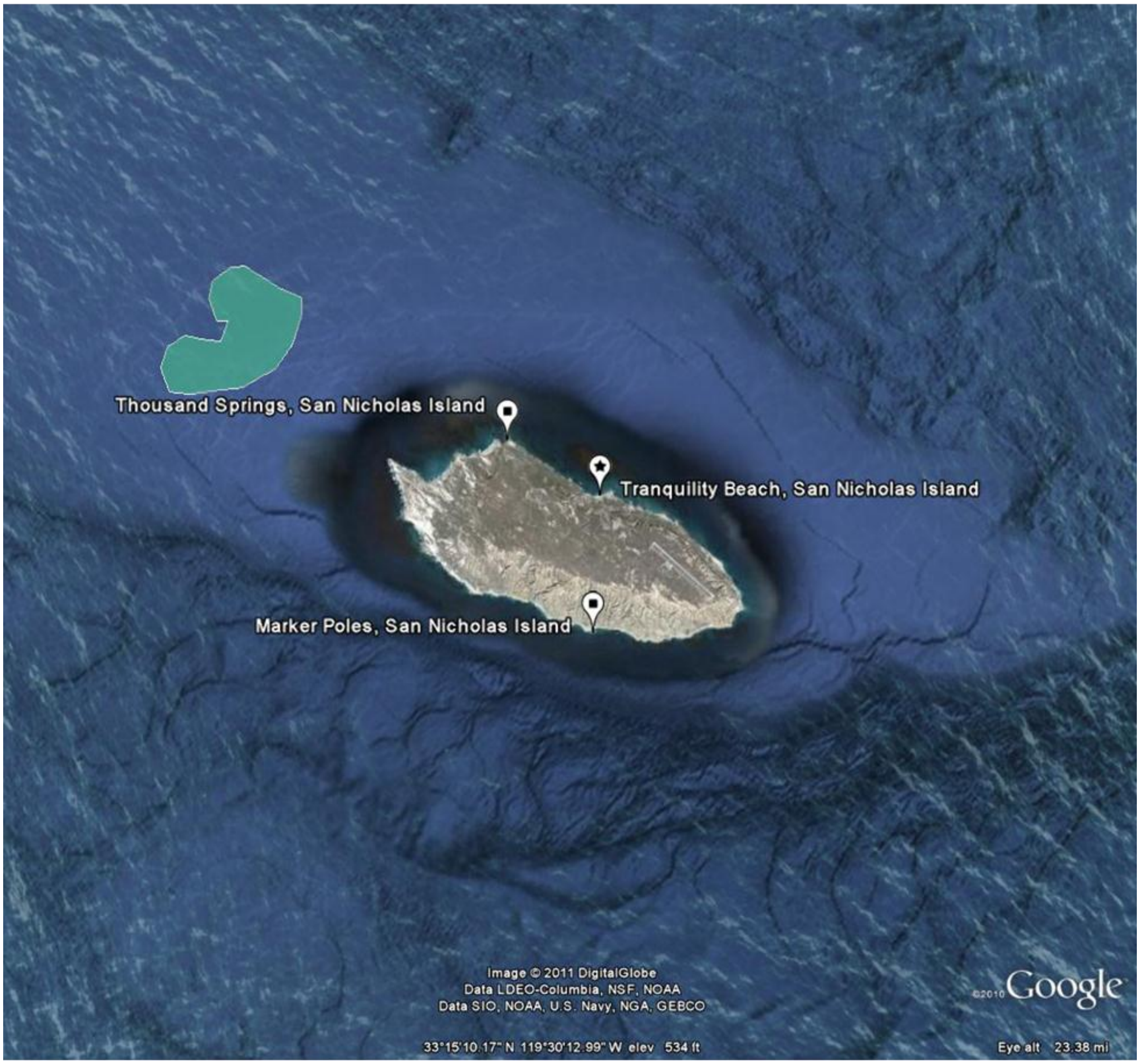
Cabrillo Zone I is comprised of bedrock and boulders with moderate relief. The surrounding coast is made up of bedrock, boulders and sand. The survey area is 30meters wide and 40meters long.

Cabrillo Zone I



Percent cover (from point contact surveys) and density (from mobile species surveys). Species order is based on ranking across all sites.

San Nicolas Island



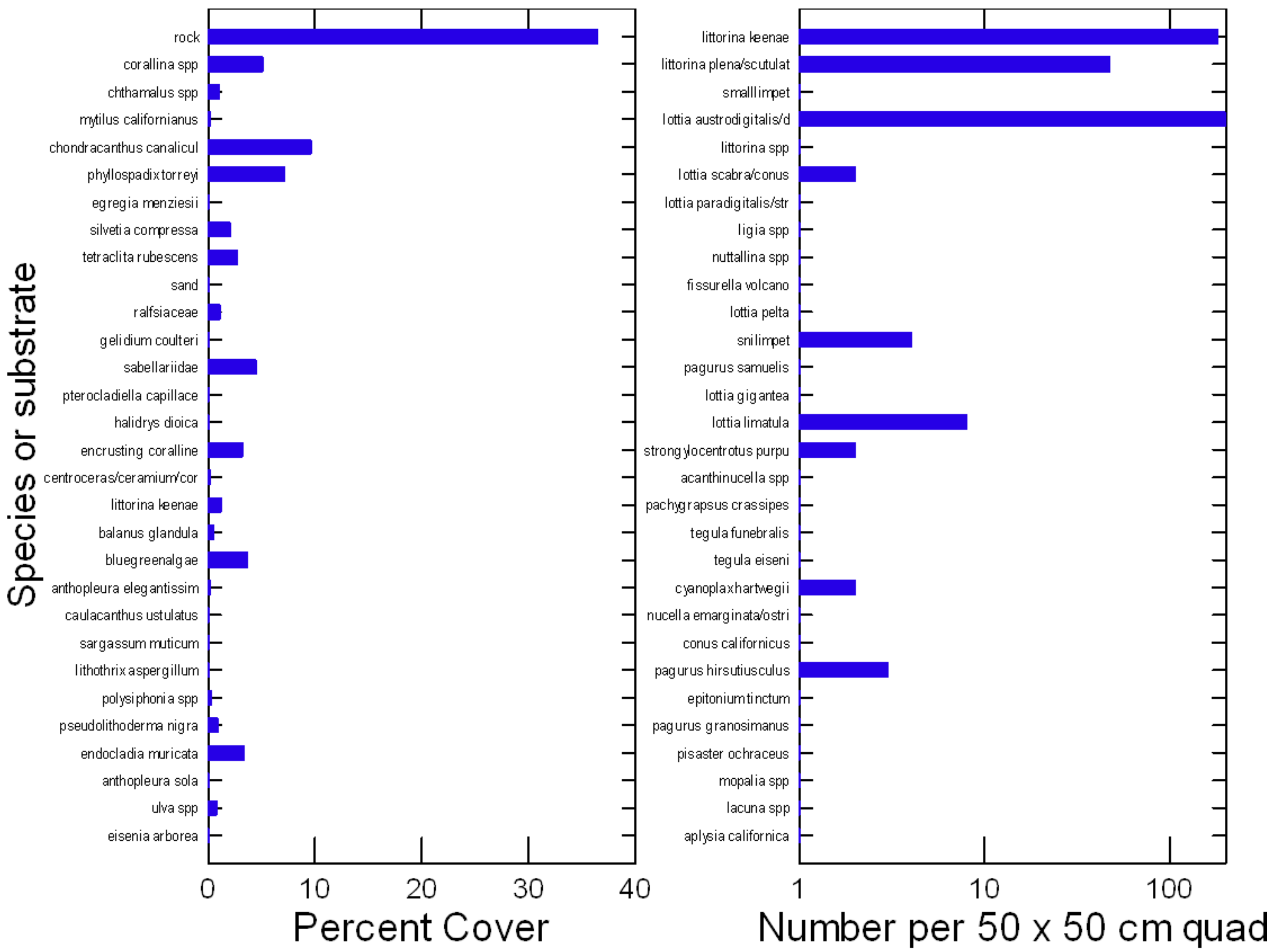
★ Discharge site in ASBS

■ Reference Site

RB-AR 7129

Thousand Springs is comprised of bedrock and boulders with moderate relief. The surrounding coast is made up of bedrock, boulders and sand. The survey area is 20meters wide and 10meters long.

Thousand Springs



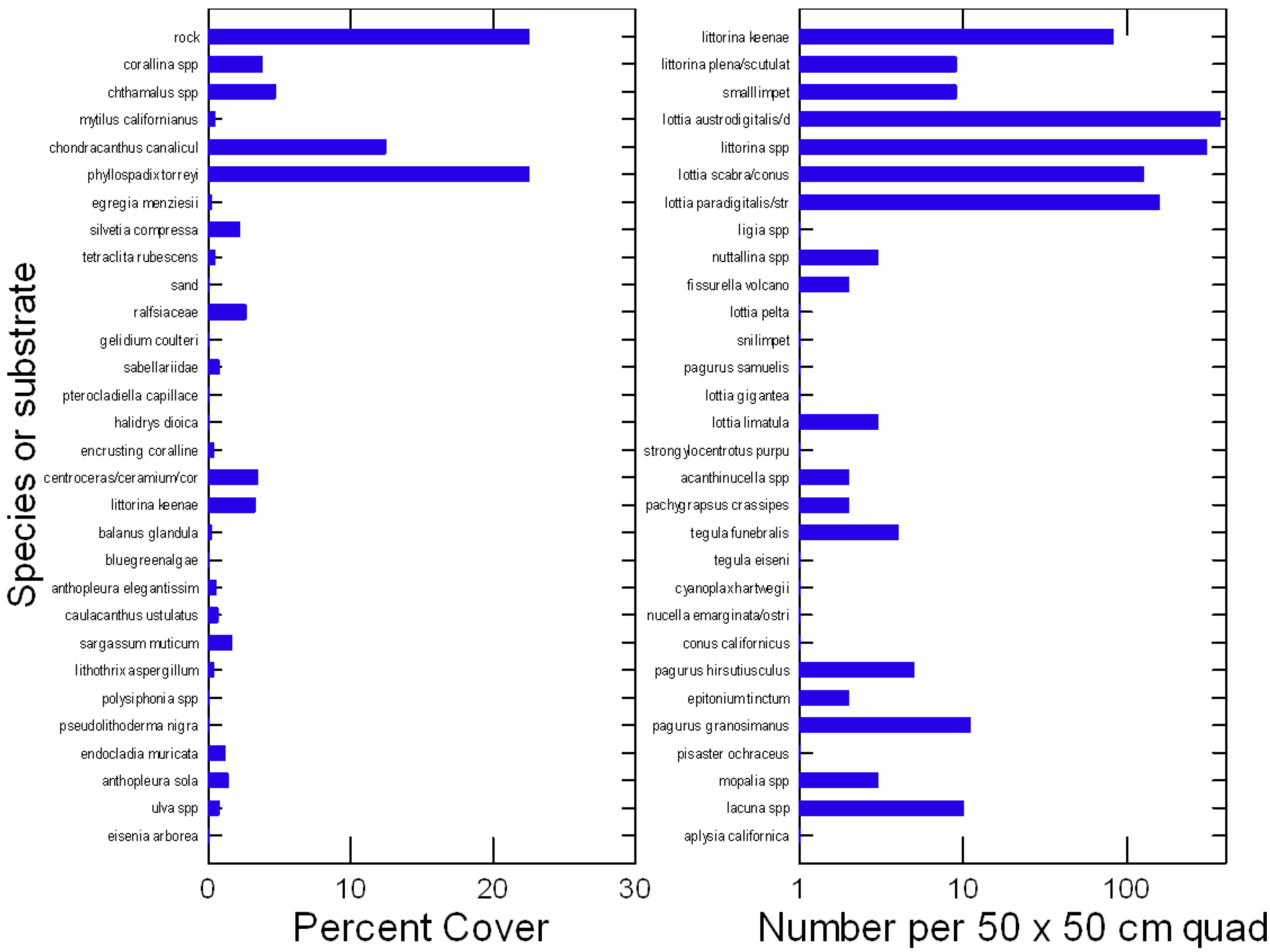
Percent cover (from point contact surveys) and density (from mobile species surveys). Species order is based on ranking across all sites.

Tranquility Beach is comprised of bedrock with moderate relief. The surrounding coast is made up of bedrock, boulders and sand. The survey area is 20meters wide and 40meters long.

The nearest storm water discharge is approximately 100meters from survey bolt OT1.

RB-AR 7132

Tranquility Beach

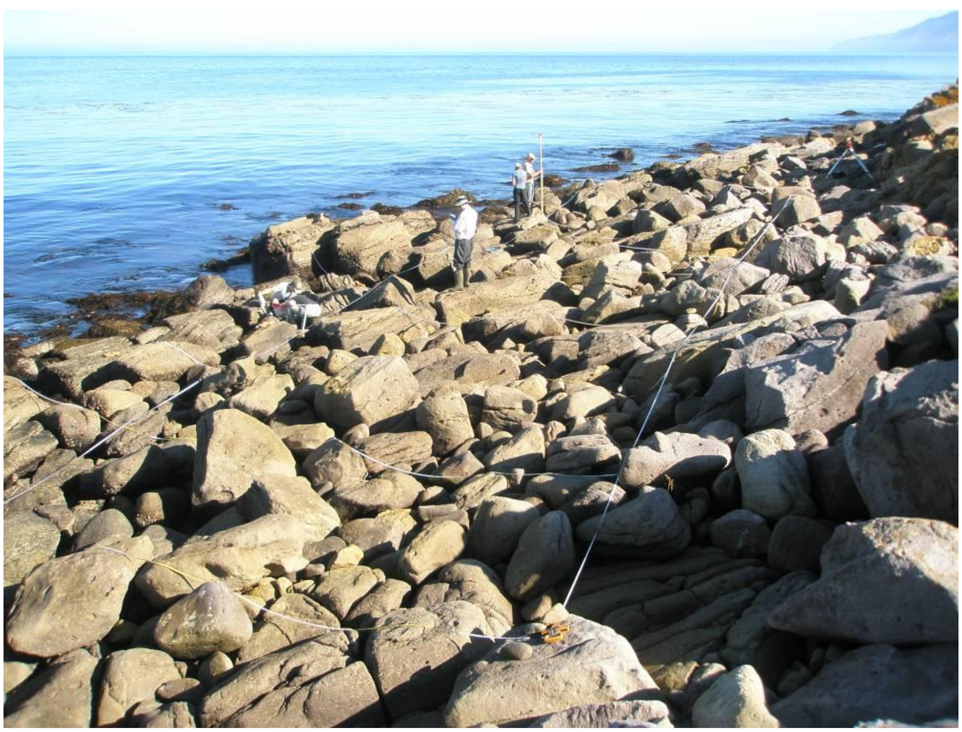


Percent cover (from point contact surveys) and density (from mobile species surveys). Species order is based on ranking across all sites.

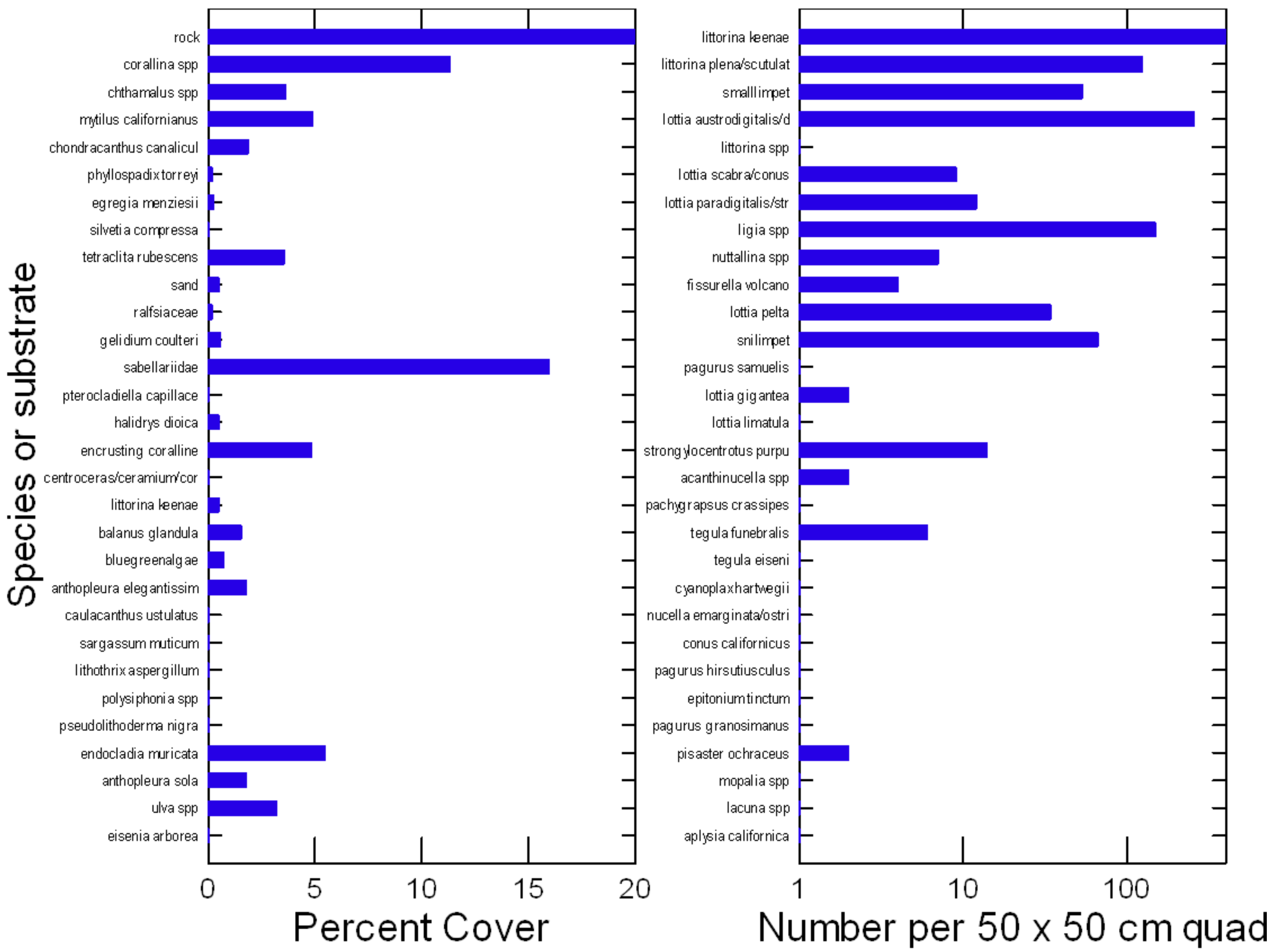
RB-AR 7133

Marker Poles is comprised of bedrock with moderate relief. The surrounding coast is made up of bedrock and sand. The survey area is 30meters wide and 40meters long.

Boy Scout Camp is comprised of bedrock and boulders with moderate relief. The surrounding coast is made up of bedrock and boulders. The survey area is 30meters wide and 15meters long.



Marker Poles



Percent cover (from point contact surveys) and density (from mobile species surveys). Species order is based on ranking across all sites.

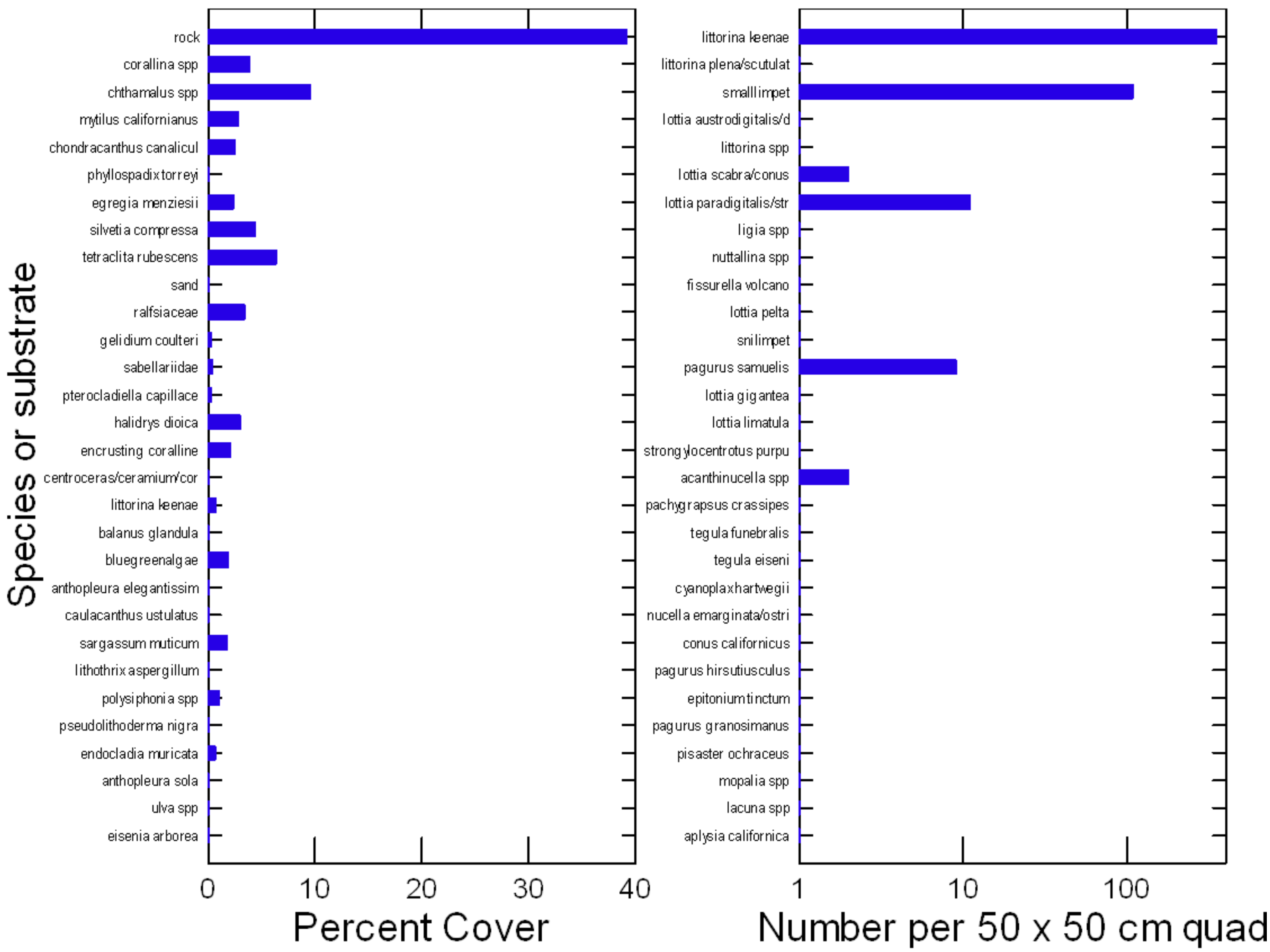
San Clemente Island

★ Discharge site in ASBS

■ Reference Site

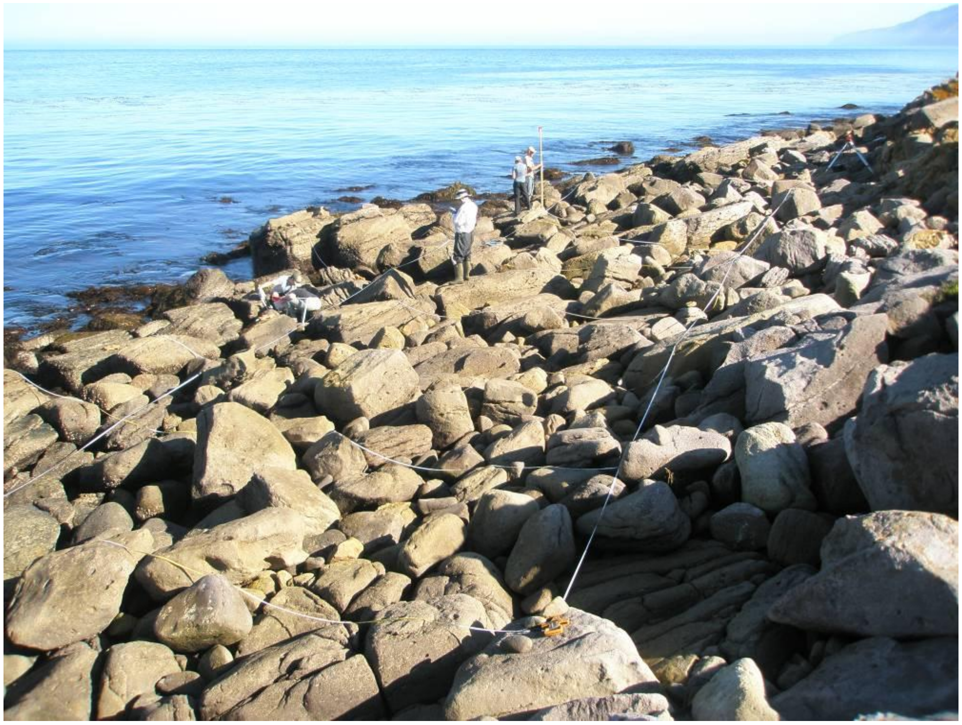
Eel Point is comprised of bedrock with moderate relief. The surrounding coast is made up of bedrock and boulders. The survey area is 20meters wide and 25meters long.

Eel Point

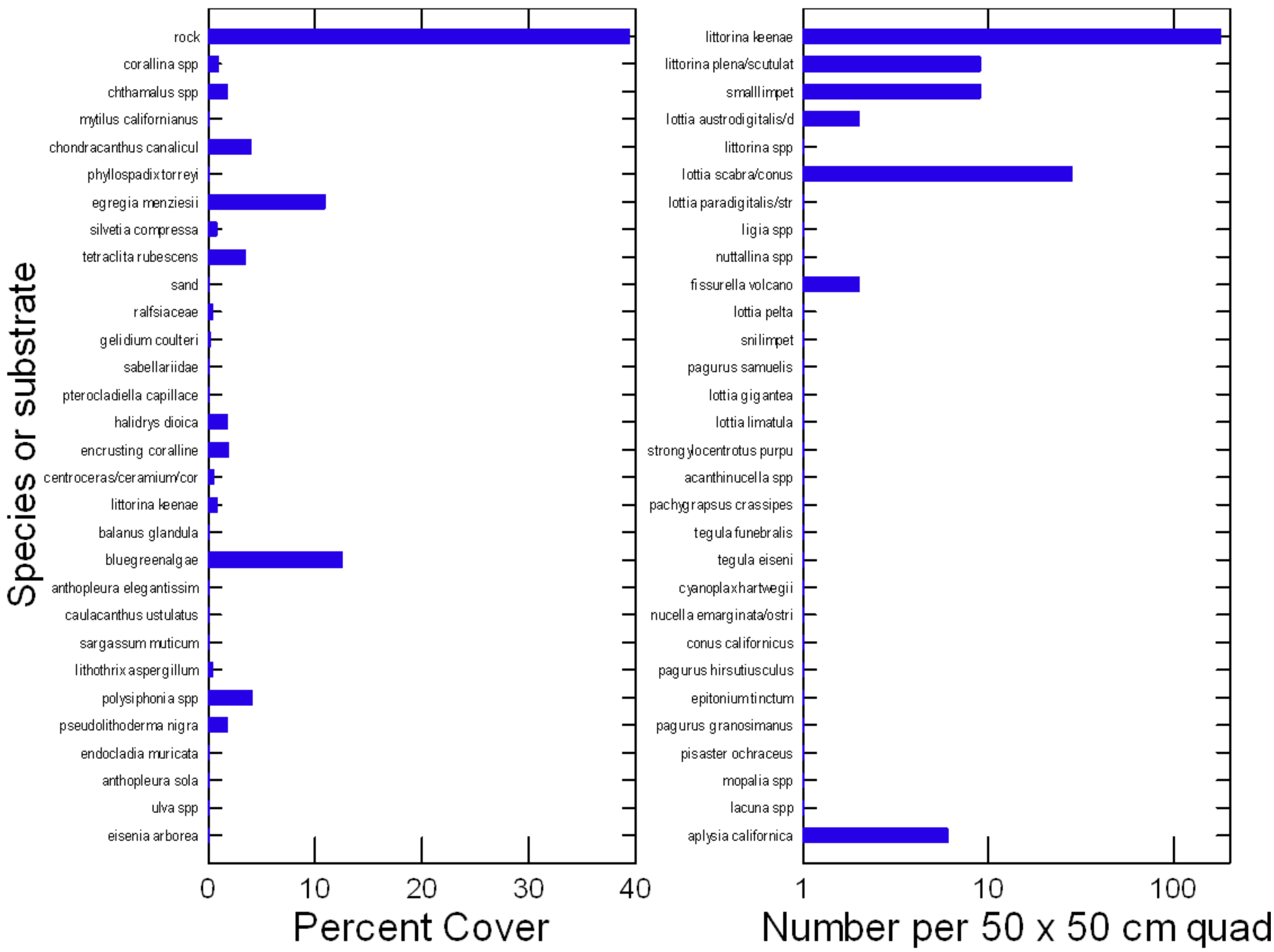


Percent cover (from point contact surveys) and density (from mobile species surveys). Species order is based on ranking across all sites.

Boy Scout Camp is comprised of bedrock and boulders with moderate relief. The surrounding coast is made up of bedrock and boulders. The survey area is 30meters wide and 15meters long.



Boy Scout Camp



Percent cover (from point contact surveys) and density (from mobile species surveys). Species order is based on ranking across all sites.

RB-AR 7140

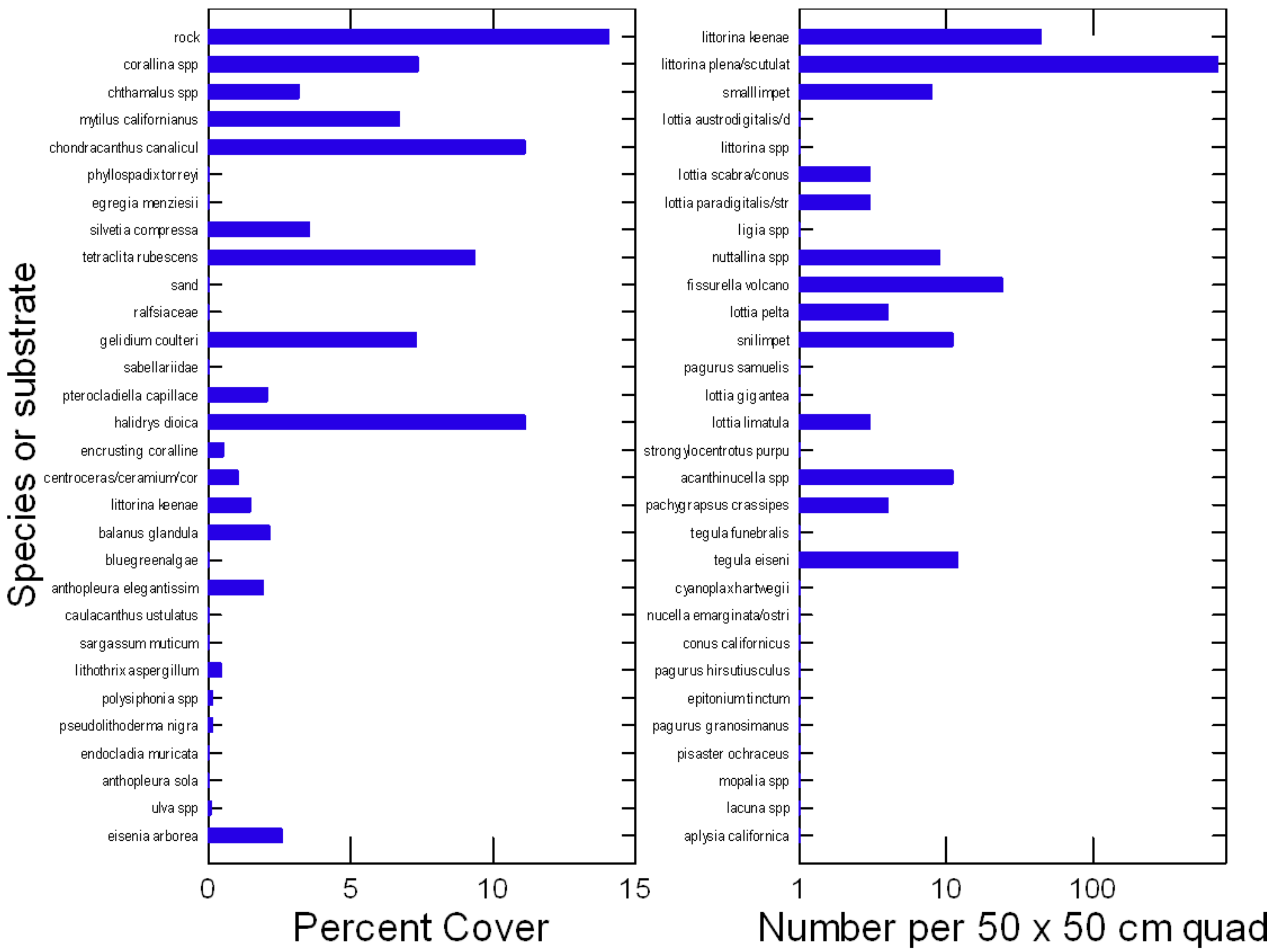
Santa Catalina Island

★ Discharge site in ASBS

■ Reference Site

Bird Rock is comprised of bedrock with moderate relief. The surrounding coast is made up of bedrock and boulders. The survey area is 30meters wide and 13meters long.

Bird Rock



Percent cover (from point contact surveys) and density (from mobile species surveys). Species order is based on ranking across all sites.

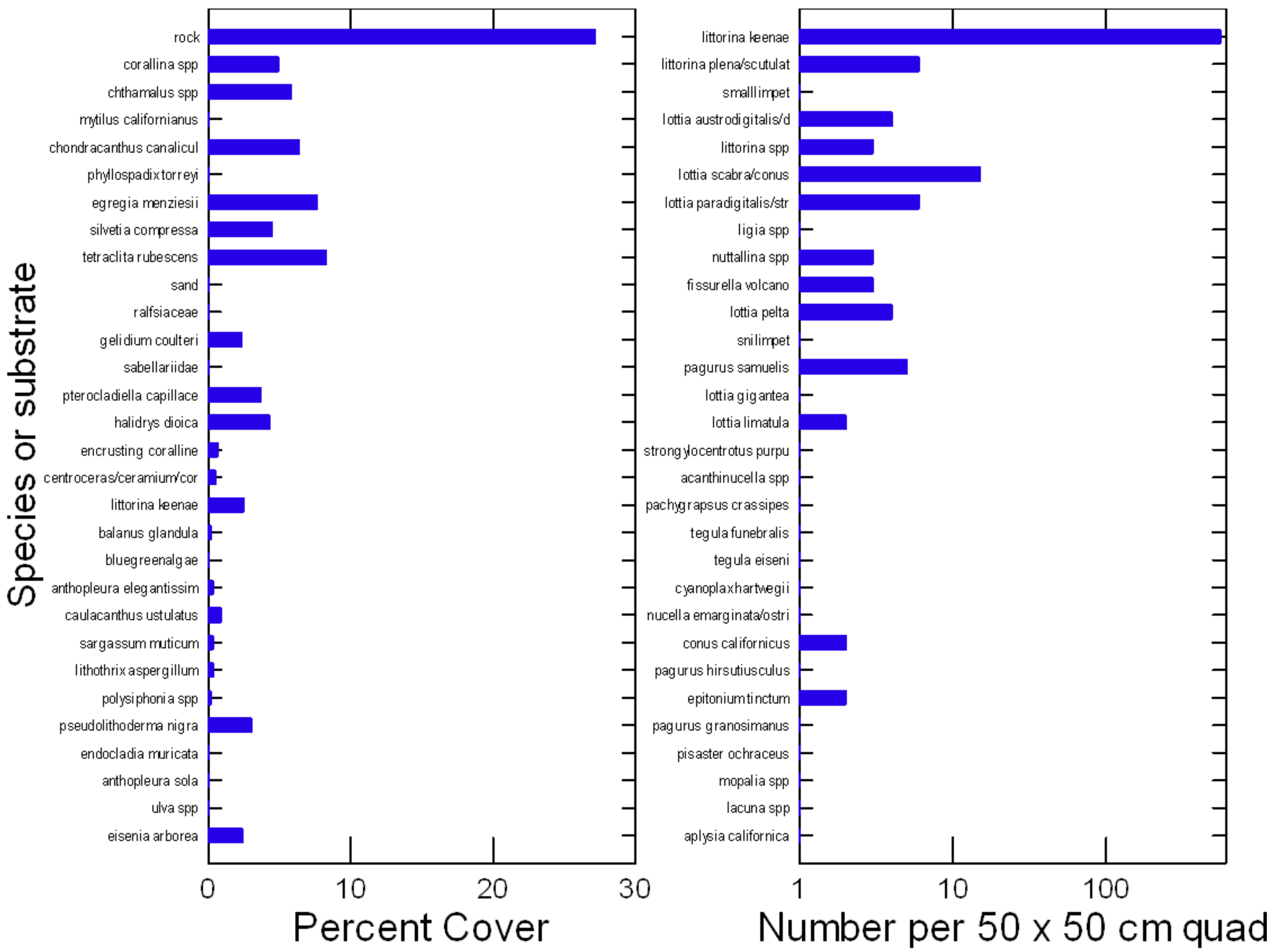
RB-AR 7143

Big Fisherman Cove is comprised of bedrock with moderate relief. The surrounding coast is made up of bedrock and boulders. The survey area is divided into two sections. The upcoast section is 8meters wide and 11meters long.

The downcoast section is 10meters wide and 12meters long. The nearest storm water discharge is approximately 100meters from survey bolt OT6.

RB-AR 7144

Big Fisherman Cove

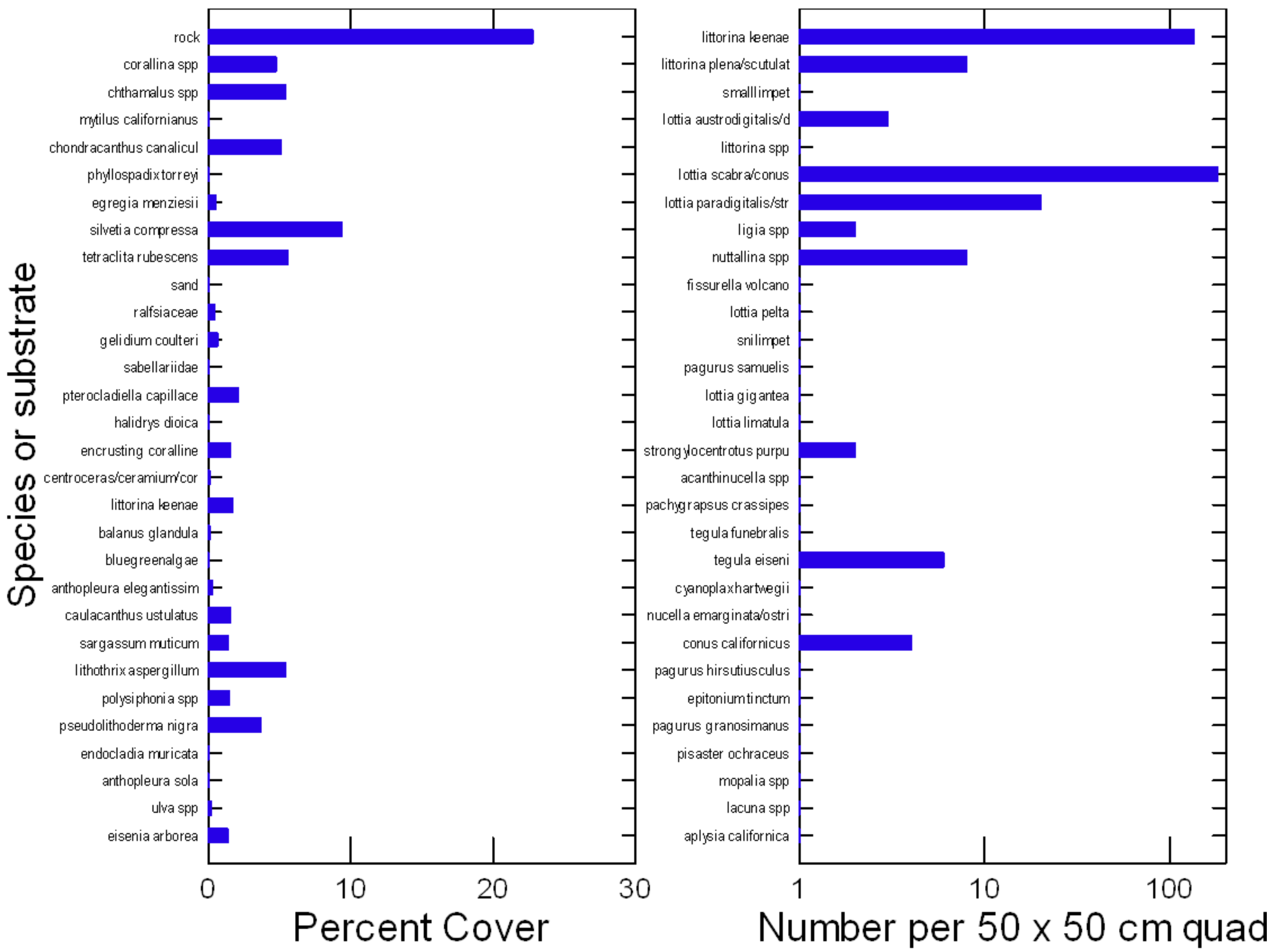


Percent cover (from point contact surveys) and density (from mobile species surveys). Species order is based on ranking across all sites.

Two Harbors is comprised of bedrock and boulders with moderate relief. The surrounding coast is made up of bedrock, boulders and sand. The survey area is 20meters wide and 10meters long.

The nearest storm water discharge pipe is approximately 150meters from survey bolt OT1.

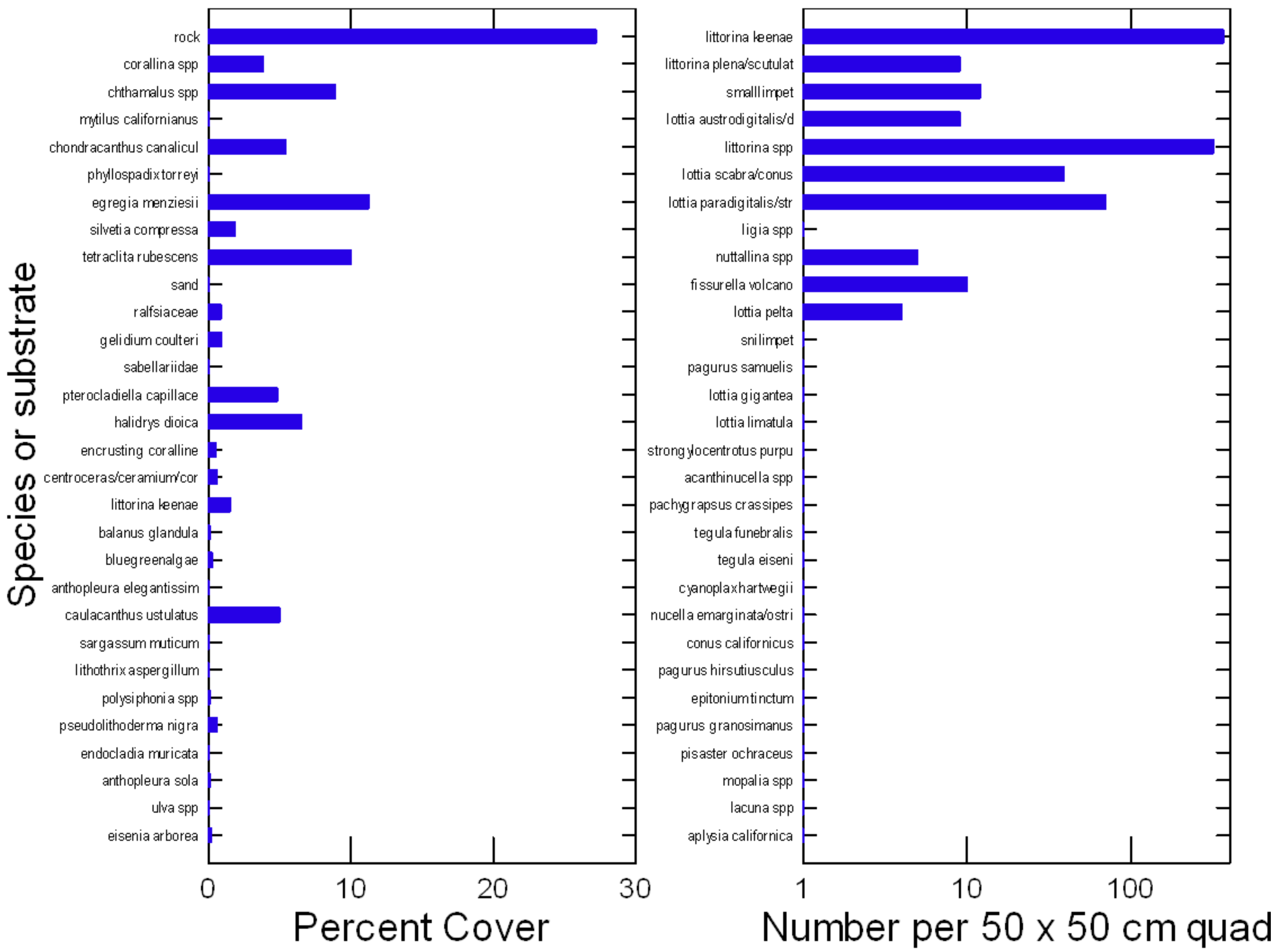
Two Harbors



Percent cover (from point contact surveys) and density (from mobile species surveys). Species order is based on ranking across all sites.

Goat Harbor is comprised of bedrock and boulders with moderate relief. The surrounding coast is made up of bedrock, boulders and cobble. The survey area is 20meters wide and 10meters long.

Goat Harbor



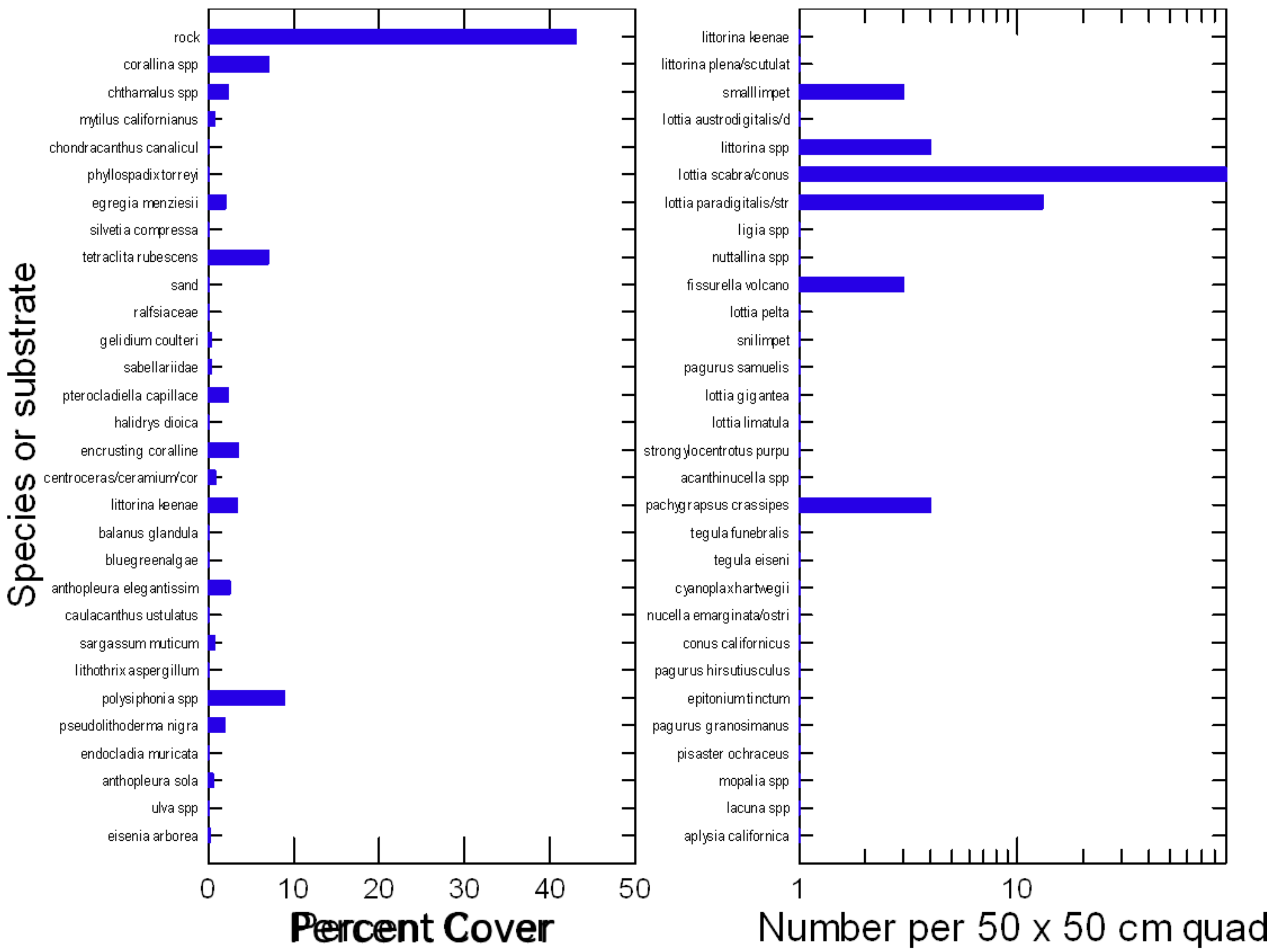
Percent cover (from point contact surveys) and density (from mobile species surveys). Species order is based on ranking across all sites.

RB-AR 7149

Avalon Quarry is comprised of boulders with moderate relief. The surrounding coast is made up of boulders. The survey area is 20meters wide and 10meters long. Based on the substrate and level of potential impact, this site was expected to differ from other sites. Our analyses confirmed this expectation.

The nearest storm water discharge is approximately 25meters from survey bolt OT1.

Avalon Quarry



Percent cover (from point contact surveys) and density (from mobile species surveys). Species order is based on ranking across all sites.

STATE WATER RESOURCES CONTROL BOARD
RESOLUTION NO. 2012-0031

AMENDING THE GENERAL EXCEPTION TO THE CALIFORNIA OCEAN PLAN FOR SELECTED DISCHARGES INTO AREAS OF SPECIAL BIOLOGICAL SIGNIFICANCE, INCLUDING SPECIAL PROTECTIONS FOR BENEFICIAL USES

WHEREAS:

1. The State Water Resources Control Board (State Water Board) adopted the California Ocean Plan (Ocean Plan) on July 6, 1972 and revised the Ocean Plan in 1978, 1983, 1988, 1990, 1997, 2000, 2005, and 2009.

2. The Ocean Plan prohibits the discharge of waste to designated Areas of Special Biological Significance (ASBS).

3. ASBS are designated by the State Water Board as ocean areas requiring protection of species or biological communities to the extent that alteration of natural water quality is undesirable.

4. Under the Marine Managed Areas Improvement Act, all ASBS are designated as a subset of state water quality protection areas and require special protection as determined by the State Water Board pursuant to the Ocean Plan and the Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (Thermal Plan).

5. In state water quality protection areas, waste discharges must be prohibited or limited by special conditions, in accordance with the Porter-Cologne Water Quality Control Act, (Wat. Code, §13000 et seq.) and implementing regulations, including the Ocean Plan and Thermal Plan.

6. The Ocean Plan authorizes the State Water Board to grant an exception to Ocean Plan provisions where the State Water Board determines that the exception will not compromise protection of ocean waters for beneficial uses and the public interest will be served.

7. On October 18, 2004, the State Water Board notified a number of parties that they must cease the discharge of storm water and nonpoint source waste into ASBS or request an exception to the Ocean Plan.

8. The State Water Board received 27 applications for an exception to the Ocean Plan prohibition against waste discharges into an ASBS. The applicants discharge storm water and nonpoint source waste into ASBS.

9. On March 20, 2012, in Resolution 2012-0012, the State Water Board adopted a General Exception to the Ocean Plan ASBS waste discharge prohibition, for storm water and nonpoint source discharges from these 27 applicants, including Special Protections for Beneficial Uses.

10. The State Water Board's stated intention when adopting the General Exception with Special Protections for Beneficial Uses was for compliance with natural ocean water quality within six years of the effective date.

11. Two sections in the Special Protections to ASBS Compliance Plans, section A. 2.d(2), and ASBS Pollution Prevention Plans, section B.2.b(2), were not corrected and retained a four year, instead of six year, compliance deadline.

THEREFORE BE IT RESOLVED THAT:

The State Water Board:

1. Amends sections A.2.d(2) and B.2.b(2) of the Special Protections in Attachment B to the General Exception, originally adopted in Resolution 2012-0012, to require pollutant reductions to be achieved within six years, to be consistent with the compliance schedules in sections I.A.3 and I.B.3.

2. Authorizes the Executive Director or designee to transmit the amended General Exception to the United States Environmental Agency (U.S. EPA) for concurrence.

CERTIFICATION

The undersigned Clerk to the Board does hereby certify that the foregoing is a full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the State Water Resources Control Board held on June 19, 2012.

AYE:	Chairman Charles R. Hoppin Vice Chair Frances Spivy-Weber Board Member Tam M. Doduc Board Member Steven Moore
NAY:	None
ABSENT:	None
ABSTAIN:	None

Jeanine Townsend

Jeanine Townsend
Clerk to the Board

Attachment A – Applicants

Applicant	ASBS
Carmel by the Sea, City of	Carmel Bay
Connolly-Pacific Company	Southeast Santa Catalina Island
Department of Parks and Recreation	Redwoods National Park, Trinidad Head, King Range, Jughandle Cove, Gerstle Cove, James V. Fitzgerald, Año Nuevo, Carmel Bay, Point Lobos, Julia Pfeiffer Burns, Laguna Point to Latigo Point, Irvine Coast
Department of Transportation (CalTrans)	Redwoods National Park, Saunders Reef,James V. Fitzgerald, Año Nuevo, Carmel Bay, Point Lobos, Julia Pfeiffer Burns, Salmon Creek Coast, Laguna Point to Latigo Point, Irvine Coast
Humboldt County	King Range
Humboldt Bay Harbor District	King Range
Irvine Company	Irvine Coast
Laguna Beach, City of	Heisler Park
Los Angeles County	Laguna Point to Latigo Point
Los Angeles County Flood Control District	Laguna Point to Latigo Point
Malibu, City of	Laguna Point to Latigo Point
Marin County	Duxbury Reef
Monterey, City of	Pacific Grove
Monterey, County of	Carmel Bay
Newport Beach, City of, and on behalf of the Pelican Point Homeowners	Robert E. Badham And Irvine Coast
Pacific Grove, City of	Pacific Grove
Pebble Beach Company, and on behalf of the Pebble Beach Stillwater Yacht Club	Carmel Bay
San Diego, City of	La Jolla
San Mateo County	James V. Fitzgerald
Santa Catalina Island Company, and on behalf of the Santa Catalina Island Conservancy	Northwest Santa Catalina Island And Western Santa Catalina Island
Sea Ranch Association	Del Mar Landing
Trinidad, City of	Trinidad Head
Trinidad Rancheria	Trinidad Head
U.S. Dept. of Interior, Point Reyes National Seashore	Point Reyes Headlands, Duxbury Reef
U.S. Dept. of Interior, Redwoods National and State Park	Redwoods National Park
U.S. Dept. of Defense, Air Force	James V. Fitzgerald
U.S. Dept. of Defense, Navy	San Nicolas Island & Begg Rock
U.S. Dept. of Defense, Navy	San Clemente Island

Attachment B - Special Protections for Areas of Special Biological Significance, Governing Point Source Discharges of Storm Water and Nonpoint Source Waste Discharges

I. PROVISIONS FOR POINT SOURCE DISCHARGES OF STORM WATER AND NONPOINT SOURCE WASTE DISCHARGES

The following terms, prohibitions, and special conditions (hereafter collectively referred to as special conditions) are established as limitations on point source storm water and nonpoint source discharges. These special conditions provide Special Protections for marine aquatic life and natural water quality in Areas of Special Biological Significance (ASBS), as required for State Water Quality Protection Areas pursuant to California Public Resources Code Sections 36700(f) and 36710(f). These Special Protections are adopted by the State Water Board as part of the California Ocean Plan (Ocean Plan) General Exception.

The special conditions are organized by category of discharge. The State Water Resources Control Board (State Water Board) and Regional Water Quality Control Boards (Regional Water Boards) will determine categories and the means of regulation for those categories [e.g., Point Source Storm Water National Pollutant Discharge Elimination System (NPDES) or Nonpoint Source].

A. PERMITTED POINT SOURCE DISCHARGES OF STORM WATER

1. General Provisions for Permitted Point Source Discharges of Storm Water

   a. Existing storm water discharges into an ASBS are allowed only under the following conditions:

      (1) The discharges are authorized by an NPDES permit issued by the State Water Board or Regional Water Board;

      (2) The discharges comply with all of the applicable terms, prohibitions, and special conditions contained in these Special Protections; and

      (3) The discharges:

         (i) Are essential for flood control or slope stability, including roof, landscape, road, and parking lot drainage;

         (ii) Are designed to prevent soil erosion;

         (iii) Occur only during wet weather;

         (iv) Are composed of only storm water runoff.

   b. Discharges composed of storm water runoff shall not alter natural ocean water quality in an ASBS.

c. The discharge of trash is prohibited.

d. Only discharges from existing storm water outfalls are allowed. Any proposed or new storm water runoff discharge shall be routed to existing storm water discharge outfalls and shall not result in any new contribution of waste to an ASBS (i.e., no additional pollutant loading). "Existing storm water outfalls" are those that were constructed or under construction prior to January 1, 2005. "New contribution of waste" is defined as any addition of waste beyond what would have occurred as of January 1, 2005. A change to an existing storm water outfall, in terms of re-location or alteration, in order to comply with these special conditions, is allowed and does not constitute a new discharge.

e. Non-storm water discharges are prohibited except as provided below:

(1) The term "non-storm water discharges" means any waste discharges from a municipal separate storm sewer system (MS4) or other NPDES permitted storm drain system to an ASBS that are not composed entirely of storm water.

(2) (i) The following non-storm water discharges are allowed, provided that the discharges are essential for emergency response purposes, structural stability, slope stability or occur naturally:

(a) Discharges associated with emergency fire fighting operations.

(b) Foundation and footing drains.

(c) Water from crawl space or basement pumps.

(d) Hillside dewatering.

(e) Naturally occurring groundwater seepage via a storm drain.

(f) Non-anthropogenic flows from a naturally occurring stream via a culvert or storm drain, as long as there are no contributions of anthropogenic runoff.

(ii) An NPDES permitting authority may authorize non-storm water discharges to an MS4 with a direct discharge to an ASBS only to the extent the NPDES permitting authority finds that the discharge does not alter natural ocean water quality in the ASBS.

(3) Authorized non-storm water discharges shall not cause or contribute to a violation of the water quality objectives in Chapter II of the Ocean Plan nor alter natural ocean water quality in an ASBS.

2. Compliance Plans for Inclusion in Storm Water Management Plans (SWMP) and Storm Water Pollution Prevention Plans (SWPPP).

The discharger shall specifically address the prohibition of non-storm water runoff and the requirement to maintain natural water quality for storm water discharges to an ASBS in an ASBS Compliance Plan to be included in its SWMP or a SWPPP, as appropriate to permit type. If a statewide permit includes a SWMP, then the discharger shall prepare a stand-alone compliance plan for ASBS discharges. The ASBS Compliance Plan is subject to approval by the Executive Director of the State Water Board (statewide permits) or Executive Officer of the Regional Water Board (for permits issued by Regional Water Boards).

a. The Compliance Plan shall include a map of surface drainage of storm water runoff, showing areas of sheet runoff, prioritize discharges, and describe any structural Best Management Practices (BMPs) already employed and/or BMPs to be employed in the future. Priority discharges are those that pose the greatest water quality threat and which are identified to require installation of structural BMPs. The map shall also show the storm water conveyances in relation to other features such as service areas, sewage conveyances and treatment facilities, landslides, areas prone to erosion, and waste and hazardous material storage areas, if applicable. The SWMP or SWPPP shall also include a procedure for updating the map and plan when changes are made to the storm water conveyance facilities.

b. The ASBS Compliance Plan shall describe the measures by which all non-authorized non-storm water runoff (e.g., dry weather flows) has been eliminated, how these measures will be maintained over time, and how these measures are monitored and documented.

c. For Municipal Separate Storm Sewer System (MS4s), the ASBS Compliance Plan shall require minimum inspection frequencies as follows:

(1) The minimum inspection frequency for construction sites shall be weekly during rainy season;

(2) The minimum inspection frequency for industrial facilities shall be monthly during the rainy season;

(3) The minimum inspection frequency for commercial facilities (e.g., restaurants) shall be twice during the rainy season; and

(4) Storm water outfall drains equal to or greater than 18 inches (457 mm) in diameter or width shall be inspected once prior to the beginning of the rainy season and once during the rainy season and maintained to remove trash and other anthropogenic debris.

d. The ASBS Compliance Plan shall address storm water discharges (wet weather flows) and, in particular, describe how pollutant reductions in storm water runoff, that are necessary to comply with these special conditions, will be achieved through BMPs. Structural BMPs need not be installed if the discharger can document to the satisfaction of the State Water Board Executive Director (statewide permits) or Regional Water Board Executive Officer (Regional Water Board permits) that such installation would pose a threat to health or safety. BMPs to control storm water runoff discharges (at the end-of-pipe) during a design storm shall be designed to achieve on average the following target levels:

(1) Table B Instantaneous Maximum Water Quality Objectives in Chapter II of the Ocean Plan; or

(2) A 90% reduction in pollutant loading during storm events, for the applicant's total discharges.

The baseline for these determinations is the effective date of the Exception, except for those structural BMPs installed between January 1, 2005 and adoption of these Special Protections, and the reductions must be achieved and documented within six (6) years of the effective date.

e. The ASBS Compliance Plan shall address erosion control and the prevention of anthropogenic sedimentation in ASBS. The natural habitat conditions in the ASBS shall not be altered as a result of anthropogenic sedimentation.

f. The ASBS Compliance Plan shall describe the non-structural BMPs currently employed and planned in the future (including those for construction activities), and include an implementation schedule. The ASBS Compliance Plan shall include non-structural BMPs that address public education and outreach. Education and outreach efforts must adequately inform the public that direct discharges of pollutants from private property not entering an MS4 are prohibited. The ASBS Compliance Plan shall also describe the structural BMPs, including any low impact development (LID) measures, currently employed and planned for higher threat discharges and include an implementation schedule. To control storm water runoff discharges (at the end-of-pipe) during a design storm, permittees must first consider, and use where feasible, LID practices to infiltrate, use, or evapotranspirate storm water runoff on-site, if LID practices would be the most effective at reducing pollutants from entering the ASBS.

g. The BMPs and implementation schedule shall be designed to ensure that natural water quality conditions in the receiving water are achieved and maintained by either reducing flows from impervious surfaces or reducing pollutant loading, or some combination thereof.

h. If the results of the receiving water monitoring described in IV.B. of these special conditions indicate that the storm water runoff is causing or contributing to an alteration of natural ocean water quality in the ASBS, the discharger shall submit a report to the State Water Board and Regional Water Board within 30 days of receiving the results.

(1) The report shall identify the constituents in storm water runoff that alter natural ocean water quality and the sources of these constituents.

(2) The report shall describe BMPs that are currently being implemented, BMPs that are identified in the SWMP or SWPPP for future implementation, and any additional BMPs that may be added to the SWMP or SWPPP to address the alteration of natural water quality. The report shall include a new or modified implementation schedule for the BMPs.

(3) Within 30 days of the approval of the report by the State Water Board Executive Director (statewide permits) or Regional Water Board Executive Officer (Regional Water Board permits), the discharger shall revise its ASBS Compliance Plan to incorporate any new or modified BMPs that have been or will be implemented, the implementation schedule, and any additional monitoring required.

(4) As long as the discharger has complied with the procedures described above and is implementing the revised SWMP or SWPPP, the discharger does not have to repeat the same procedure for continuing or recurring exceedances of natural ocean water quality conditions due to the same constituent.

(5) The requirements of this section are in addition to the terms, prohibitions, and conditions contained in these Special Protections.

3. Compliance Schedule

a. On the effective date of the Exception, all non-authorized non-storm water discharges (e.g., dry weather flow) are effectively prohibited.

b. Within eighteen (18) months from the effective date of the Exception, the discharger shall submit a draft written ASBS Compliance Plan to the State Water Board Executive Director (statewide permits) or Regional Water Board Executive Officer (Regional Water Board permits) that describes its strategy to comply with these special conditions, including the requirement to maintain natural water quality in the affected ASBS. The ASBS Compliance Plan shall include a description of appropriate non-structural controls and a time schedule to implement structural controls (implementation schedule) to comply with these special conditions for inclusion in the discharger's SWMP or SWPPP, as appropriate to permit type. The final ASBS Compliance Plan, including a description and final schedule for structural controls based on the results of runoff and receiving water monitoring, must be submitted within thirty (30) months from the effective date of the Exception.

c. Within 18 months of the effective date of the Exception, any non-structural controls that are necessary to comply with these special conditions shall be implemented.

d. Within six (6) years of the effective date of the Exception, any structural controls identified in the ASBS Compliance Plan that are necessary to comply with these special conditions shall be operational.

e. Within six (6) years of the effective date of the Exception, all dischargers must comply with the requirement that their discharges into the affected ASBS maintain natural ocean water quality. If the initial results of post-storm receiving water quality testing indicate levels higher than the 85th percentile threshold of reference water quality data and the pre-storm receiving water levels, then the discharger must re-sample the receiving water, pre- and post-storm. If after re-sampling the post-storm levels are still higher than the 85th percentile threshold of reference water quality data, and the pre-storm receiving water levels, for any constituent, then natural ocean water quality is exceeded. See attached Flowchart.

f. The Executive Director of the State Water Board (statewide permits) or Executive Officer of the Regional Water Board (Regional Water Board permits) may only authorize additional time to comply with the special conditions d. and e., above if good cause exists to do so. Good cause means a physical impossibility or lack of funding.

If a discharger claims physical impossibility, it shall notify the Board in writing within thirty (30) days of the date that the discharger first knew of the event or circumstance that caused or would cause it to fail to meet the deadline in d. or e. The notice shall describe the reason for the noncompliance or anticipated noncompliance and specifically refer to this Section of this Exception. It shall describe the anticipated length of time the delay in compliance may persist, the cause or causes of the delay as well as measures to minimize the impact of the delay on water quality, the measures taken or to be taken by the discharger to prevent or minimize the delay, the schedule by which the measures will be implemented, and the anticipated date of compliance. The discharger shall adopt all reasonable measures to avoid and minimize such delays and their impact on water quality.

The discharger may request an extension of time for compliance based on lack of funding. The request for an extension shall require:

1. for municipalities, a demonstration of significant hardship to discharger ratepayers, by showing the relationship of storm water fees to annual household income for residents within the discharger's jurisdictional area, and the discharger has made timely and complete applications for all available bond and grant funding, and either no bond or grant funding is available, or bond and/or grant funding is inadequate; or

2. for other governmental agencies, a demonstration and documentation of a good faith effort to acquire funding through that agency's budgetary process, and a demonstration that funding was unavailable or inadequate.

B. NONPOINT SOURCE DISCHARGES

1. General Provisions for Nonpoint Sources

   a. Existing nonpoint source waste discharges are allowed into an ASBS only under the following conditions:

      (1) The discharges are authorized under waste discharge requirements, a conditional waiver of waste discharge requirements, or a conditional prohibition issued by the State Water Board or a Regional Water Board.

      (2) The discharges are in compliance with the applicable terms, prohibitions, and special conditions contained in these Special Protections.

      (3) The discharges:

         (i) Are essential for flood control or slope stability, including roof, landscape, road, and parking lot drainage;

         (ii) Are designed to prevent soil erosion;

         (iii) Occur only during wet weather;

         (iv) Are composed of only storm water runoff.

   b. Discharges composed of storm water runoff shall not alter natural ocean water quality in an ASBS.

c. The discharge of trash is prohibited.

d. Only existing nonpoint source waste discharges are allowed. “Existing nonpoint source waste discharges” are discharges that were ongoing prior to January 1, 2005. “New nonpoint source discharges” are defined as those that commenced on or after January 1, 2005. A change to an existing nonpoint source discharge, in terms of relocation or alteration, in order to comply with these special conditions, is allowed and does not constitute a new discharge.

e. Non-storm water discharges from nonpoint sources (those not subject to an NPDES Permit) are prohibited except as provided below:

(1) The term “non-storm water discharges” means any waste discharges that are not composed entirely of storm water.

(2) The following non-storm water discharges are allowed, provided that the discharges are essential for emergency response purposes, structural stability, slope stability, or occur naturally:

(i) Discharges associated with emergency fire fighting operations.

(ii) Foundation and footing drains.

(iii) Water from crawl space or basement pumps.

(iv) Hillside dewatering.

(v) Naturally occurring groundwater seepage via a storm drain.

(vi) Non-anthropogenic flows from a naturally occurring stream via a culvert or storm drain, as long as there are no contributions of anthropogenic runoff.

(3) Authorized non-storm water discharges shall not cause or contribute to a violation of the water quality objectives in Chapter II of the Ocean Plan nor alter natural ocean water quality in an ASBS.

f. At the San Clemente Island ASBS, discharges incidental to military training and research, development, test, and evaluation operations are allowed. Discharges incidental to underwater demolition and other in-water explosions are not allowed in the two military closure areas in the vicinity of Wilson Cove and Castle Rock. Discharges must not result in a violation of the water quality objectives, including the protection of the marine aquatic life beneficial use, anywhere in the ASBS.

g. At the San Nicolas Island and Begg Rock ASBS, discharges incidental to military research, development, testing, and evaluation of, and training with, guided missile and other weapons systems, fleet training exercises, small-scale amphibious warfare training, and special warfare training are allowed. Discharges incidental to underwater demolition and other in-water explosions are not allowed. Discharges must not result in a violation of the water quality objectives, including the protection of the marine aquatic life beneficial use, anywhere in the ASBS.

h. All other nonpoint source discharges not specifically authorized above are prohibited.

2. Planning and Reporting

a. The nonpoint source discharger shall develop an ASBS Pollution Prevention ~~P~~lan, including an implementation schedule, to address storm water runoff and any other nonpoint source discharges from its facilities. The ASBS Pollution Prevention Plan must be equivalent in contents to an ASBS Compliance Plan as described in I (A)(2) in this document. The ASBS Pollution Prevention Plan is subject to approval by the Executive Director of the State Water Board (statewide waivers or waste discharge requirements) or Executive Officer of the Regional Water Board (Regional Water Board waivers or waste discharge requirements).

b. The ASBS Pollution Prevention Plan shall address storm water discharges (wet weather flows) and, in particular, describe how pollutant reductions in storm water runoff that are necessary to comply with these special conditions, will be achieved through Management Measures and associated Management Practices (Management Measures/Practices). Structural BMPs need not be installed if the discharger can document to the satisfaction of the State Water Board Executive Director or Regional Water Board Executive Officer that such installation would pose a threat to health or safety. Management Measures to control storm water runoff during a design storm shall achieve on average the following target levels:

(1) Table B Instantaneous Maximum Water Quality Objectives in Chapter II of the Ocean Plan; or

(2) A 90% reduction in pollutant loading during storm events, for the applicant's total discharges.

The baseline for these determinations is the effective date of the Exception, except for those structural BMPs installed between January 1, 2005 and adoption of these Special Protections, and the reductions must be achieved and documented within six (6) years of the effective date.

c. If the results of the receiving water monitoring described in IV.B. of these special conditions indicate that the storm water runoff or other nonpoint source pollution is causing or contributing to an alteration of natural ocean water quality in the ASBS, the discharger shall submit a report to the State Water Board and the Regional Water Board within 30 days of receiving the results.

(1) The report shall identify the constituents that alter natural water quality and the sources of these constituents.

(2) The report shall describe Management Measures/Practices that are currently being implemented, Management Measures/Practices that are identified in the ASBS Pollution Prevention Plan for future implementation, and any additional Management Measures/Practices that may be added to the Pollution Prevention Plan to address the alteration of natural water quality. The report shall include a new or modified implementation schedule for the Management Measures/Practices.

(3) Within 30 days of the approval of the report by the State Water Board Executive Director (statewide waivers or waste discharge requirements) or Executive Officer of the Regional Water Board (Regional Water Board waivers or waste discharge requirements), the discharger shall revise its ASBS Pollution Prevention Plan to incorporate any new or modified Management Measures/Practices that have been or will be implemented, the implementation schedule, and any additional monitoring required.

(4) As long as the discharger has complied with the procedures described above and is implementing the revised ASBS Pollution Prevention Plan, the discharger does not have to repeat the same procedure for continuing or recurring exceedances of natural water quality conditions due to the same constituent.

(5) The requirements of this section are in addition to the terms, prohibitions, and conditions contained in these Special Protections.

3. Compliance Schedule

a. On the effective date of the Exception, all non-authorized non-storm water discharges (e.g., dry weather flow) are effectively prohibited.

b. Within eighteen (18) months from the effective date of the Exception, the discharger~~s~~ shall submit a draft written ASBS Pollution Prevention Plan to the State Water Board Executive Director (statewide waivers or waste discharge requirements) or Executive Officer of the Regional Water Board (Regional Water Board waivers or waste discharge requirements) that describes its strategy to comply with these special conditions, including the requirement to maintain natural ocean water quality in the affected ASBS. The Pollution Prevention Plan shall include a description of appropriate non-structural controls and a time schedule to implement structural controls to comply with these special conditions for inclusion in the discharger's Pollution Prevention Plan. The final ASBS Pollution Prevention Plan, including a description and final schedule for structural controls based on the results of runoff and receiving water monitoring, must be submitted within thirty (30) months from the effective date of the Exception.

c. Within 18 months of the effective date of the Exception, any non-structural controls that are necessary to comply with these Special Protections shall be implemented.

d. Within six (6) years of the effective date of the Exception, any structural controls identified in the ASBS Pollution Prevention Plan that are necessary to comply with these special conditions shall be operational.

e. Within six (6) years of the effective date of the Exception, all dischargers must comply with the requirement that their discharges into the affected ASBS maintain natural ocean water quality. If the initial results of post-storm receiving water quality testing indicate levels higher than the 85^{th} percentile threshold of reference water quality data and the pre-storm receiving water levels, then the discharger must re-sample the receiving water pre- and post-storm. If after re-sampling the post-storm levels are still higher than the 85^{th} percentile threshold of reference water quality data and the pre-storm receiving water levels, for any constituent, then natural ocean water quality is exceeded. See attached Flowchart.

f. The Executive Director of the State Water Board (statewide waivers or waste discharge requirements) or Executive Officer of the Regional Water Board (Regional Water Board waivers or waste discharge requirements) may only authorize additional time to comply with the special conditions d. and e., above if good cause exists to do so. Good cause means a physical impossibility or lack of funding.

   If a discharger claims physical impossibility, it shall notify the Board in writing within thirty (30) days of the date that the discharger first knew of the event or circumstance that caused or would cause it to fail to meet the deadline in d. or e. The notice shall describe the reason for the noncompliance or anticipated noncompliance and specifically refer to this Section of this Exception. It shall describe the anticipated length of time the delay in compliance may persist, the cause or causes of the delay as well as measures to minimize the impact of the delay on water quality, the measures taken or to be taken by the discharger to prevent or minimize the delay, the schedule by which the measures will be implemented, and the anticipated date of compliance. The discharger shall adopt all reasonable measures to avoid and minimize such delays and their impact on water quality.

   The discharger may request an extension of time for compliance based on lack of funding. The request for an extension shall require:

   1. a demonstration that the discharger has made timely and complete applications for all available bond and grant funding, and either no bond or grant funding is available, or bond and/or grant funding is inadequate; or

   2. for governmental agencies, a demonstration and documentation of a good faith effort to acquire funding through that agency's budgetary process, and a demonstration that funding was unavailable or inadequate.

II. ADDITIONAL REQUIREMENTS FOR PARKS AND RECREATION FACILITIES

In addition to the provisions in Section I (A) or I (B), respectively, a discharger with parks and recreation facilities shall comply with the following:

A. The discharger shall include a section in an ASBS Compliance Plan (for NPDES dischargers) or an ASBS Pollution Prevention Plan (for nonpoint source dischargers) to address storm water runoff from parks and recreation facilities.

   1. The plan shall identify all pollutant sources, including sediment sources, which may result in waste entering storm water runoff. Pollutant sources include, but are not limited to, roadside rest areas and vistas, picnic areas, campgrounds, trash receptacles, maintenance facilities, park personnel housing, portable toilets, leach fields, fuel tanks, roads, piers, and boat launch facilities.

   2. The plan shall describe BMPs or Management Measures/Practices that will be implemented to control soil erosion (both temporary and permanent erosion controls) and reduce or eliminate pollutants in storm water runoff in order to achieve and maintain natural water quality conditions in the affected ASBS. The plan shall include BMPs or

Management Measures/Practices to ensure that trails and culverts are maintained to prevent erosion and minimize waste discharges to ASBS.

3. The plan shall include BMPs or Management Measures/Practices to prevent the discharge of pesticides or other chemicals, including agricultural chemicals, in storm water runoff to the affected ASBS.

4. The plan shall include BMPs or Management Measures/Practices that address public education and outreach. The goal of these BMPs or Management Measures/Practices is to ensure that the public is adequately informed that waste discharges to the affected ASBS are prohibited or limited by special conditions in these Special Protections. The BMPs or Management Measures/Practices shall include signage at camping, picnicking, beach and roadside parking areas, and visitor centers, or other appropriate measures, which notify the public of any applicable requirements of these Special Protections and identify the ASBS boundaries.

5. The plan shall include BMPs or Management Measures/Practices that address the prohibition against the discharge of trash to ASBS. The BMPs or Management Measures/Practices shall include measures to ensure that adequate trash receptacles are available for public use at visitor facilities, including parking areas, and that the receptacles are adequately maintained to prevent trash discharges into the ASBS. Appropriate measures include covering trash receptacles to prevent trash from being wind blown and periodically emptying the receptacles to prevent overflows.

6. The plan shall include BMPs or Management Measures/Practices to address runoff from parking areas and other developed features to ensure that the runoff does not alter natural water quality in the affected ASBS. BMPs or Management Measures/Practices shall include measures to reduce pollutant loading in runoff to the ASBS through installation of natural area buffers (LID), treatment, or other appropriate measures.

B. Maintenance and repair of park and recreation facilities must not result in waste discharges to the ASBS. The practice of road oiling must be minimized or eliminated, and must not result in waste discharges to the ASBS.

III. ADDITIONAL REQUIREMENTS – WATERFRONT AND MARINE OPERATIONS

In addition to the provisions in Section I (A) or I (B), respectively, a discharger with waterfront and marine operations shall comply with the following:

A. For discharges related to waterfront and marine operations, the discharger shall develop a Waterfront and Marine Operations Management Plan (Waterfront Plan). This plan shall contain appropriate Management Measures/Practices to address nonpoint source pollutant discharges to the affected ASBS.

1. The Waterfront Plan shall contain appropriate Management Measures/Practices for any waste discharges associated with the operation and maintenance of vessels, moorings, piers, launch ramps, and cleaning stations in order to ensure that beneficial uses are protected and natural water quality is maintained in the affected ASBS.

2. For discharges from marinas and recreational boating activities, the Waterfront Plan shall include appropriate Management Measures, described in The Plan for California's Nonpoint Source Pollution Control Program, for marinas and recreational boating, or equivalent practices, to ensure that nonpoint source pollutant discharges do not alter natural water quality in the affected ASBS.

3. The Waterfront Plan shall include Management Practices to address public education and outreach to ensure that the public is adequately informed that waste discharges to the affected ASBS are prohibited or limited by special conditions in these Special Protections. The management practices shall include appropriate signage, or similar measures, to inform the public of the ASBS restrictions and to identify the ASBS boundaries.

4. The Waterfront Plan shall include Management Practices to address the prohibition against trash discharges to ASBS. The Management Practices shall include the provision of adequate trash receptacles for marine recreation areas, including parking areas, launch ramps, and docks. The plan shall also include appropriate Management Practices to ensure that the receptacles are adequately maintained and secured in order to prevent trash discharges into the ASBS. Appropriate Management Practices include covering the trash receptacles to prevent trash from being windblown, staking or securing the trash receptacles so they don't tip over, and periodically emptying the receptacles to prevent overflow.

5. The discharger shall submit its Waterfront Plan to the by the State Water Board Executive Director (statewide waivers or waste discharge requirements) or Executive Officer of the Regional Water Board (Regional Water Board waivers or waste discharge requirements) within six months of the effective date of these special conditions. The Waterfront Plan is subject to approval by the State Water Board Executive Director or the Regional Water Board Executive Officer, as appropriate. The plan must be fully implemented within 18 months of the effective date of the Exception.

B. The discharge of chlorine, soaps, petroleum, other chemical contaminants, trash, fish offal, or human sewage to ASBS is prohibited. Sinks and fish cleaning stations are point source discharges of wastes and are prohibited from discharging into ASBS. Anthropogenic accumulations of discarded fouling organisms on the sea floor must be minimized.

C. Limited-term activities, such as the repair, renovation, or maintenance of waterfront facilities, including, but not limited to, piers, docks, moorings, and breakwaters, are authorized only in accordance with Chapter III.E.2 of the Ocean Plan.

D. If the discharger anticipates that the discharger will fail to fully implement the approved Waterfront Plan within the 18 month deadline, the discharger shall submit a technical report as soon as practicable to the State Water Board Executive Director or the Regional Water Board Executive Officer, as appropriate. The technical report shall contain reasons for failing to meet the deadline and propose a revised schedule to fully implement the plan.

E. The State Water Board or the Regional Water Board may, for good cause, authorize additional time to comply with the Waterfront Plan. Good cause means a physical impossibility or lack of funding.

If a discharger claims physical impossibility, it shall notify the Board in writing within thirty (30) days of the date that the discharger first knew of the event or circumstance that caused or would cause it to fail to meet the deadline in Section III.A.5. The notice shall describe the reason for the noncompliance or anticipated noncompliance and specifically refer to this Section of this Exception. It shall describe the anticipated length of time the delay in compliance may persist, the cause or causes of the delay as well as measures to minimize the impact of the delay on water quality, the measures taken or to be taken by the discharger to prevent or minimize the delay, the schedule by which the measures will be implemented, and the anticipated date of compliance. The discharger shall adopt all reasonable measures to avoid and minimize such delays and their impact on water quality. The discharger may request an extension of time for compliance based on lack of funding. The request for an extension shall require:

1. a demonstration of significant hardship by showing that the discharger has made timely and complete applications for all available bond and grant funding, and either no bond or grant funding is available, or bond and/or grant funding is inadequate.

2. for governmental agencies, a demonstration and documentation of a good faith effort to acquire funding through that agency's budgetary process, and a demonstration that funding was unavailable or inadequate.

IV. MONITORING REQUIREMENTS

Monitoring is mandatory for all dischargers to assure compliance with the Ocean Plan. Monitoring requirements include both: (A) core discharge monitoring, and (B) ocean receiving water monitoring. The State and Regional Water Boards must approve sampling site locations and any adjustments to the monitoring programs. All ocean receiving water and reference area monitoring must be comparable with the Water Boards' Surface Water Ambient Monitoring Program (SWAMP).

Safety concerns: Sample locations and sampling periods must be determined considering safety issues. Sampling may be postponed upon notification to the State and Regional Water Boards if hazardous conditions prevail.

Analytical Chemistry Methods: All constituents must be analyzed using the lowest minimum detection limits comparable to the Ocean Plan water quality objectives. For metal analysis, all samples, including storm water effluent, reference samples, and ocean receiving water samples, must be analyzed by the approved analytical method with the lowest minimum detection limits (currently Inductively Coupled Plasma/Mass Spectrometry) described in the Ocean Plan.

A. CORE DISCHARGE MONITORING PROGRAM

1. General sampling requirements for timing and storm size:

   Runoff must be collected during a storm event that is greater than 0.1 inch and generates runoff, and at least 72 hours from the previously measurable storm event. Runoff samples shall be collected during the same storm and at approximately the same time when post-storm receiving water is sampled, and analyzed for the same constituents as receiving water and reference site samples (see section IV B) as described below.

2. Runoff flow measurements

   a. For municipal/industrial storm water outfalls in existence as of December 31, 2007, 18 inches (457mm) or greater in diameter/width (including multiple outfall pipes in combination having a width of 18 inches, runoff flows must be measured or calculated, using a method acceptable to and approved by the State and Regional Water Boards.

   b. This will be reported annually for each precipitation season to the State and Regional Water Boards.

3. Runoff samples – storm events

   a. For outfalls equal to or greater than 18 inches (0.46m) in diameter or width:

      (1) samples of storm water runoff shall be collected during the same storm as receiving water samples and analyzed for oil and grease, total suspended solids, and, within the range of the southern sea otter indicator bacteria or some other measure of fecal contamination; and

      (2) samples of storm water runoff shall be collected and analyzed for critical life stage chronic toxicity (one invertebrate or algal species) at least once during each storm season when receiving water is sampled in the ASBS.

      (3) If an applicant has no outfall greater than 36 inches, then storm water runoff from the applicant's largest outfall shall be further collected during the same storm as receiving water samples and analyzed for Ocean Plan Table B metals for protection of marine life, Ocean Plan polynuclear aromatic hydrocarbons (PAHs), current use pesticides (pyrethroids and OP pesticides), and nutrients (ammonia, nitrate and phosphates).

   b. For outfalls equal to or greater than 36 inches (0.91m) in diameter or width:

      (1) samples of storm water runoff shall be collected during the same storm as receiving water samples and analyzed for oil and grease, total suspended solids, and, within the range of the southern sea otter indicator bacteria or some other measure of fecal contamination; and

      (2) samples of storm water runoff shall be further collected during the same storm as receiving water samples and analyzed for Ocean Plan Table B metals for protection of marine life, Ocean Plan polynuclear aromatic hydrocarbons (PAHs), current use pesticides (pyrethroids and OP pesticides), and nutrients (ammonia, nitrate and phosphates); and

      (3) samples of storm water runoff shall be collected and analyzed for critical life stage chronic toxicity (one invertebrate or algal species) at least once during each storm season when receiving water is sampled in the ASBS.

c. For an applicant not participating in a regional monitoring program [see below in Section IV (B)] in addition to (a.) and (b.) above, a minimum of the two largest outfalls or 20 percent of the larger outfalls, whichever is greater, shall be sampled (flow weighted composite samples) at least three times annually during wet weather (storm event) and analyzed for all Ocean Plan Table A constituents, Table B constituents for marine aquatic life protection (except for toxicity, only chronic toxicity for three species shall be required), DDT, PCBs, Ocean Plan PAHs, OP pesticides, pyrethroids, nitrates, phosphates, and Ocean Plan indicator bacteria. For parties discharging to ASBS in more than one Regional Water Board region, at a minimum, one (the largest) such discharge shall be sampled annually in each Region.

4. The Executive Director of the State Water Board (statewide permits) or Executive Officer of the Regional Water Board (Regional Water Board permits) may reduce or suspend core monitoring once the storm runoff is fully characterized. This determination may be made at any point after the discharge is fully characterized, but is best made after the monitoring results from the first permit cycle are assessed.

B. Ocean Receiving Water and Reference Area Monitoring Program

In addition to performing the Core Discharge Monitoring Program in Section II.A above, all applicants having authorized discharges must perform ocean receiving water monitoring. In order to fulfill the requirements for monitoring the physical, chemical, and biological characteristics of the ocean receiving waters within their ASBS, dischargers may choose either (1) an individual monitoring program, or (2) participation in a regional integrated monitoring program.

1. Individual Monitoring Program: The requirements listed below are for those dischargers who elect to perform an individual monitoring program to fulfill the requirements for monitoring the physical, chemical, and biological characteristics of the ocean receiving waters within the affected ASBS. In addition to Core Discharge Monitoring, the following additional monitoring requirements shall be met:

   a. Three times annually, during wet weather (storm events), the receiving water at the point of discharge from the outfalls described in section (IV)(A)(3)(c) above shall be sampled and analyzed for Ocean Plan Table A constituents, Table B constituents for marine aquatic life, DDT, PCBs, Ocean Plan PAHs, OP pesticides, pyrethroids, nitrates, phosphates, salinity, chronic toxicity (three species), and Ocean Plan indicator bacteria.

      The sample location for the ocean receiving water shall be in the surf zone at the point of discharges; this must be at the same location where storm water runoff is sampled. Receiving water shall be sampled prior to (pre-storm) and during (or immediately after) the same storm (post storm). Post storm sampling shall be during the same storm and at approximately the same time as when the runoff is sampled. Reference water quality shall also be sampled three times annually and analyzed for the same constituents pre-storm and post-storm, during the same storm seasons when receiving water is sampled. Reference stations will be determined by the State Water Board's Division of Water Quality and the applicable Regional Water Board(s).

   b. Sediment sampling shall occur at least three times during every five (5) year period. The subtidal sediment (sand or finer, if present) at the discharge shall be sampled and analyzed for Ocean Plan Table B constituents for marine aquatic life, DDT, PCBs, PAHs, pyrethroids, and OP pesticides. For sediment toxicity testing, only an acute toxicity test using the amphipod *Eohaustorius estuarius* must be performed.

c. A quantitative survey of intertidal benthic marine life shall be performed at the discharge and at a reference site. The survey shall be performed at least once every five (5) year period. The survey design is subject to approval by the Regional Water Board and the State Water Board's Division of Water Quality. The results of the survey shall be completed and submitted to the State Water Board and Regional Water Board at least six months prior to the end of the permit cycle.

d. Once during each five (5) year period, a bioaccumulation study shall be conducted to determine the concentrations of metals and synthetic organic pollutants at representative discharge sites and at representative reference sites. The study design is subject to approval by the Regional Water Board and the State Water Board's Division of Water Quality. The bioaccumulation study may include California mussels (*Mytilus californianus*) and/or sand crabs (*Emerita analoga* or *Blepharipoda occidentalis*). Based on the study results, the Regional Water Board and the State Water Board's Division of Water Quality, may adjust the study design in subsequent permits, or add or modify additional test organisms (such as shore crabs or fish), or modify the study design appropriate for the area and best available sensitive measures of contaminant exposure.

e. Marine Debris: Representative quantitative observations for trash by type and source shall be performed along the coast of the ASBS within the influence of the discharger's outfalls. The design, including locations and frequency, of the marine debris observations is subject to approval by the Regional Water Board and State Water Board's Division of Water Quality.

f. The monitoring requirements of the Individual Monitoring Program in this section are minimum requirements. After a minimum of one (1) year of continuous water quality monitoring of the discharges and ocean receiving waters, the Executive Director of the State Water Board (statewide permits) or Executive Officer of the Regional Water Board (Regional Water Board permits) may require additional monitoring, or adjust, reduce or suspend receiving water and reference station monitoring. This determination may be made at any point after the discharge and receiving water is fully characterized, but is best made after the monitoring results from the first permit cycle are assessed.

2. Regional Integrated Monitoring Program: Dischargers may elect to participate in a regional integrated monitoring program, in lieu of an individual monitoring program, to fulfill the requirements for monitoring the physical, chemical, and biological characteristics of the ocean receiving waters within their ASBS. This regional approach shall characterize natural water quality, pre- and post-storm, in ocean reference areas near the mouths of identified open space watersheds and the effects of the discharges on natural water quality (physical, chemical, and toxicity) in the ASBS receiving waters, and should include benthic marine aquatic life and bioaccumulation components. The design of the ASBS stratum of a regional integrated monitoring program may deviate from the otherwise prescribed individual monitoring approach (in Section IV.B.1) if approved by the State Water Board's Division of Water Quality and the Regional Water Boards.

   a. Ocean reference areas shall be located at the drainages of flowing watersheds with minimal development (in no instance more than 10% development), and shall not be located in CWA Section 303(d) listed waterbodies or have tributaries that are 303(d) listed. Reference areas shall be free of wastewater discharges and anthropogenic non-storm water runoff. A minimum of low threat storm runoff discharges (e.g. stream highway overpasses and campgrounds) may be allowed on a case-by-case basis. Reference areas shall be located in the same region as the ASBS receiving water monitoring occurs. The reference areas for each Region are subject to approval by the participants in the regional monitoring program and the State Water Board's Division of Water Quality and the applicable Regional Water Board(s). A minimum of three ocean reference water samples must be collected from each station, each from a separate storm during the same storm season that receiving water is sampled. A minimum of one reference location shall be sampled for each ASBS receiving water site sampled per responsible party. For parties discharging to ASBS in more than one Regional Water Board region, at a minimum, one reference station and one receiving water station shall be sampled in each region.

b. ASBS ocean receiving water must be sampled in the surf zone at the location where the runoff makes contact with ocean water (i.e. at "point zero"). Ocean receiving water stations must be representative of worst-case discharge conditions (i.e. co-located at a large drain greater than 36 inches, or if drains greater than 36 inches are not present in the ASBS then the largest drain greater than18 inches.) Ocean receiving water stations are subject to approval by the participants in the regional monitoring program and the State Water Board's Division of Water Quality and the applicable Regional Water Board(s). A minimum of three ocean receiving water samples must be collected during each storm season from each station, each from a separate storm. A minimum of one receiving water location shall be sampled in each ASBS per responsible party in that ASBS. For parties discharging to ASBS in more than one Regional Water Board region, at a minimum, one reference station and one receiving water station shall be sampled in each region.

c. Reference and receiving water sampling shall commence during the first full storm season following the adoption of these special conditions, and post-storm samples shall be collected during the same storm event when storm water runoff is sampled. Sampling shall occur in a minimum of two storm seasons. For those ASBS dischargers that have already participated in the Southern California Bight 2008 ASBS regional monitoring effort, sampling may be limited to only one storm season.

d. Receiving water and reference samples shall be analyzed for the same constituents as storm water runoff samples. At a minimum, constituents to be sampled and analyzed in reference and discharge receiving waters must include oil and grease, total suspended solids, Ocean Plan Table B metals for protection of marine life, Ocean Plan PAHs, pyrethroids, OP pesticides, ammonia, nitrate, phosphates, and critical life stage chronic toxicity for three species. In addition, within the range of the southern sea otter, indicator bacteria or some other measure of fecal contamination shall be analyzed.

3. Waterfront and Marine Operations: In addition to the above requirements for ocean receiving water monitoring, additional monitoring must be performed for marinas and boat launch and pier facilities:

   a. For all marina or mooring field operators, in mooring fields with 10 or more occupied moorings, the ocean receiving water must be sampled for Ocean Plan indicator bacteria, residual chlorine, copper, zinc, grease and oil, methylene blue active substances (MBAS), and ammonia nitrogen.

(1) For mooring field operators opting for an individual monitoring program (Section IV.B.1 above), this sampling must occur weekly (on the weekend) from May through October.

(2) For mooring field operators opting to participate in a regional integrated monitoring program (Section IV.B.2 above), this sampling must occur monthly from May through October on a high use weekend in each month. The Water Boards may allow a reduction in the frequency of sampling, through the regional monitoring program, after the first year of monitoring.

b. For all mooring field operators, the subtidal sediment (sand or finer, if present) within mooring fields and below piers shall be sampled and analyzed for Ocean Plan Table B metals (for marine aquatic life beneficial use), acute toxicity, PAHs, and tributyltin. For sediment toxicity testing, only an acute toxicity test using the amphipod *Eohaustorius estuarius* must be performed. This sampling shall occur at least three times during a five (5) year period. For mooring field operators opting to participate in a regional integrated monitoring program, the Water Boards may allow a reduction in the frequency of sampling after the first sampling effort's results are assessed.

Glossary

At the point of discharge(s) – Means in the surf zone immediately where runoff from an outfall meets the ocean water (a.k.a., at point zero).

Areas of Special Biological Significance (ASBS) – Those areas designated by the State Water Board as ocean areas requiring protection of species or biological communities to the extent that alteration of natural water quality is undesirable. All Areas of Special Biological Significance are also classified as a subset of State Water Quality Protection Areas.

Design storm – For purposes of these Special Protections, a design storm is defined as the volume of runoff produced from one inch of precipitation per day or, if this definition is inconsistent with the discharger's applicable storm water permit, then the design storm shall be the definition included in the discharger's applicable storm water permit.

Development – Relevant to reference monitoring sites, means urban, industrial, agricultural, grazing, mining, and timber harvesting land uses.

Higher threat discharges - Permitted storm drains discharging equal to or greater than 18 inches, industrial storm drains, agricultural runoff discharged through an MS4, discharges associated with waterfront and marina operations (e.g., piers, launch ramps, mooring fields, and associated vessel support activities, except for passive discharges defined below), and direct discharges associated with commercial or industrial activities to ASBS.

Low Impact Development (LID) – A sustainable practice that benefits water supply and contributes to water quality protection. Unlike traditional storm water management, which entails collecting and conveying storm water runoff through storm drains, pipes, or other conveyances to a centralized storm water facility, LID focuses on using site design and storm water management to maintain the site's pre-development runoff rates and volumes. The goal of LID is to mimic a site's predevelopment hydrology by using design techniques that infiltrate, filter, store, evaporate, and detain runoff close to the source of rainfall.

Marine Operations – Marinas or mooring fields that contain slips or mooring locations for 10 or more vessels.

Management Measure (MM) - Economically achievable measures for the control of the addition of pollutants from various classes of nonpoint sources of pollution, which reflect the greatest degree of pollutant reduction achievable through the application of the best available nonpoint pollution control practices, technologies, processes, siting criteria, operating methods, or other alternatives. For example, in the "marinas and recreational boating" land-use category specified in the Plan for California's Nonpoint Source Pollution Control Program (NPS Program Plan) (SWRCB, 1999), "boat cleaning and maintenance" is considered a MM or the source of a specific class or type of NPS pollution.

Management Practice (MP) - The practices (e.g., structural, non-structural, operational, or other alternatives) that can be used either individually or in combination to address a specific MM class or classes of NPS pollution. For example, for the "boat cleaning and maintenance" MM, specific MPs can include, but are not limited to, methods for the selection of environmentally sensitive hull paints or methods for cleaning/removal of hull copper anti-fouling paints.

Municipal Separate Storm Sewer System (MS4) – A municipally-owned storm sewer system regulated under the Phase I or Phase II storm water program implemented in compliance with Clean Water Act section 402(p). Note that an MS4 program's boundaries are not necessarily congruent with the permittee's political boundaries.

Natural Ocean Water Quality - The water quality (based on selected physical, chemical and biological characteristics) that is required to sustain marine ecosystems, and which is without apparent human influence, *i.e.*, an absence of significant amounts of: (a) man-made constituents (*e.g.,* DDT); (b) other chemical (*e.g.,* trace metals), physical (temperature/thermal pollution, sediment burial), and biological (*e.g.*, bacteria) constituents at concentrations that have been elevated due to man's activities above those resulting from the naturally occurring processes that affect the area in question; and (c) non-indigenous biota (*e.g.,* invasive algal bloom species) that have been introduced either deliberately or accidentally by man. Discharges "*shall not alter natural ocean water quality*" as determined by a comparison to the range of constituent concentrations in reference areas agreed upon via the regional monitoring program(s). If monitoring information indicates that *natural ocean water quality* is not maintained, but there is sufficient evidence that a discharge is not contributing to the alteration of natural water quality, then the Regional Water Board may make that determination. In this case, sufficient information must include runoff sample data that has equal or lower concentrations for the range of constituents at the applicable reference area(s).

Nonpoint source – Nonpoint pollution sources generally are sources that do not meet the definition of a point source. Nonpoint source pollution typically results from land runoff, precipitation, atmospheric deposition, agricultural drainage, marine/boating operations or hydrologic modification. Nonpoint sources, for purposes of these Special Protections, include discharges that are not required to be regulated under an NPDES permit.

Non-storm water discharge – Any runoff that is not the result of a precipitation event. This is often referred to as "dry weather flow."

Non-structural control – A Best Management Practice that involves operational, maintenance, regulatory (e.g., ordinances) or educational activities designed to reduce or eliminate pollutants in runoff, and that are not structural controls (i.e. there are no physical structures involved).

Physical impossibility - Means any act of God, war, fire, earthquake, windstorm, flood or natural catastrophe; unexpected and unintended accidents not caused by discharger or its employees' negligence; civil disturbance, vandalism, sabotage or terrorism; restrain by court order or public authority or agency; or action or non-action by, or inability to obtain the necessary authorizations or approvals from any governmental agency other than the permittee.

Representative sites and monitoring procedures – Are to be proposed by the discharger, with appropriate rationale, and subject to approval by Water Board staff.

Sheet-flow – Runoff that flows across land surfaces at a shallow depth relative to the cross-sectional width of the flow. These types of flow may or may not enter a storm drain system before discharge to receiving waters.

Storm Season – Also referred to as rainy season, means the months of the year from the onset of rainfall during autumn until the cessation of rainfall in the spring.

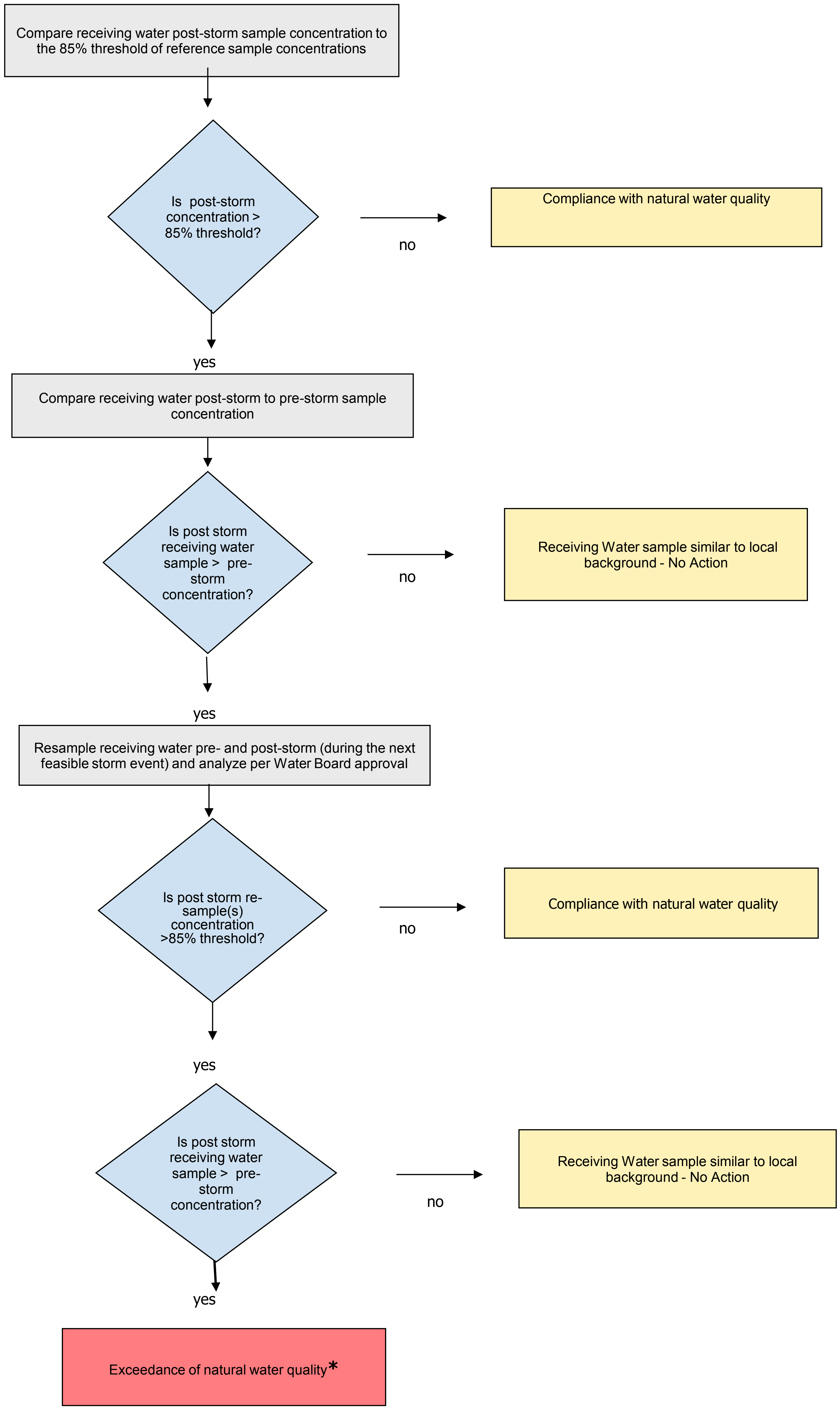
Structural control – A Best Management Practice that involves the installation of engineering solutions to the physical treatment or infiltration of runoff.

Surf Zone - The surf zone is defined as the submerged area between the breaking waves and the shoreline at any one time.

Surface Water Ambient Monitoring Program (SWAMP) comparable – Means that the monitoring program must 1) meet or exceed 2008 SWAMP Quality Assurance Program Management Plan (QAPP) Measurement Quality Objectives, or 2) have a Quality Assurance Project Plan that has been approved by SWAMP; in addition data must be formatted to match the database requirements of the SWAMP Information Management System. Adherence to the measurement quality objectives in the Southern California Bight 2008 ASBS Regional Monitoring Program QAPP and data base management comprises being SWAMP comparable.

Waterfront Operations - Piers, launch ramps, and cleaning stations in the water or on the adjacent shoreline.

Attachment 1
Special Protections Sections I(A)(3)(e) and I(B)(3)(e)
Flowchart to Deteremine Compliance with natural Water Quality



*** When an exceedance of natural water quality occurs, the discharger must comply with section I.A.2.h (for permitted storm water) or section I.B.2.c (for nonpoint sources). Note, when sampling data is available, end-of-pipe effluent concentrations will be considered by the Water Boards in making this determination.**

Areas of Special Biological Significance: Bioaccumulation Monitoring

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INTRODUCTION

The California Water Resources Control Board (SWRCB) has designated Areas of Special Biological Significance (ASBSs) as marine regions that require water quality protection. Discharges of waste into ASBSs, such as polluted storm water, are prohibited, but the State Water Resources Control Board (SWRCB) grants exceptions if it can be shown that the protection of marine life in ocean waters is not compromised. The standard for protection is that discharges “shall not alter natural ocean water quality in an ASBS” (SWRCB Resolution 2012-0012). In California, there are approximately 1,658 known discharges into ASBSs, nearly all of them storm water outfalls, which have a potential to impact ASBS water quality (SCCWRP 2003).

Wet-weather water column contamination in ASBS receiving waters was monitored in 2008 (Schiff et al. 2011). In order to define “natural”, the study used reference sites that were minimally impacted by human activities. The results from this survey found concentrations near discharges were, on average, similar to concentrations near reference sites. However, there were individual ASBS discharge sites that were greater than reference site based natural water quality thresholds. While these results were encouraging, the study did not focus on bioaccumulating compounds.

Driven by the needs of the SWRCB, the goal of this project was to answer the following questions for bioaccumulative contaminants. 1) What is the range of natural water quality for bioaccumulative compounds, as defined by mussel tissue sampled near reference stations? 2) Is the water quality for bioaccumulative compounds at ASBS discharge stations similar to that at reference stations representing natural water quality? Mussels are filter feeders that will accumulate contaminants over a longer period of time compared to storm water grab samples, and will bioconcentrate contaminants resulting in lower analytical method detection limits. Mussels have been used for decades in NOAA’s Mussel Watch Program to monitor bioaccumulative contaminants across the U.S. coastline (Kimbrough et al. 2008), but have not been previously utilized to assess ASBS water quality.

METHODS

Bioaccumulative contaminants in mussels were surveyed at 21 stations within 10 ASBSs in the Southern California Bight (Table 1 and Figure 1). Metals and synthetic organic contaminants were measured at locations representative of discharge and reference sites. The thirteen discharge sites received ASBS storm water discharge. The eight reference sites received drainage from a watershed determined to represent natural water quality. Station locations were selected by the ASBS Technical Committee and the SWRCB.

Sampling

Sample collection followed protocols established by the NOAA NS&T Mussel Watch Program (Lauenstein and Cantillo 1998, Diehl 2007). Mussels were collected from March to May 2013 at low tide by hand. Twenty individuals were collected at each of three sub-stations located along a 100 m transect of shoreline (60 individuals total per station). All intended stations were successfully sampled except at the following two locations. On Santa Catalina Island, reference station Goat Harbor could not be sampled due to field constraints (tide/weather); instead, nearby reference station Italian Gardens was sampled. On San Clemente Island, mussels were not present at discharge station Boy Scout Camp; instead, discharge station Boy Scout camp on Santa Catalina Island was sampled. As a result, San Clemente Island did not have a discharge station, only a reference station (Eel Point). *Mytilus californianus* was collected at all stations, except at Big Fisherman Cove, Two Harbors, and Boy Scout Camp on Catalina Island, where *Mytilus galloprovincialis* was collected. These two species have similar bioaccumulation potentials (Kimbrough et al. 2008). At the latter three stations, specimens were collected on man-made surfaces, whereas at all other stations specimens were collected from native habitats.

Upon collection, the shells were rinsed in water at the site to remove mud and debris, drained, and placed into individual plastic bags on ice. Samples were shipped cold to Physis Laboratories and the tissues were frozen after removal. Morphometric measurements were taken on each specimen and the individual tissues from each station were homogenized into a single sample. The sample was then split, with one portion sent for metal analysis at Physis Laboratories and one portion sent for organic analysis at SCCWRP.

Laboratory Analysis

Targeted contaminants were similar to those listed in the Ocean Plan and historically measured by the NOAA NS&T Mussel Watch Program (Table 2): metals, legacy organochlorine pesticides (OCP), polychlorinated biphenyls (PCBs), and polycyclic aromatic hydrocarbons (PAHs). Additional contaminants of emerging concern (CECs) were also measured. The polybrominated diphenyl ether (PBDE) flame retardants were recommended for monitoring in tissues by the recent expert panel on CECs in California marine ecosystems (Anderson et al. 2012), and were previously observed in Southern California mussel tissue (Dodder et al. 2013). Current use pesticides (CUP) included pyrethroids, fipronil, and fipronil degradates.

Organic contaminants were measured by gas chromatography coupled to mass spectrometry (GC/MS), and metals by inductively coupled plasma coupled to mass spectrometry (ICP/MS). The project used performance-based criteria for quality assurance. For metals, all laboratory blanks were non-detects, blank spike recoveries were 95%-108%, matrix spike recoveries were 95%-114%, the relative percent difference between duplicate matrix spikes was 0%-3%, certified reference material recoveries were 91%-109%, and the relative percent difference between replicate samples was 0%-14%. For organics, surrogate standard recoveries were 54%-116%, certified reference material recoveries were 50%-130%, and spiked matrix recoveries were 72%-110%. The relative percent difference between replicate samples was <45% for all detected organic analytes, except for 4 that were 56%-92% in one of two batches. All analytes were determined to pass the quality assurance criteria, except PCB-153/168 and PBDE-183, which were removed due to poor accuracy in the CRM. PBDE-66 passed the quality assurance criteria, but was unusually high in the mussel tissue relative to the known congener distribution in the technical mixture. This compound may have been a natural halogenated compound misidentified as a PBDE and was removed from the data set.

Data Analysis

Morphometric data was evaluated to compare mussel size and tissue mass among stations. Outlying morphometric parameter values at a particular station may indicate a difference in the age or health of the organisms, which in turn may affect contaminant concentrations relative to the other locations. The contaminant concentration data was evaluated in four steps. The results from steps 1-4 were compared and used to cross-check each other. Metals and organics were treated separately due to the higher concentration range of metals. First, the magnitude of each compound class at the reference and discharge stations were compared and outliers were noted. Second, the contaminant profiles (type and abundance of all individual compounds) were compared using clustering methods. Stations that clustered into separate groups were noted. Third, outlying reference stations were determined for each contaminant using Grubbs' test, and excluded when determining the reference threshold concentration in the next step. Fourth, a method for determining reference/discharge station equivalence was applied to each contaminant. This followed a procedure developed in the Bight '08 ASBS Study examining storm water, which used a reference-station based threshold as a proxy for distinguishing differences from natural water quality (Schiff et al. 2011). The threshold was calculated as the 85th percentile of the reference station concentrations after outliers were removed. Exceeding discharge stations were those with concentrations greater than the threshold. Threshold exceedance was determined on both a dry weight and lipid weight basis.

RESULTS

Morphometrics

The mean (± standard deviation) shell length was 61 ± 10 mm, mean total mass was 20 ± 9 g, and mean tissue mass was 5.2 ± 2.9 g. The mean shell length at each station varied among the total mean by < 2%. Shell length is a proxy for age; therefore, results indicated the mussels at each station had the same mean age and age was not a confounding variable when interpreting contaminant concentrations. The relationship between shell length and tissue mass for all 1260 individual mussels (Figure 2) can be used in future studies to predict the recoverable tissue mass given the size of collected mussels.

Contaminant Magnitude

Contaminant magnitudes are shown in Figures 3a (metals) and 3b (organics). Outlying concentrations and/or discharge stations with relatively high values are labeled. For metals, discharge station Avalon Quarry, Santa Catalina Island, had copper, silver, and molybdenum concentrations that exceeded reference station levels. Discharge station Boy Scout Camp, Santa Catalina Island, had cadmium, copper, lead, and selenium concentrations that exceeded reference station levels. Reference station Thousand Springs, San Nicholas Island, had relatively high levels of arsenic and nickel that exceeded discharge station levels.

For organics, discharge station Barge Landing, San Nicholas Island, had DDT, PCB, PBDE, and Other Pesticides concentrations that exceeded reference station levels (except Thousand Springs for PCB; Figure 4). Discharge station Two Harbors, Santa Catalina Island, had PAH concentrations that exceeded reference station levels. Discharge station Muddy Canyon, Irvine Coast, had DDT and Other Pesticide concentrations that exceeded reference station concentrations. Three Orange County discharge stations, Buck Gully South, Muddy Canyon, and Heisler Park, had elevated fipronil concentrations relative to the reference stations. Reference station Thousand Springs, San Nicholas Island, had relatively high levels of PCB that exceeded discharge station levels.

Contaminant Profile Clustering

Clustering methods compare the relative abundances of the contaminants. Stations that have a shorter "distance" to one another (i.e., cluster together) have similar contaminant profiles. Stations that have a further "distance" from one another have dissimilar contaminant profiles. Clustering methods consider the relative abundances, not absolute magnitudes, of the contaminants. For the organics, individual compound concentrations were used, not the compound class concentrations. Three clustering algorithms were applied and the results are summarized in Figures 5a (metals) and 5b (organics). The methods were hierarchical analysis, *k*-means clustering, and principal components analysis (PCA). Conclusions were based on a weight of evidence approach, where the highest confidence was reached if all three algorithms had the same result.

For metals, results from the three clustering algorithms showed Eel Point and Bird Rock (reference stations on San Clemente Island and Santa Catalina Island, respectively) formed a separate cluster due to low aluminum concentrations. This is visualized in the PCA plot, where the first two principal components (PC1 and PC2) represent 73% of the variation in the data. In the PCA plot, Boy Scout Camp on Santa Catalina Island appears distinct from the other stations due to a higher cadmium concentration, but this result was not corroborated by the other clustering algorithms.

For organics, results from the three clustering algorithms showed Two Harbors and Big Fisherman Cove (discharge stations on Santa Catalina Island) formed a separate cluster due to high PAH concentrations. Thousand Springs and Barge Landing (the reference and discharge stations on San Nicholas Island, respectively) formed a second separate cluster due to high PCB concentrations. The remaining stations may be considered as one cluster. This is visualized in the PCA plot, where the first two principal components (PC1 and PC2) represent 71% of the variation in the data.

Reference Outlier Detection

Outlier reference concentrations are shown in Table 3. Thousand Springs, San Nicholas Island, was found to have multiple outlying contaminants and may not be suitable as a reference station in future surveys. For some contaminants, the normality assumption of Grubbs' test was questionable due to only one or two detects among the reference stations. In this case, if the detect was at Thousand Springs, it was considered an outlier since multiple lines of evidence (contaminant magnitudes and clustering) indicated it may not have reference conditions. Otherwise, the station was not considered an outlier.

Reference Threshold Exceedance

The 85th percentile of the reference station concentrations for a given analyte, with outliers removed, was used to set the exceedance threshold. This threshold concentration was applied to each discharge station, and the number of exceeding contaminants at each station was determined. Figures 6a (metals) and 6b (organics) show the frequency of exceeding contaminants at each station. Fifteen percent exceedance was expected due to the 85th percentile threshold that was applied. Stations close to or below 15% exceedance were determined to have natural water quality.

For metals, stations on Santa Catalina Island with a greater than 15% exceedance frequency were Avalon Quarry (50%), Boy Scout Camp (42%), Big Fisherman Cove (25%), and Two Harbors (25%). Other exceeding stations were Buck Gully South (42%), and Scripps Reef (25%). There is a greater uncertainty in the exceedance of Big Fisherman Cove, Two Harbors, and Scripps Reef because their values are closer to the 15% threshold. The metals responsible for exceeding stations are described in Table 4a. Copper was responsible for all 6 exceeding stations and manganese for 4 of the 6 stations.

For organics, island stations with a greater than 15% exceedance frequency were Barge Landing on San Nicolas (36%), and Two Harbors (36%) and Big Fisherman Cove (32%) on Santa Catalina. Mainland stations were Buck Gully South (33%) and Crystal Cove (33%). Other stations had an exceedance frequency of 15%-25% and therefore a greater uncertainty in the result. The organic contaminants responsible for the five highest exceeding stations are described in Table 4b. PAHs were primarily responsible for exceedances on Santa Catalina Island. PCBs and PBDEs were primarily responsible for exceedances on San Nicholas Island.

Tables 5a, 5b, 6a and 6b give the full set of concentrations for each contaminant at both reference and discharge stations.

DISCUSSION

All reference stations were determined to be suitable except for Thousand Springs on San Nicholas Island. This station had a similar contaminant profile to its paired discharge station, Barge Landing, and had unusually high PCB concentrations relative to the other reference stations. In this study, outlying reference concentrations for individual contaminants were removed. Future surveys should consider excluding Thousand Springs as a reference location.

Three methods were used to analyze the contaminant data: 1) compare the concentration magnitudes at reference and discharge locations, 2) compare the relative profiles using clustering algorithms, and 3) determine if the discharge station concentration exceeds a reference threshold. These three methods generally agreed on both the discharge stations that were different from reference conditions, and on the contaminants responsible for the differences. Agreement among the methods increased the confidence in the results. The exception was the clustering results for metals, which did not identify exceeding stations observed by the other methods. For example, Avalon Quarry, Santa Catalina Island, had the highest exceedance frequency at 50% (Figure 6a), but was not identified as different from reference conditions by the clustering methods. This is because the clustering algorithms compare abundances of contaminants relative to one another, not the absolute magnitudes, and can miss magnitude differences if the relative abundances of contaminants are similar.

The concentration basis is a potentially confounding factor in the interpretation of the organic contaminant results. Organic contaminant concentrations may be calculated on either a dry weight basis or a lipid weight basis. We reported concentrations on a dry weight basis because this is the more common format for mussel tissue data (Lauenstein and Cantillo 1998, Kimbrough et al. 2008, Dodder et al. 2013), but many of the bioaccumulative contaminants are known to be positively correlated with increasing lipid mass. Therefore, the reference threshold exceedance was also calculated with concentrations on a lipid weight basis. Table 7 compares the results using both normalization methods. There was agreement that Barge Landing (San Nicholas Island), Two Harbors and Big Fisherman Cove (Santa Catalina Island), and Buck Gully South (mainland) are different than reference conditions. Other stations that exceeded on a dry weight basis did not exceed on a lipid weight basis.

Taking into account the results from the three data analysis methods, with preference given to the reference threshold exceedance method, and the dry weight/lipid weight comparison for organics, the following stations were determined to be different from natural water quality. 1) Barge Landing in the San Nicholas Island ASBS (due to organics); 2) Two Harbors (organics), Big Fisherman Cove (organics), and Boy Scout Camp (metals) in the NW Santa Catalina Island ASBS; 3) Avalon Quarry (metals) in the SE Santa Catalina ASBS; and 4) Buck Gully South (metals and organics) in the Robert Badham ASBS. Note that mussels at Two Harbors and Big Fisherman Cove were collected on man-made structures (see Table 1 for the types of structures) and had relatively high PAH concentrations. Boy Scout Camp was also collected on a man-made structure and had relatively high metal concentrations. The results for these three stations may have been influenced by their close proximity to boating activity in addition to possible storm water influence.

In 2010, NOAA, the State Water Resources Control Board, and SCCWRP collaborated to sample mussel tissues across the California coast (Dodder et al. 2013). This was in part a continuation of NOAA's Mussel Watch program, but was exclusive to California, included more stations within the state, and expanded the list of measured compounds to include contaminants of emerging concern. This data set, which includes stations intentionally selected to have the highest contaminant loads in California, can be used to put the ASBS contaminant concentrations in perspective; see Table 8 for a list of representative compounds. ASBS stations measured in the present study were lower than the maximum concentrations observed at non-ASBS stations in the 2010 study. Maximum metal concentrations in the present study were within an order of magnitude of the maximum concentration at non-ASBS stations. However, maximum organic contaminant concentrations were one to two orders of magnitude higher in the non-ASBS stations.

CONCLUSIONS AND RECOMMENDATIONS

The goal of this project was to answer the following questions for bioaccumulative contaminants. 1) What is the range of natural water quality for bioaccumulative compounds, as defined by mussel tissue sampled near reference stations? 2) Is the water quality for bioaccumulative compounds at ASBS discharge stations similar to that at reference stations representing natural water quality? The conclusions were:

- **Cumulatively, the differences between reference and discharge stations were small.**
  Median contaminant concentrations were similar between reference stations and discharge stations for both metals and organic contaminants. Contaminant profiles (types and relative abundances) among all stations were also similar based on cluster analysis.

- **Despite the similarity in average concentrations between reference and discharge stations, there were differences in concentrations at individual sites.**
  For organic contaminants, the four discharge stations determined to be different from natural water quality were Barge Landing (San Nicholas Island ASBS), Two Harbors and Big Fisherman Cove (NW Santa Catalina Island ASBS), and Buck Gully South (Robert Badham ASBS).
  For metals, the three discharge stations determined to be different from natural water quality were Avalon Quarry (SE Santa Catalina Island ASBS), Boy Scout Camp (NW Santa Catalina Island ASBS), and Buck Gully South (Robert Badham ASBS)

- **The compounds that exceeded natural water quality thresholds most frequently were copper and PAHs.**
  Of those discharge stations that exceeded natural water quality thresholds, copper was the only metal of concern at every station. Similarly, PAHs were the only organic compound of concern at every station that exceeded natural water quality thresholds. While this survey was intended to examine storm water discharges, proximity to boating activity may be a contributing factor for PAH and/or copper concentrations observed in the NW Santa Catalina Island ASBS.

- **Thousand Springs on San Nicholas Island may not be a suitable reference station.**
  The Thousand Springs reference site had high PCB concentrations relative to the other reference stations, and also had a contaminant profile similar to the discharge station on San Nicholas Island (Barge Landing). As a result, multiple PCB congeners from Thousand Springs were removed as outliers prior to establishing reference threshold values.

- **Concentrations at ASBS discharge stations were lower than maximum values observed at non-ASBS stations in the 2010 California Mussel Watch survey.**
  The most recent Mussel Watch survey in California occurred in 2010. Compared to concentrations of representative compounds in the current survey, median ASBS concentrations are lower for PAH, PCB, DDT, and PBDE.

Future recommendations include:

- **Bioaccumulation results should be connected to the other concurrent ASBS surveys on aqueous-phase storm water contaminants and biodiversity.**
  The bioaccumulation results in this report are not the only indicator of natural water quality being measured near ASBS discharges. Storm water discharges and adjacent receiving waters are being measured for pollutant concentrations and toxicity. Also, biodiversity surveys that identify and enumerate rocky intertidal biological communities are being conducted at many of the same discharge and reference stations sampled for bioaccumulation. These different indicators of

environmental stress and biological response should be integrated in a synthesis report of ASBS condition.

- **Resample San Nicholas and NW Santa Catalina Island ASBSs to confirm the contaminant concentrations observed in this study.**
  While mussels are a valuable indicator because they integrate pollutant concentrations over time, re-sampling at these sites is recommended as a confirmation step. Re-sampling efforts should investigate the use of an alternate San Nicholas Island reference station. Additionally, the NW Santa Catalina Island discharge stations should be collected at locations near the storm water discharge, but away from boating activity and on non-anthropogenic substrates in an effort to isolate the different sources of potential pollutants.

Figure 1. Map of discharge and reference stations sampled for bioaccumulative contaminants in mussels.

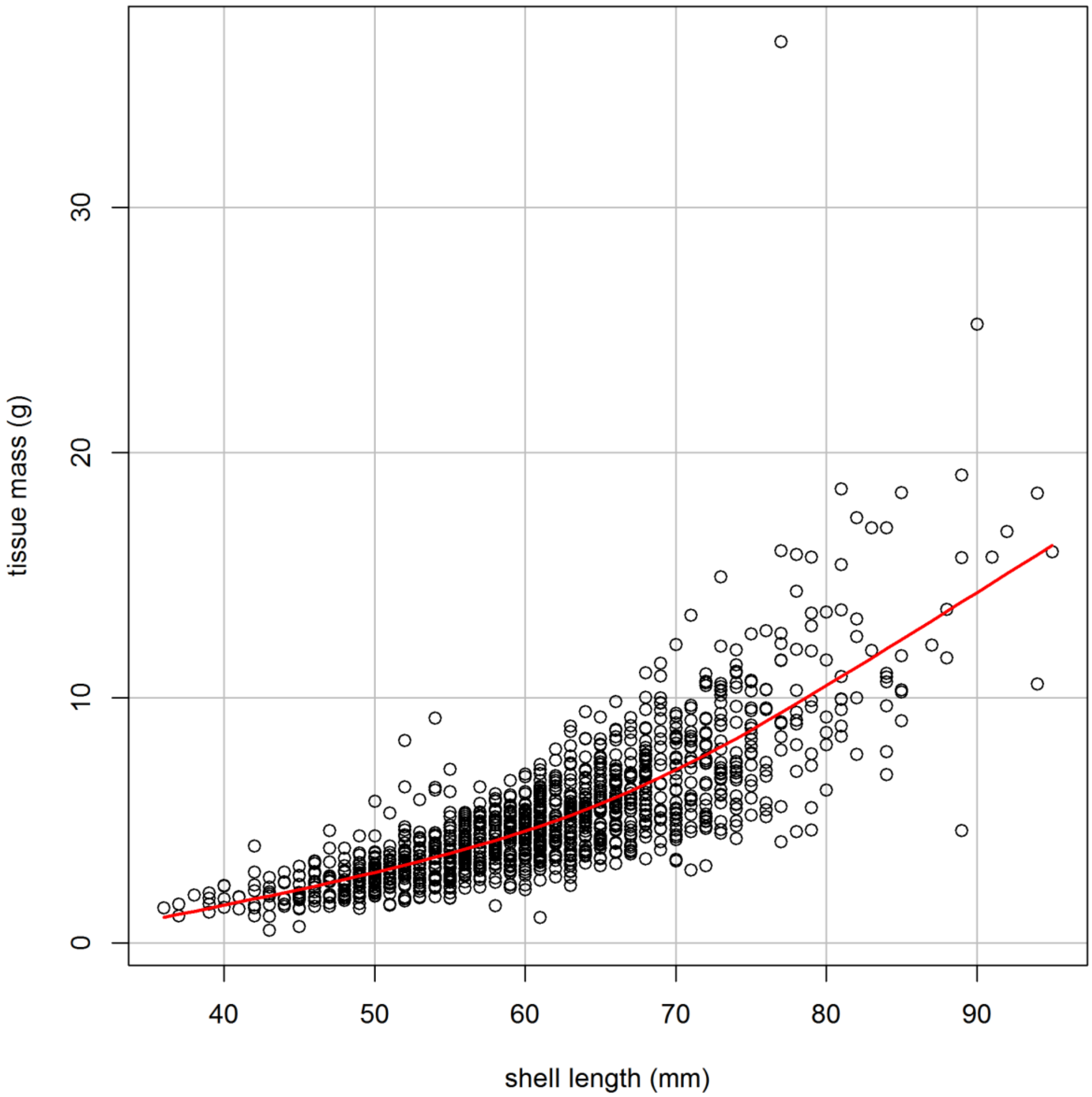

Figure 2. Shell length as a predictor of tissue mass. The data set is primarily *Mytilus californianus*, but 14% of the mussels (3 of the 21 stations) were *Mytilus galloprovincialis*. The fitted line is a cubic smoothing spline.

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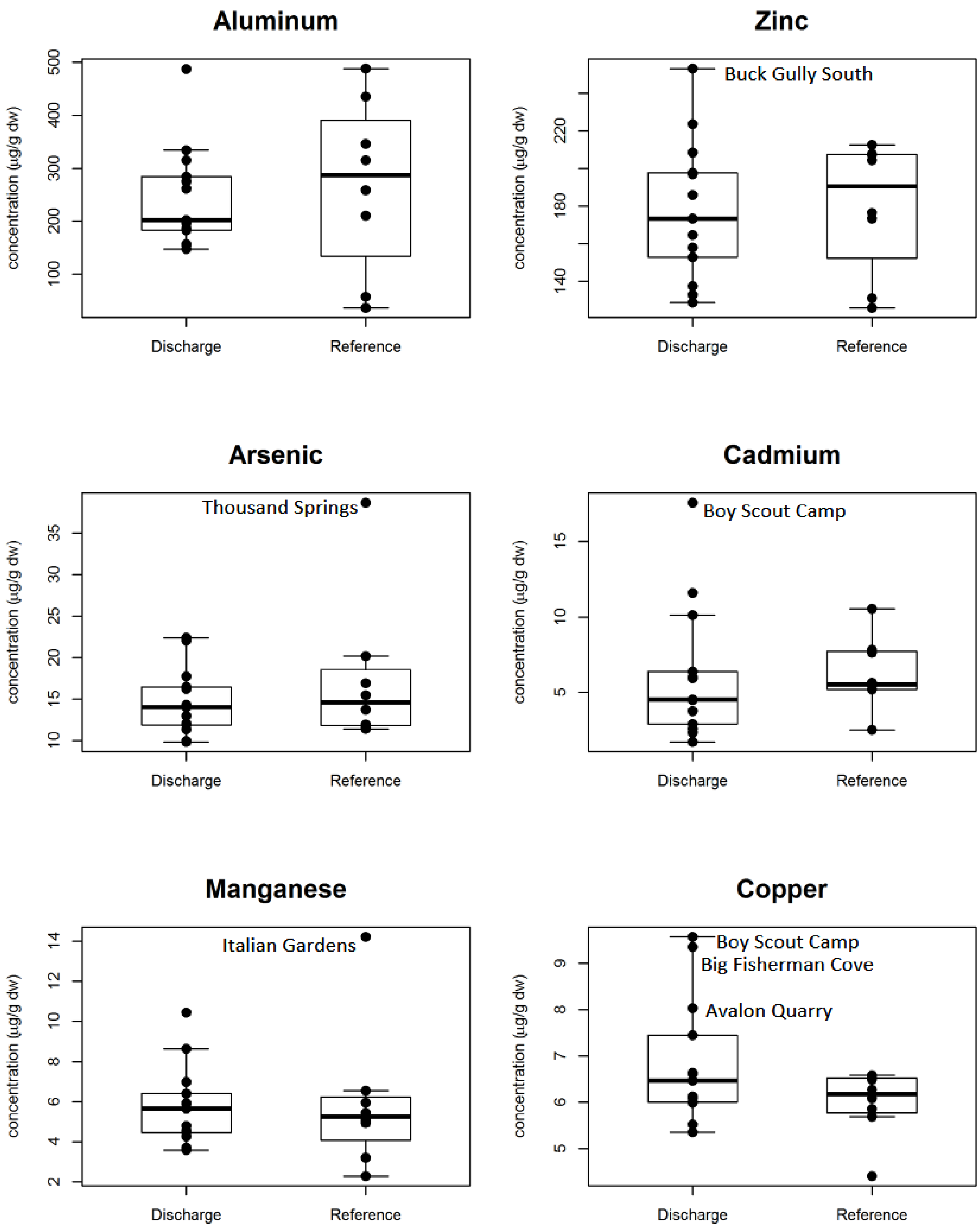

Figure 3a. Metal concentrations at discharge and reference stations.

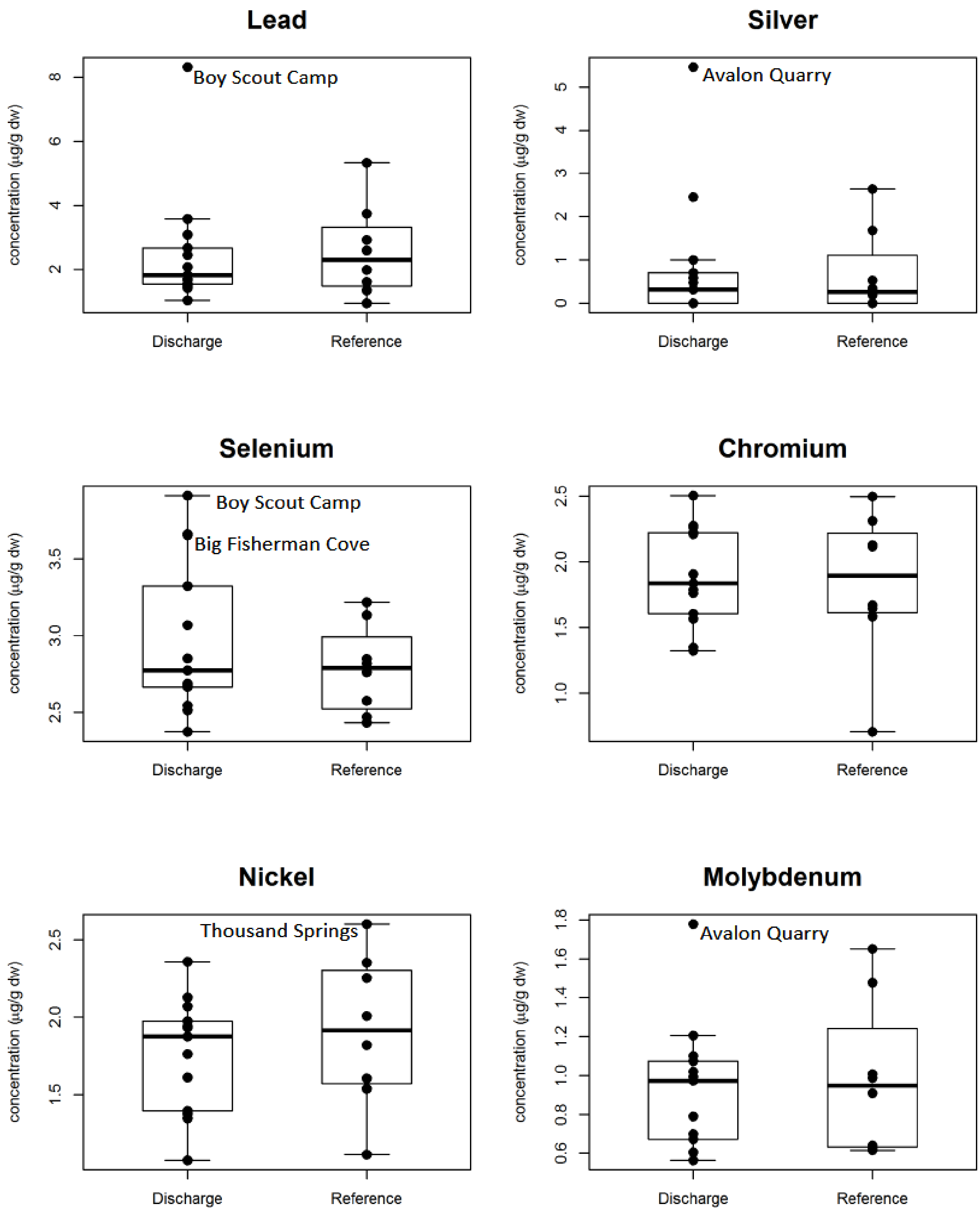

Figure 3b. Metal concentrations at discharge and reference stations.

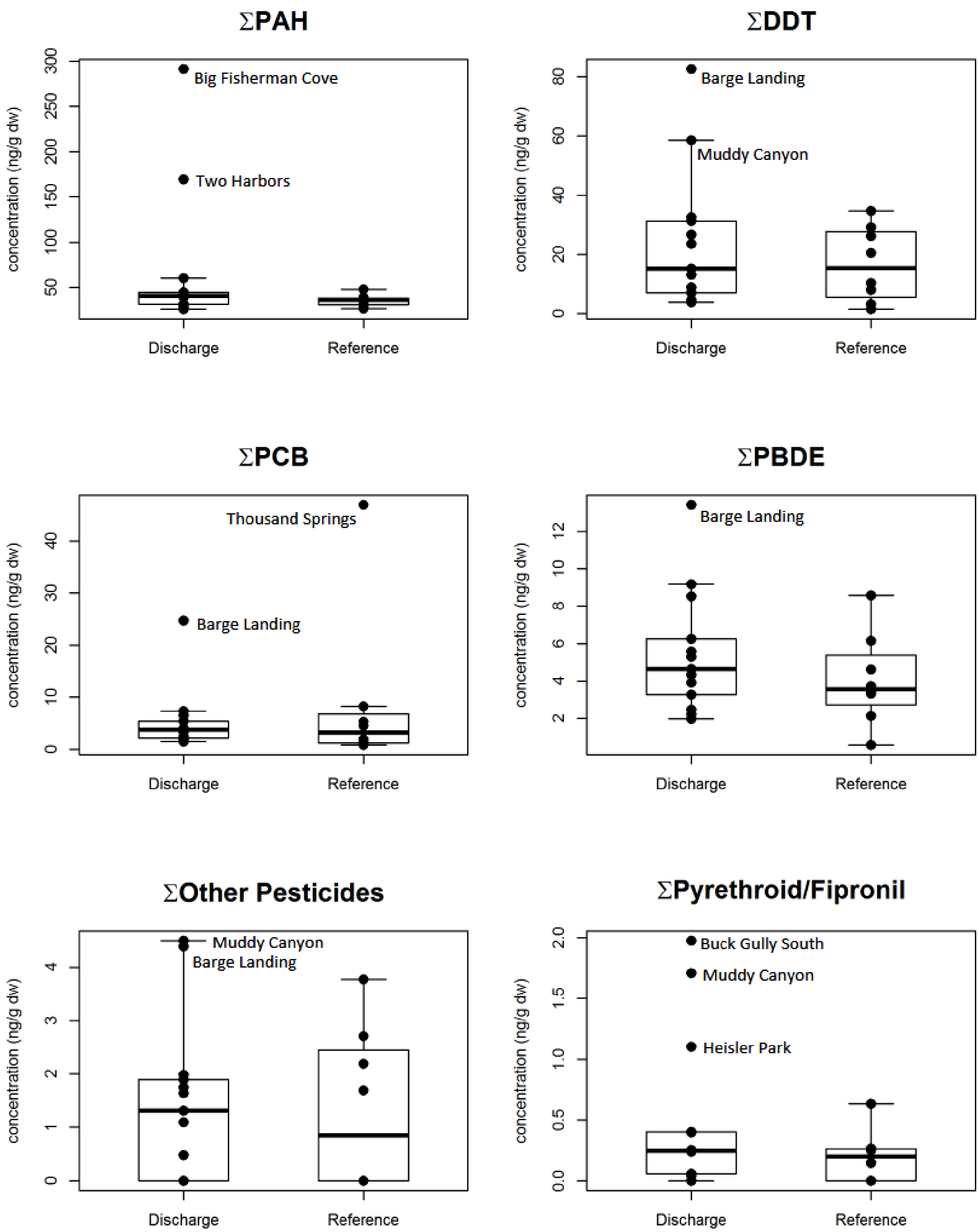

Figure 4. Organic contaminant concentrations at discharge and reference stations. The total concentration for the compound class is shown.

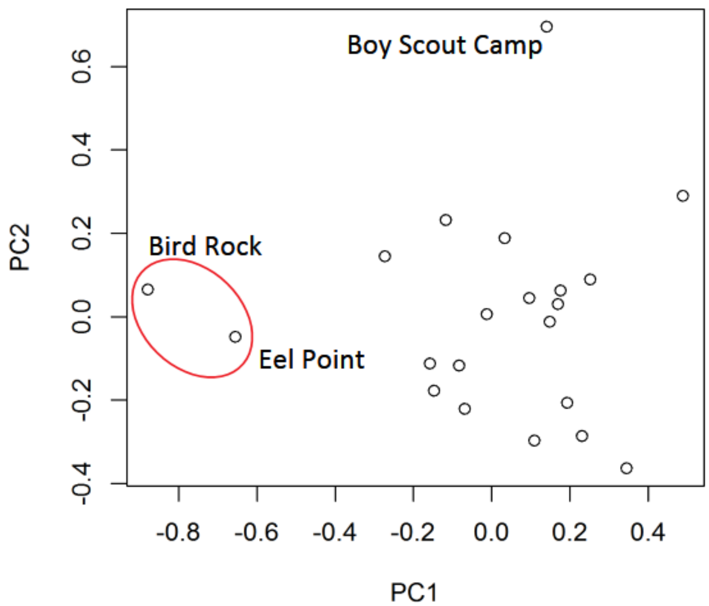

Figure 5a. PCA plot of the metal profiles at each station. Each point represents a station, and points closer in space have more similar profiles. The red circle identifies a separate PCA cluster (i.e., stations that are different from the others). These stations were also identified as a separate cluster by the *k*-means and hierarchical clustering algorithms.

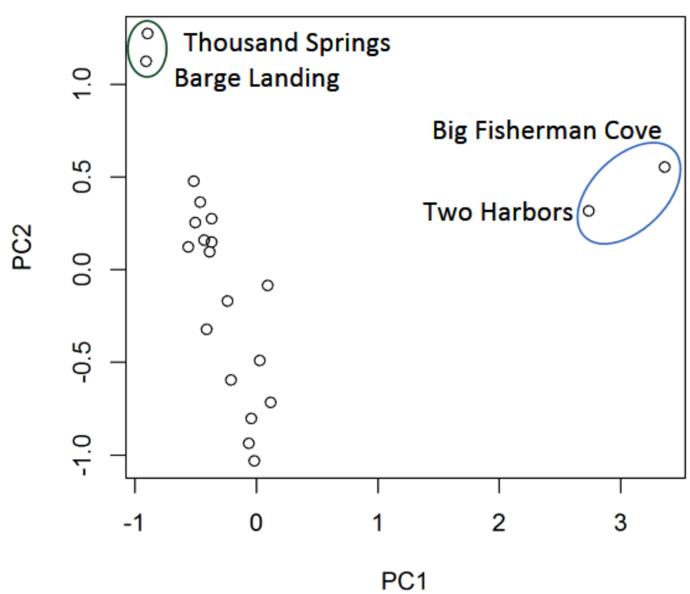

Figure 5b. PCA plot of the organic contaminant profiles at each station. The green and blue circles identify separate PCA clusters (i.e., stations that are different from the others). These stations were also identified as a separate clusters by the *k*-means and hierarchical clustering algorithms.

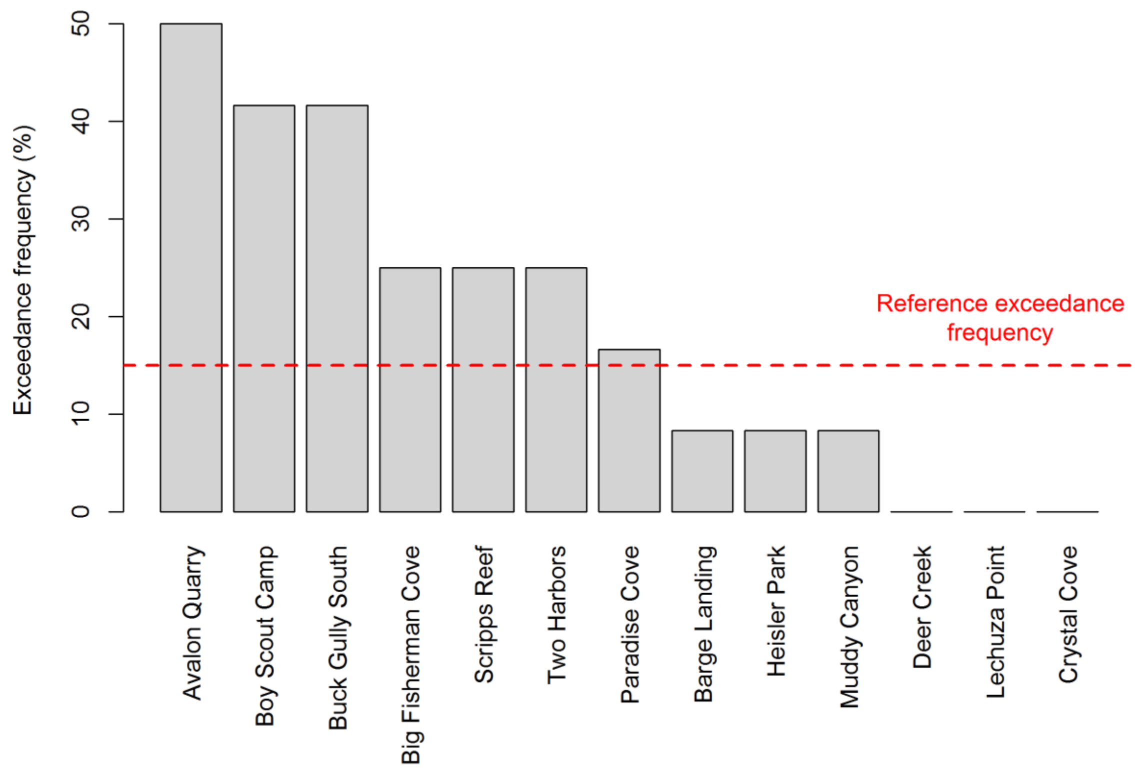

Figure 6a. Metal exceedance frequency at each station. The expected exceedance frequency (dashed line) was 15%.

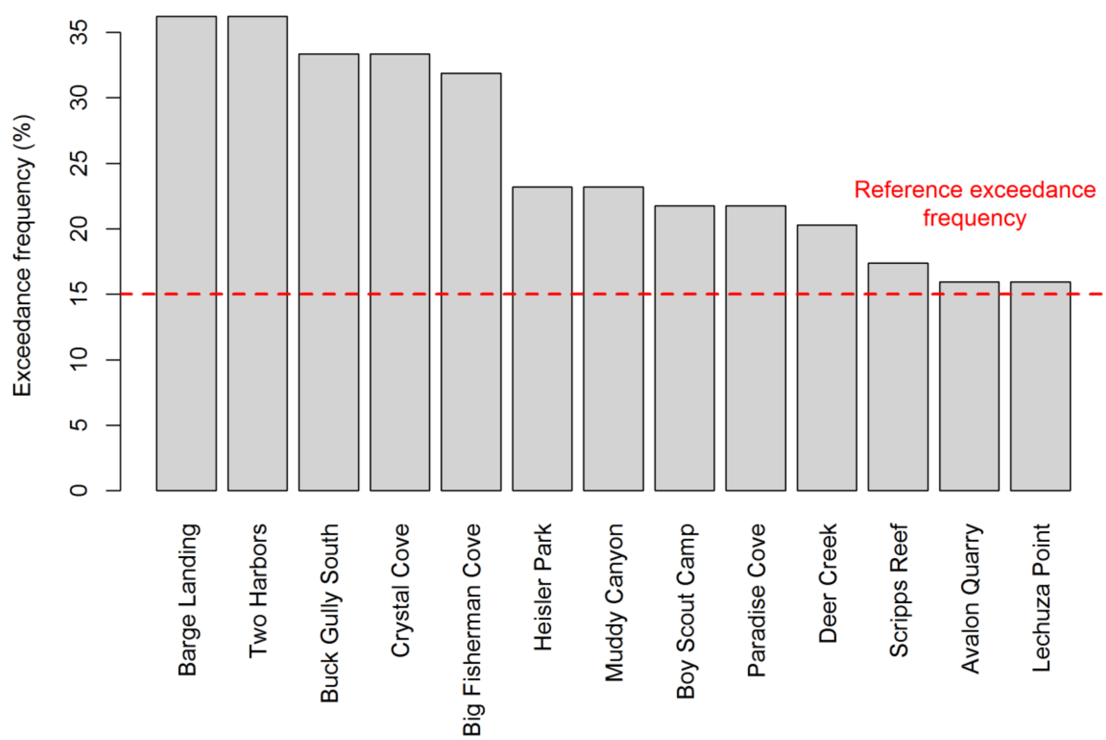

Figure 6b. Organic contaminant exceedance frequency at each station. The expected exceedance frequency (dashed line) was 15%.

Table 1. ASBS reference and discharge bioaccumulation samples collected between March and May 2013 in Southern California.

ASBS Number	Station Name	ASBS Name or Location	Type	Species	Collection Surface	Latitude	Longitude
ASBS 31	Scripps Reef	San Diego-Scripps	Discharge	*Mytilus californianus*	native	32.87148	-117.25327
not in ASBS	Dana Point	Orange County Coast	Reference	*Mytilus californianus*	native	33.45984	-117.71401
ASBS 33	Muddy Canyon	Irvine Coast	Discharge	*Mytilus californianus*	native	33.56572	-117.83314
ASBS 30	Heisler Park	Heisler Park	Discharge	*Mytilus californianus*	native	33.54251	-117.78942
ASBS 33	Crystal Cove	Irvine Coast	Discharge	*Mytilus californianus*	native	33.57078	-117.83778
ASBS 32	Buck Gully South	Robert E. Badham	Discharge	*Mytilus californianus*	native	33.58821	-117.86764
ASBS 24	Old Stairs	Laguna Point to Latigo Point	Reference	*Mytilus californianus*	native	34.06612	-118.99821
ASBS 24	Point Dume	Laguna Point to Latigo Point	Reference	*Mytilus californianus*	native	34.00027	-118.80706
ASBS 24	Sequit Point	Laguna Point to Latigo Point	Reference	*Mytilus californianus*	native	34.04303	-118.93689
ASBS 24	Deer Creek	Laguna Point to Latigo Point	Discharge	*Mytilus californianus*	native	34.06087	-118.98327
ASBS 24	Lechuza Point	Laguna Point to Latigo Point	Discharge	*Mytilus californianus*	native	34.0343	-118.86182
ASBS 24	Paradise Cove	Laguna Point to Latigo Point	Discharge	*Mytilus californianus*	native	34.01205	-118.79218
ASBS 28	Avalon Quarry	SE Santa Catalina Island	Discharge	*Mytilus californianus*	native	33.317361	-118.303556
not in ASBS	Italian Gardens	Santa Catalina Island	Reference	*Mytilus californianus*	native	33.412806	-118.384333
ASBS 25	Big Fisherman Cove	NW Santa Catalina Island	Discharge	*Mytilus galloprovincialis*	floating dock	33.445056	-118.4845
ASBS 25	Bird Rock	NW Santa Catalina Island	Reference	*Mytilus californianus*	native	33.451917	-118.487611
ASBS 25	Two Harbors	NW Santa Catalina Island	Discharge	*Mytilus galloprovincialis*	pier piling	33.442028	-118.49775
ASBS 25	Boy Scout Camp	NW Santa Catalina Island	Discharge	*Mytilus galloprovincialis*	mooring can	33.469056	-118.529917
ASBS 23	Eel Point	San Clemente Island	Reference	*Mytilus californianus*	native	32.91810139	-118.5470194
ASBS 21	Thousand Springs	San Nicolas Island	Reference	*Mytilus californianus*	native	33.284908	-119.534287
ASBS 21	Barge Landing	San Nicolas Island	Discharge	*Mytilus californianus*	native	33.219443	-119.442661

Table 2. Bioaccumulative contaminants measured in the mussel tissues. The reporting level range for each class is given in parentheses.

Metal	PAH	PCB		Pesticide	PBDE	Pyrethroid/Fipronil Pesticides
(0.058–2.8 μg/g dw)	(0.11–0.98 ng/g dw)	(0.25–1.6 ng/g dw)		(0.66–5.5 ng/g dw)	(0.020–0.31 ng/g dw)	(0.021–2.1 ng/g dw)
Aluminum	11H-Benzo[b]fluorene	PCB 8	PCB 156	Chloropyrifos	BDE 15	Fipronil
Antimony	1-Methylnaphthalene	PCB 18	PCB 157	Diazinon	BDE 28	Fipronil desulfinyl
Arsenic	1-Methylphenanthrene	PCB 28	PCB 158	Aldrin	BDE 33	Fipronil sulfide
Beryllium	2,3,5-Trimethylnaphthaline	PCB 37	PCB 167	Dieldrin	BDE 47	Fipronil sulfone
Cadmium	2,6-Dimethylnaphthalene	PCB 44	PCB 169	Endrin	BDE 49	Permethrin
Chromium	2-Methylnaphthalene	PCB 49	PCB 170	Chlordene	BDE 66	Lamda-Cyhalothrin
Copper	2-Methylphenanthrene	PCB 52	PCB 177	Oxychlordane	BDE 75	Fenpropathrin
Lead	3,6-Dimethylphenanthrene	PCB 66	PCB 180	Heptachlor Epoxide B	BDE 99	Esfenvalerate
Manganese	9,10-Diphenylanthracene	PCB 70	PCB 183	Cis-Chlordane (Alpha)	BDE 100	Deltamethrin
Molybdenum	Acenaphthene	PCB 74	PCB 187	Trans-Chlordane (Gamma)	BDE 119	Cypermethrin
Nickel	Acenaphthylene	PCB 77	PCB 189	Cis-Nonachlor	BDE 153	Cyfluthrin
Selenium	Anthracene	PCB 81	PCB 194	Trans-Nonchlor	BDE 154	Bifenthrin
Silver	Benz[a]anthracene	PCB 87	PCB 200	o,p'-DDT	BDE 155	
Thallium	Benzo[a]pyrene	PCB 99	PCB 201	p,p'-DDT	BDE 183	
Zinc	Benzo[b]fluoranthene	PCB 101	PCB 206	o,p'-DDD		
	Benzo[e]pyrene	PCB 105	PCB 209	p,p'-DDD		
	Benzo[g,h,i]perylene	PCB 110		o,p-DDE		
	Benzo[k]fluoranthene	PCB 114		p,p'-DDE		
	Biphenyl	PCB 118		DDMU		
	Chrysene	PCB 119		DDNU		
	Dibenzo[a,h]anthracene	PCB 123				
	Fluoranthene	PCB 126				
	Fluorene	PCB 128				
	Naphthalene	PCB 138				
	Perylene	PCB 149				
	Phenanthrene	PCB 151				
	Pyrene	PCB 153/168				

Table 3. Number of outlier concentrations detected at the reference stations.

Station	Contaminant Class	Number of Outliers
Thousand Springs	PCB	19
	PAH	2
	PBDE	2
	Metal (Arsenic)	1
Dana Point	Fipronil	4
	PAH	2
Italian Gardens	PAH	1
	Metal (Manganese)	1
Old Stairs	PAH	2
Eel Point	PAH	1
Sequit Point	PAH	1

Table 4a. Metal threshold exceedance by station. Check marks indicate metals that exceeded the reference threshold concentration.

Metal	Avalon Quarry	Boy Scout Camp	Buck Gully South	Big Fisherman Cove	Scripps Reef	Two Harbors
Copper	✓	✓	✓	✓	✓	✓
Manganese	✓	✓	✓		✓	
Selenium	✓	✓		✓		✓
Cadmium		✓		✓		✓
Zinc	✓		✓			
Molybdenum	✓					
Silver	✓					
Lead		✓				
Arsenic			✓			
Nickel			✓			

Table 4b. Organic contaminant threshold exceedance by station. Values are the number of individual compounds that exceeded the reference threshold concentrations. The value in parentheses is the percent of exceeding contaminants within the compound class.

Contaminant Class	Barge Landing	Two Harbors	Big Fisherman Cove	Crystal Cove	Buck Gully South
PAH	2	22 (81%)	19 (70%)	4	13 (48%)
PCB	12 (28%)	0	0	7 (16%)	1
PBDE	8 (57%)	2	2	8 (57%)	3
Fipronil	1	0	1	1	3 (75%)
DDT	1	0	0	4 (50%)	0
Other Pesticides	2	0	0	0	0

Table 5a. Discharge station metal concentrations (µg/g dry weight).

Metal	Reference Threshold	Avalon Quarry	Barge Landing	Big Fisherman Cove	Boy Scout Camp	Buck Gully South	Crystal Cove	Deer Creek	Heisler Park	Lechuza Point	Muddy Canyon	Paradise Cove	Scripps Reef	Two Harbors
Aluminum	431	186	183	148	284	261	275	334	154	196	157	315	487	202
Arsenic	17.3	14.0	22.4	12.0	11.4	22.0	14.3	11.8	17.7	12.9	16.5	16.2	9.8	10.0
Cadmium	7.81	6.4	5.9	10.1	17.6	4.5	2.3	6.0	2.6	4.5	3.8	2.9	1.7	11.6
Chromium	2.30	2.22	1.57	1.84	1.76	2.27	1.60	1.79	2.26	1.35	1.90	2.50	1.32	2.21
Copper	6.55	8.03	5.52	9.35	9.58	7.45	6.12	6.00	6.08	6.47	5.36	5.99	6.64	6.61
Lead	3.69	2.68	1.47	1.43	8.31	3.58	1.55	3.09	2.46	1.69	2.08	1.83	1.05	1.68
Manganese	6.01	10.4	3.7	4.3	8.6	7.0	4.8	5.9	4.5	4.6	3.6	5.7	6.4	5.9
Molybdenum	1.45	1.78	0.70	1.07	1.20	1.02	0.79	0.61	0.97	0.57	0.99	0.67	0.60	1.10
Nickel	2.35	2.07	1.61	1.35	1.87	2.36	1.40	1.93	1.97	1.37	1.76	2.13	1.08	1.94
Selenium	3.12	3.66	2.55	3.66	3.92	2.69	2.67	2.52	2.38	2.85	2.67	3.07	2.77	3.32
Silver	1.63	5.46	0	0	0	0.47	0	0.58	0.71	1.00	0.32	2.45	0	0
Zinc	208	209	186	158	133	253	164	198	197	153	224	173	129	137

Table 5b. Reference station metal concentrations (µg/g dry weight).

Metal	Bird Rock	Dana Point	Eel Point	Italian Gardens	Old Stairs	Point Dume	Sequit Point	Thousand Springs
Aluminum	37	346	57	488	315	259	210	435
Arsenic	11.6	16.9	20.2	15.5	11.4	11.9	13.7	38.7
Cadmium	10.55	2.52	7.82	5.64	5.43	5.19	5.19	7.64
Chromium	0.71	2.50	1.67	1.65	2.13	2.12	1.58	2.31
Copper	6.08	5.86	4.41	6.55	6.58	6.27	6.49	5.69
Lead	0.96	1.35	1.62	5.33	1.99	3.73	2.92	2.60
Manganese	3.22	5.95	2.30	14.22	6.54	5.06	4.95	5.45
Molybdenum	0.99	0.91	1.01	1.48	0.63	0.64	0.62	1.65
Nickel	1.11	2.25	2.35	2.01	1.54	1.82	1.60	2.60
Selenium	3.13	2.43	2.82	3.22	2.47	2.76	2.85	2.58
Silver	0	0.180	0	2.65	0.34	1.68	0.53	0
Zinc	131	204	213	126	173	207	176	208

Table 6a. Discharge station organic concentrations (ng/g dry weight).

Organic Analyte	Reference Threshold	Avalon Quarry	Barge Landing	Big Fisherman Cove	Boy Scout Camp	Buck Gully South	Crystal Cove	Deer Creek	Heisler Park	Lechuza Point	Muddy Canyon	Paradise Cove	Scripps Reef	Two Harbors
11H-Benzo[b]fluorene	0	0	0	1.96	0	0	0	0	0	0	0	0	0	3.87
1-Methylnaphthalene	0.273	0.198	0.441	0.241	0.247	0.261	0.199	0.182	0.164	0.24	0.167	0.251	0.153	0.338
1-Methylphenanthrene	10.9	9.47	9.47	10.67	11.5	17.5	8.555	12.4	11.1	7.42	12.2	9.77	7.8	7.65
2,3,5-Trimethylnaphthalene	0.203	0.456	0	0	0.222	0	0	0	0	0	0.183	0.538	0	0.222
2,6-Dimethylnaphthalene	0	0	0	0	0	1.11	0	0	0	0	0	0	0	0
2-Methylnaphthalene	0.440	0.313	0	0.439	0.384	0.418	0.221	0.402	0.238	0.400	0.257	0.343	0.387	0.566
2-Methylphenanthrene	10.9	10.1	8.59	12.8	12	14.6	8.002	12.4	10.8	7.42	11.3	10.4	6.29	9.22
3,6-Dimethylphenanthrene	3.02	2.26	2.68	3.18	3.35	4.74	0	3.74	3.15	2.12	3.21	2.21	1.41	2.23
Acenaphthene	0	0	0	0.282	0	0	0	0	0	0	0	0	0	0.386
Acenaphthylene	0.0300	1.8	0	1.31	0	0.203	0	0	1.331	0	0	0	0.164	0.301
Anthracene	0	0.485	0	5.92	0	0	0	0.714	0	0	0	0	0	3.835
Benz[a]anthracene	0	0	0	16.8	0	0.53	0	0	0	0	0	0	0	8.67
Benzo[a]pyrene	0	0	0	3.31	0	0.669	0	0	0	0	0	0	0.419	3.72
Benzo[b]fluoranthene	0.171	0	0	24.3	0.333	0	0.218	0	0	0.154	0.152	0	0.188	11.5
Benzo[e]pyrene	0.321	0.2	0	11	0.417	1.59	0.331	0.274	0.394	0.252	0.247	0.284	0.884	7.45
Benzo[g,h,i]perylene	0	0	0	2.91	0	0.381	0	0	0	0	0	0	0	3.86
Benzo[k]fluoranthene	0	0	0	9.71	0.171	0	0	0	0	0	0	0	0	4.94
Biphenyl	0.523	0.447	0.293	0.491	0.464	0.593	0.32	0.318	0.409	0.276	0.343	0.361	0.283	0.742
Chrysene	1.06	0.528	0	52.5	1.25	1.61	0.769	0.74	1.16	0.854	1.07	0.812	0	13.6
Dibenzo[a,h]anthracene	0	0	0	3.75	0	0	0	0	0	0	0	0	0	3.4
Fluoranthene	0.792	1	0.572	50.3	1.52	1.33	1.1	1.06	1.09	0.807	1.18	0.723	0.311	33.3
Fluorene	0.486	0.689	0	0.985	0.497	0	0	0.598	0	0	0	0.944	0.515	0.972
Naphthalene	0.729	0.595	1.19	0.66	0.695	0.644	0.448	0.492	0.473	0.638	0.461	0.597	0.41	0.745
Perylene	0.0302	0	0	2.05	0	0.519	1.78	0	0	0	1.13	0.3	0	1.99
Phenanthrene	6.53	7.83	5.06	26	6.76	8.15	5.095	7.4	6.28	5.36	7.1	8.54	4.75	15.8
Pyrene	3.92	3.15	3.11	50.1	4.63	5.52	2.81	3.55	4.06	2.93	3.87	2.85	2.03	30.3
BDE 100	0.549	0.258	1.78	0.259	0.119	0.448	0.838	0.498	0.92	0.6	0.58	0.4	0.83	0.2
BDE 119	0.0371	0	0	0.12	0.158	0	0	0	0.06	0	0	0	0.04	0.08
BDE 153	0.0600	0	0.18	0.08	0	0.124	0.1	0.08	0	0.04	0.1	0.06	0	0
BDE 154	0.0771	0	0.16	0.04	0.02	0.1	0.1	0.08	0.02	0.06	0.08	0.06	0.079	0.04
BDE 155	0.0405	0.04	0.16	0	0	0.199	0.08	0	0.04	0	0.04	0.04	0	0
BDE 28	0.0790	0.06	0	0	0	0	2.59	0	0	0.1	0	0	1.05	0
BDE 33	0.278	0.06	0.36	0	0.119	0	0	0.219	0	0	0	0	0.988	0.14
BDE 47	3.29	1.55	8.1	1.49	0.968	2.34	3.59	2.21	2.9	3.26	1.92	1.7	3.81	0.84
BDE 49	0.403	0.952	0.82	0	0.277	0	0.538	0.239	0	0.34	0.26	0.28	0	0.5
BDE 75	0	1.806	0	0	0	0	0.08	0.159	0.08	0	0	0	0	0
BDE 99	1.45	0.556	1.86	0.478	0.316	1.44	1.26	0.857	2.24	1.18	0.94	0.74	1.74	0.42

Table 6a, continued. Discharge station organic concentrations (ng/g dry weight).

Organic Analyte	Reference Threshold	Avalon Quarry	Barge Landing	Big Fisherman Cove	Boy Scout Camp	Buck Gully South	Crystal Cove	Deer Creek	Heisler Park	Lechuza Point	Muddy Canyon	Paradise Cove	Scripps Reef	Two Harbors
Bifenthrin	0	0	0	0	0	1.35	0	0	0	0	0	0	0	0
Cis-Chlordane (Alpha)	1.05	0	1.09	0	0	0.615	0.74	1.01	0	1.001	4.497	0.867	0.863	0
Cypermethrin	0	0	0	0	0	0	0	0	0	0	1.66	0	0	0
DDMU	2.94	0	0	0	0	0	3.61	3.83	2.23	3.44	2.74	2.5	1.35	0
Fipronil	0.232	0.367	0	0.183	0.239	0.124	0	0	0.57	0.302	0	0.138	0	0.186
Fipronil desulfinyl	0.00320	0.034	0	0	0	0.127	0.038	0	0.094	0	0	0.026	0	0
Fipronil sulfide	0	0	0	0	0	0.05	0	0	0.038	0	0	0	0	0
Fipronil sulfone	0.0489	0	0.058	0.06	0	0.326	0	0	0.4	0.096	0.05	0.088	0	0.058
o,p'-DDD	0	0	0	0	0	0	1.51	0	0	0	0	1.34	0	0
o,p-DDE	1.95	0	0	0.456	0	1.26	2.07	1.41	0.795	2.348	1.35	1.57	0	0.474
p,p'-DDD	1.01	0	0	0	0	0	1.48	0	0	1.11	0	0	0	0
p,p'-DDE	23.8	3.8	82.7	6.66	3.99	13.98	22.6	21.5	10.1	25.6	54.5	18.2	7.47	4.16
Trans-Chlordane (Gamma)	1.17	0	0.433	0	0	0.476	0.569	0.976	0.474	0.888	0	0.773	0.882	0
Trans-Nonchlor	0.828	0	2.86	0	0	0	0	0	0	0	0	0	0	0
PCB 101	0.664	0	1.08	0	0	0.438	0.781	0.464	0.349	0.641	0.386	0.871	0.3	0.306
PCB 105	0	0.968	0	0	0	0	0	0	0	0	0	0	0	0
PCB 110	0.442	0	0	0	0	0	0.465	0.305	0.238	0.416	0.282	0.628	0	0.215
PCB 118	0.532	0	2.81	0	0	0	0.955	0.49	0.532	0.738	0	1.135	0	0.285
PCB 128	0	0	0.805	0	0	0	0	0	0	0	0	0	0	0
PCB 138	1.26	0.316	8.24	0.46	0.35	1.182	1.42	1.358	0.92	1.144	0.825	1.53	0.545	0.414
PCB 149	0.737	0	1.36	0.271	0	0.455	0.64	0.656	0.282	0.676	0.421	0.789	0.323	0
PCB 151	0.0317	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 156	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 177	0.0380	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 180	0.0380	0	1.16	0	0.389	0	0	0	0	0	0.367	0	0	0
PCB 183	0.0399	0	0.963	0	0	0	0	0	0	0	0	0	0	0
PCB 187	0.637	0	2.58	0	0	0.379	0.55	0.701	0.367	0.53	0.363	0.546	0	0
PCB 200	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 49	0.745	0.545	2.18	0.371	0.626	0	0.508	0.681	0.603	0.399	0.364	0.586	0.693	0.569
PCB 52	0.363	0.311	1.97	0.321	0.358	0.474	0.517	0.392	0.396	0.347	0.491	0.406	0.255	0.326
PCB 87	0	0	0	0	0	0	0	0	0	0	0	0.295	0	0
PCB 99	0.475	0	1.56	0	0	0.393	0.623	0.328	0.259	0.494	0.319	0.562	0.236	0

Table 6b. Reference station organic contaminant concentrations (ng/g dry weight).

Organic Analyte	Bird Rock	Dana Point	Eel Point	Italian Gardens	Old Stairs	Point Dume	Sequit Point	Thousand Springs
11H-Benzo[b]fluorene	0	0	0	0	0	0	0	0
1-Methylnaphthalene	0.302	0.222	0.151	0.247	0.207	0.15	0.27	0.515
1-Methylphenanthrene	9.9	11.6	9.89	10.9	10.4	8.21	6.07	9.11
2,3,5-Trimethylnaphthalene	0.259	0.187	0	0.204	0	0	0	0
2,6-Dimethylnaphthalene	0	0	0	0.749	0	0	0	0
2-Methylnaphthalene	0.442	0.377	0.24	0.394	0.399	0.312	0.594	0.205
2-Methylphenanthrene	10.5	11.5	10.5	10.9	10.4	7.97	6.49	8.6
3,6-Dimethylphenanthrene	2.65	3.03	3.06	2.91	2.86	1.75	1.7	2.4
Acenaphthene	0	0	0.219	0	0	0	0	0
Acenaphthylene	0	3.301	0.3	0	0	0	0	0
Anthracene	0	0	0	0	0.439	0	0	0
Benz[a]anthracene	0	0	0	0	0	0	0.444	0
Benzo[a]pyrene	0	0	0	0	0.273	0	0	0
Benzo[b]fluoranthene	0	0.183	0	0	0	0.171	0.161	0
Benzo[e]pyrene	0.25	0.309	0.239	0.207	0.578	0.322	0.25	0
Benzo[g,h,i]perylene	0	0	0	0	0	0	0	0
Benzo[k]fluoranthene	0	0	0	0	0	0	0	0
Biphenyl	0.335	0.523	0.298	0.525	0.331	0.523	0.286	0.423
Chrysene	0.459	1.34	0.676	0.686	0.687	0	1.08	0
Dibenzo[a,h]anthracene	0	0	0	0	0	0	0	0
Fluoranthene	0.602	1.11	0.73	0.791	0.708	0.749	0.8	0.66
Fluorene	0.512	0	0	0	0	0.683	0	0
Naphthalene	0.771	0.589	0.461	0.724	0.581	0.4	0.714	1.21
Perylene	0	1.79	0	0	0	0	0	0.302
Phenanthrene	6.53	7.36	4.96	6.49	6.24	5.22	5.49	5.46
Pyrene	3.25	4.2	3.94	3.55	3.35	2.47	2.24	3.22
BDE 100	0.24	0.513	0.082	0	0.768	0.551	0.42	0.438
BDE 119	0	0.045	0	0	0	0.039	0	0
BDE 153	0	0	0	0	0.079	0.039	0.06	0.06
BDE 154	0.02	0.022	0	0	0.079	0.079	0.04	0.02
BDE 155	0	0.045	0	0.04	0.039	0	0	0.159
BDE 28	0.06	0.134	0	0	0	0	0.08	0
BDE 33	0.26	0	0	0.44	0	0	0	1.116
BDE 47	1.2	2.01	0.328	0.44	3.35	2.19	1.86	4.76
BDE 49	0.08	0.402	0	2.26	0.413	0	0.2	0.219
BDE 75	0	0	0	0	0	0	0	0
BDE 99	0.28	1.45	0.184	0.16	1.42	0.846	0.74	1.81

Table 6b, continued. Reference station organic contaminant concentrations (ng/g dry weight).

Organic Analyte	Bird Rock	Dana Point	Eel Point	Italian Gardens	Old Stairs	Point Dume	Sequit Point	Thousand Springs
Bifenthrin	0	0	0	0	0	0	0	0
Cis-Chlordane (Alpha)	0	0	0	0	1.33	0.993	1.01	1.05
Cypermethrin	0	0	0	0	0	0	0	0
DDMU	0	0	0	0	2.98	3.21	2.24	0
Fipronil	0.234	0.277	0.201	0.146	0	0	0.19	0
Fipronil desulfinyl	0.032	0.071	0	0	0	0	0	0
Fipronil sulfide	0	0.022	0	0	0	0	0	0
Fipronil sulfone	0	0.264	0.047	0	0	0	0.066	0
o,p'-DDD	0	0	0	0	0	0	0	0
o,p-DDE	0.642	0.756	0	0	1.97	2.05	1.66	1.26
p,p'-DDD	0	0	0	0	1.65	0	1.06	0
PCB 101	0	0.229	0	0	0.663	0.676	0.469	3.65
PCB 105	0	0	0	0	0	0	0	1.95
PCB 110	0	0	0	0	0.438	0.48	0.314	3.38
PCB 118	0	0.273	0	0	0.677	0	0.516	5.63
PCB 128	0	0	0	0	0	0	0	1.09
PCB 138	0.335	0.517	0	0	1.621	1.22	0.971	8.18
PCB 149	0	0	0	0	1.184	0.687	0.62	3.45
PCB 151	0	0	0	0	0.317	0	0	1.15
PCB 156	0	0	0	0	0	0	0	0.787
PCB 177	0	0	0	0	0.38	0	0	1
PCB 180	0.38	0	0	0	0	0	0	2.31
PCB 183	0	0	0	0	0.399	0	0	1.32
PCB 187	0	0	0	0	0.993	0.597	0.498	3.38
PCB 200	0	0	0	0	0	0	0	0.352
PCB 49	0.364	0.501	0.625	0.563	0.866	0.731	0.46	3.19
PCB 52	0.323	0.381	0.264	0.265	0.256	0.361	0.272	2.62
PCB 87	0	0	0	0	0	0	0	1.38
PCB 99	0	0	0	0	0.468	0.536	0.378	2.15
p-p'-DDE	9.69	7.29	1.53	3.11	28.1	23.9	21.3	19.2
Trans-Chlordane (Gamma)	0	0	0	0	1.57	1.2	0.685	0.564
Trans-Nonchlor	0	0	0	0	0.872	0	0	1.09

Table 7. Exceedance frequency (%) comparison for organic contaminants. Calculations were performed on a dry weight basis and lipid weight basis. Exceedance frequencies greater than 20% are in bold text.

Discharge Station	Dry Weight Basis Exceedance Frequency (%)	Lipid Weight Basis Exceedance Frequency (%)
Barge Landing	**36**	**43**
Two Harbors	**36**	**30**
Buck Gully South	**33**	**26**
Crystal Cove	**33**	20
Big Fisherman Cove	**31**	**36**
Heisler Park	**23**	12
Muddy Canyon	**23**	17
Boy Scout Camp	**22**	9
Paradise Cove	**22**	19
Deer Creek	**20**	17
Scripps Reef	17	16
Avalon Quarry	16	14
Lechuza Point	16	**22**

Table 8. Concentrations of representative compounds in four compound classes in the present study, compared to the Mussel Watch 2010 survey (ng/g dry weight).

	Chrysene (PAH)		PCB-118 (PCB)		p,p'-DDE (DDT)		BDE-47 (PBDE)	
	This Study	MW 2010	This Study	MW 2010	This Study	MW 2010	This Study	MW 2010
Median	0.77	4.7	0.27	2.0	14	30	2.0	3.2
Range	0-53	1.3-160	0-5.6	0-54	1.5-83	0-1800	0.33-8.1	0-68
Number of Stations	21	23	21	23	21	45	21	66
Maximum Station	Big Fisherman Cove	Tijuana River Estuary	Thousand Springs	San Diego-Harbor Island	Barge Landing	Monterey Bay-Salinas River	Barge Landing	Imperial Beach North Jetty

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South Coast Areas of Special Biological Significance Regional Monitoring Program Year 2 Results

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Southern California Coastal Water Research Project

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Kenneth Schiff and Jeff Brown

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EXECUTIVE SUMMARY

Over 280 km of shoreline have been designated as marine water quality protected areas, termed Areas of Special Biological Significance (ASBS), in southern California, USA. While the standard for water quality protection in an ASBS is “natural water quality”, there are at least 271 documented coastal discharges that potentially threaten this important ecological resource. The goal of this study was to assess the water quality status of ASBS by answering two questions: 1) What is the range of natural water quality near reference drainage locations? and 2) How does water quality near ASBS discharges compare to the natural water quality near reference drainage locations? Previous monitoring of southern California ASBS in 2008-09 was able to produce natural water quality guidelines, and ASBS water quality was generally comparable to these guidelines without widespread, dramatic alterations. The work detailed in this report, describes a second survey in 2012-14, which aims to increase confidence in the natural water quality guidelines and confirm the lack of demonstrative impacts to water quality in ASBS.

The sample design focused exclusively on receiving water (not effluents) and wet weather, which are the locations and times where natural and anthropogenic contributions can mix making pollutants difficult to identify and control. Twenty-seven locations encompassing 57 site-events were sampled immediately prior to (<48 hours), then immediately following (<24 hours) storm events ranging from 0.09 to 2.58 inches rainfall. Mean concentrations of total suspended solids (TSS), nutrients (ammonia, nitrate, nitrite, total phosphorus), total trace metals (arsenic, cadmium, chromium, copper, nickel, lead, silver, and zinc), pyrethroid and organophosphorus pesticides, and polycyclic aromatic hydrocarbons (PAH) from post-storm samples were similar at reference drainage and ASBS discharge sites. The average concentration difference between post-storm geometric mean concentrations at reference drainage vs. ASBS discharge sites across all parameters was <10%. Concentrations of pesticides were infrequent and post-storm samples rarely exhibited significant toxicity despite testing with three different endemic species. In addition, there was no consistent increase from pre- to post-storm concentrations at either reference drainage or ASBS discharge locations. Most post-storm concentrations did not correlate well with storm parameters (i.e., rainfall quantity, duration, intensity) or stormwater tracers (i.e., salinity, TSS), decreasing the utility of these tools for predicting impacts. A reference drainage site based threshold was used as a proxy for distinguishing differences from natural water quality. The reference based threshold included a two-step process: 1) was the individual chemical post-storm discharge concentration greater than the 85th percentile of the reference drainage site post-storm concentrations; and then 2) was the individual post-storm discharge concentration greater than the pre-storm concentration for the same storm event. While the concentrations near ASBS discharges were on average similar to reference site concentrations, there were some individual ASBS discharge sites that were greater than the reference site based threshold. Cumulatively across all ASBS, the constituents that were most frequently greater than the reference site based threshold were PAHs, pesticides, and nutrients.

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INTRODUCTION

Environmental managers face a tremendous challenge trying to maintain water quality in the face of urban development. Nowhere is this more apparent than in southern California. Population in the three coastal counties has increased from roughly 10 million in 1970 to 24 million in 2010; an increase of 140% in just 40 years (US Census 2009). Along with this increase in urban development, are commensurate increases in habitat loss, flow modification, and pollutant inputs from surface runoff (Lyon and Stein 2009, Schiff and Sutula 2004, Tiefenthaler *et al.* 2008).

In the early to mid-1970's, perhaps in anticipation of the urbanizing coastline, the State Water Resources Control Board (SWRCB) created a series of water quality protected areas, termed Areas of Special Biological Significance (ASBS). The language in the SWRCB's Ocean Plan (2010) states that ASBS shall not have any "discharge of waste" and shall maintain "natural water quality". There are 14 ASBS in southern California covering approximately 280 km of shoreline in southern California (Figure 1).

Since the mid-1970's, the SWRCB has effectively prevented the construction of treated municipal or industrial wastewater outfalls in ASBS. However, there are at least 271 storm drain outfalls that discharge to ASBS (SCCWRP 2003). These storm drain outfalls likely discharge natural constituents (i.e., suspended solids, nutrients or trace metals) as well as the possibility of anthropogenic pollutant contributions of these natural constituents and some human synthesized pollutants (i.e., pesticides).

In order to address the dilemma between water quality protected areas and development in the coastal zone, the goal of this study was to assess the water quality in southern California ASBS. Specifically, the study was designed to answer two questions: 1) what is the range of natural water quality near reference drainage locations? and 2) how does water quality near ASBS discharges compare to the natural water quality at reference drainage locations? The first question aims to quantify what is meant by "natural water quality" by visiting locations presumptively free of anthropogenic contributions. The second question compares the natural water quality levels derived from the first question to water quality near ASBS discharges to determine the level of existing water quality protection.

In 2008-09, the dischargers to ASBS in southern California and their state regulators collaborated on a first-of-its-kind regional monitoring program in an attempt to answer these questions (Schiff *et al.* 2011). After collecting 35 storm-event samples in the ocean from Malibu to San Diego, the water quality measured in ASBS receiving water near storm drain discharges was similar to the water quality at reference locations. However, one of the primary limitations from that study was a concern that the data set was too sparse. The regional monitoring collaborative recommended collecting additional data to capture the range of variability inherent between storms, between wet seasons, and between additional sites. The goal of this study fulfills these recommendations, collecting additional storms to quantify the range of variability from reference locations and near ASBS discharges, and to confirm that water quality in ASBS is being protected.

METHODS

There are 34 ASBS in California, 14 of which occur in southern California (Figure 1). The majority (78%) of ASBS shoreline in southern California surrounds the offshore Channel Islands, but a significant fraction (35 km) occur along the six mainland ASBS.

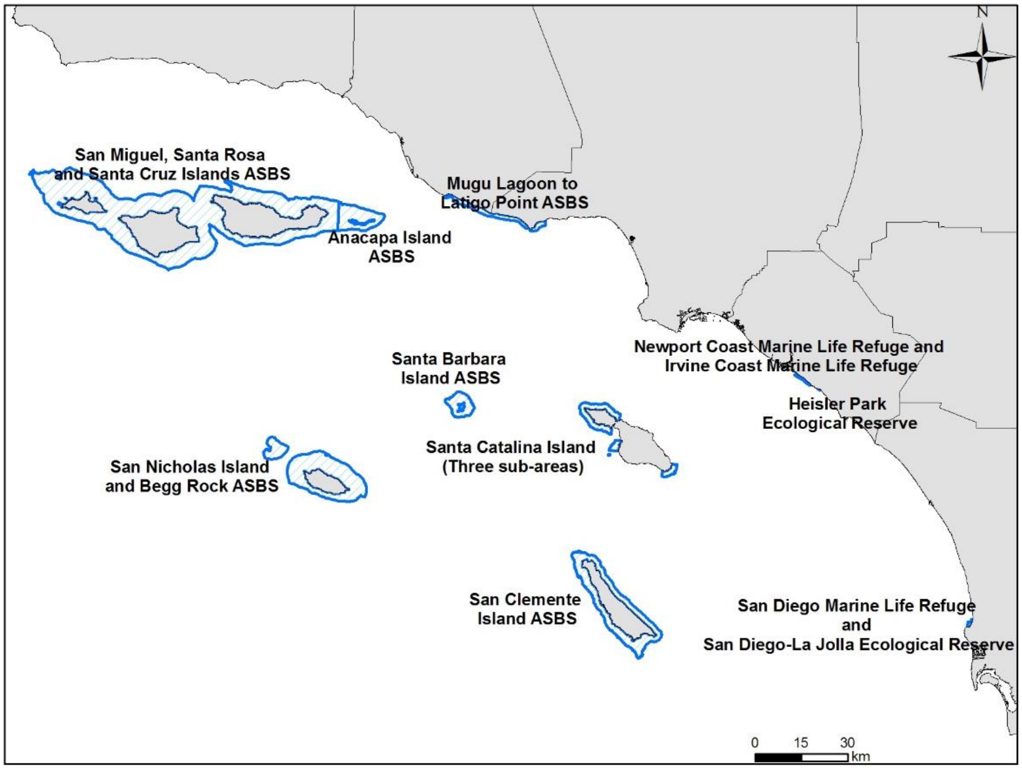

Figure 1. Southern California Areas of Special Biological Significance.

This study had two primary design elements. The first design element was a focus on receiving water. All samples were collected in receiving waters near reference drainage or ASBS discharges; no effluent discharge samples were collected as part of this study. The second design element was a focus on wet weather. Dry weather was not addressed in this study assuming that all non-storm discharges are, or soon will be, remediated.

Sampling

Twenty-seven sites were selected for wet weather sampling in this study (Table 1). Fourteen of the sampling locations were reference drainage sites (representing natural water quality) and 13 were ASBS discharge sites. Reference site selection followed five criteria: 1) the site must be an open beach with breaking waves (i.e., no embayments); 2) the beach must have drainage from a watershed that produces flowing surface waters during storm events; 3) the reference watershed should be similar in size to the watersheds that discharge to ASBS; 4) the watershed must be comprised of primarily (>90%) open space; and 5) neither the shoreline nor any segment within the contributing watershed can be on the State's 2006 list of impaired waterbodies (e.g., §303d list). All but one of the reference drainage sites was located within an ASBS.

Table 1. Sampling sites and sample inventory.

ASBS Number	ASBS Name	Site Name (Survey year, if changed between years)	Latitude	Longitude	Reference or Discharge	Number Pre-Storm Samples	Number Post-Storm Samples
21	San Nicolas Island	North end of San Nicholas Island (2013)	33.26797	-119.5	Reference	2	3
21	San Nicolas Island	North end of San Nicholas Island (2014)	33.27969	-119.52117	Reference	1	1
21	San Nicolas Island	San Nicolas Island (2008/2009)	37.26600	-119.49828	Reference	2	2
21	San Nicolas Island	Barge Landing	33.21961	-119.44736	Discharge	3	3
23	San Clemente Island	San Clemente Island (2013/14)	32.98083	-118.53815	Reference	1	1
23	San Clemente Island	San Clemente Island (2008/09)	32.98083	-118.53815	Reference	1	1
23	San Clemente Island	San Clemente Island (Outfall 30)	33.0049	-118.5569	Discharge	2	3
24	Laguna Pt to Latigo Pt	Broad Beach	34.0331	-118.851	Discharge	1	1
24	Laguna Pt to Latigo Pt	Deer Creek	34.0622	-118.986	Reference	2	2
24	Laguna Pt to Latigo Pt	Escondido Beach	34.0256	-118.76	Discharge	3	3
24	Laguna Pt to Latigo Pt	MUG283RW (7-369)	34.0249	-118.766	Discharge	1	1
24	Laguna Pt to Latigo Pt	Nicholas Canyon (2013/14)	34.0423	-118.915	Reference	2	2
24	Laguna Pt to Latigo Pt	Nicholas Canyon (2008/09)	34.04172	-118.91574	Reference	3	3
24	Laguna Pt to Latigo Pt	Zuma Beach	34.019	-118.828	Discharge	3	1
25	NW Santa Catalina Island	Catalina Express Pier (TH1-SW)	33.4418	-118.498	Discharge	2	2
28	SE Santa Catalina Island	Connolly Pacific	33.3178	-118.303	Discharge	3	3
29	La Jolla	Avenida De La Playa (SDL062)	32.8549	-117.26	Discharge	3	3
30	Heisler Park	Heisler Pk	33.3235	-117.472	Discharge	3	3
31	San Diego-Scripps	SIO Headwall (OF002)	32.8656	-117.254	Discharge	3	3
32	Robert E. Badham	Shorecliffs (NEW018OP)	33.5885	-117.868	Discharge	3	3
33	Irvine Coast/Crystal Cove	El Morro Canyon (2013/14)	33.5608	-117.822	Reference	3	3
33	Irvine Coast/Crystal Cove	El Morro Canyon (2008/09)	33.56033	-117.82205	Reference	3	3
33	Irvine Coast/Crystal Cove	Irvine Coast (12-351)	33.5642	-117.829	Discharge	1	1
-	-	Goat Harbor, Catalina Island	33.4162	-118.395	Reference	2	2
-	-	Italian Gardens, Catalina Island (2013/14)	33.4097	-118.382	Reference	2	2
-	-	Italian Gardens, Catalina Island (2009)	33.41011	-118.38176	Reference	1	1
-	-	San Onofre Creek	33.38056	-117.57722	Reference	1	1
		Total No. Reference Site-Events				**26**	**27**
		Total No. Discharge Site-Events				**33**	**30**
		Total No. Site-Events				**59**	**57**

A total of 57 site-events were sampled (Table 1). Twenty-seven site-events were sampled near reference drainage locations, and another 30 site-events were sampled near ASBS discharge locations. Up to three storm events were sampled per site. A storm was defined as any wet weather event that resulted in surface flow across the beach into the ocean receiving water. Rainfall during sampled events ranged from 0.09 to 2.58 inches. Pre-storm samples were collected prior to (<48 hours) rainfall, and post-storm samples were collected immediately following (<24 hours) rainfall, with most post-storm samples collected less than 6 hours after rainfall cessation. All post-storm samples also had a pre-storm sample collected. Samples were collected in the ocean at the initial mixing location in the receiving water. Both pre- and post-storm samples were collected by filling pre-cleaned intermediate container just below the water surface and then pouring sequential aliquotes into sample containers to ensure homogeneity.

Laboratory Analysis

All water samples were analyzed for 18 parameters: 1) general constituents including total suspended solids (TSS), oil and grease, and salinity; 2) nutrients including nitrate (NO3-N), ammonia (NH3-N), and ortho-phophate (PO4-P); 3) total [unfiltered] trace metals (arsenic, cadmium, chromium, copper, mercury, nickel, lead, selenium, silver, zinc); 3) pyrethroid (8 pyrethroids) and organophosphorus (2 OPs) pesticides; 4) total polycyclic aromatic hydrocarbons (28 PAHs); and 5) three different short-term chronic toxicity tests using endemic species (successful egg fertilization of purple sea urchin *Strongylocentrotus purpuratus*, normal germination and tube growth using the giant kelp *Macrocycstis pyrifera*, and normal growth and development of the California mussel *Mytilus californianus*). All sample analysis followed standard methods and/or EPA approved procedures (APHA 2006, USEPA 1995). Trace metals were prepared for analysis using ammonium pyrrolidine dithiocarbamate (APDC), a chelation method that concentrates trace metals and removes matrix interferences (USEPA 1996).

The project focused on performance-based measures of quality assurance. In general, laboratory data quality was quite good: 100% sample completeness, no laboratory blank samples were greater than the method detection limit; 90% success meeting data quality objectives (DQOs) for precision using laboratory duplicates; 96% success meeting DQOs for accuracy using spiked samples. All toxicity tests indicated 100% success meeting DQOs for negative and positive control response.

Data Analysis

Data analysis followed four steps. The first step was determining the validity of reference drainage site selection. This was achieved by examining the data for known anthropogenic contamination (i.e., synthetic pesticides such as pyrethroids and fipronyl), testing for outlier samples in the reference drainage data set, and the presence of toxicity. The second data analysis step compared the average concentration of post-storm ambient concentrations at reference drainage sites to ASBS discharge sites. Differences between these concentrations were evaluated using a studentized T-test. The third data analysis step examined potential relationships among parameters looking for explanatory variables that derive differences both within reference drainage sites and between reference drainage and ASBS discharge sites. Rainfall quantity, TSS and salinity concentrations were correlated with all of the post-storm chemical concentrations. For the final data analysis, a reference site based threshold was used as a proxy for distinguishing differences from natural water quality (Table 2). The reference based threshold included a two-step process: 1) was the individual chemical post-storm discharge concentration greater than the 85th percentile of the reference drainage site post-storm concentrations; and then 2) was the individual post-storm discharge concentration greater than the pre-storm concentration for the same storm event.

Table 2. Reference drainage site based thresholds (85th percentile of reference drainage site distribution) used as proxies of natural water quality in south coast areas of special biological significance.

Analyte	Reference Drainage Site Thresholds (85th Percentile)
Ammonia as N (mg/L)	0.015
Nitrate as N (mg/L)	0.34
Oil and Grease (mg/L)	0.5
Orthophosphate as P (mg/L)	0.10
Total Suspended Solids (mg/L)	48
Arsenic (µg/L)	1.8
Cadmium (µg/L)	0.15
Chromium (µg/L)	1.9
Copper (µg/L)	1.5
Lead (µg/L)	0.5
Mercury (µg/L)	0.0006
Nickel (µg/L)	1.3
Selenium (µg/L)	0.0025
Silver (µg/L)	0.08
Zinc (µg/L)	18.6
Total PAHs (µg/L)	0.0125
Total Organophosphorus pesticides (µg/L)	0.006
Total Pyrethroid pesticides (µg/L)	0.00675

Minimum detection limits for each compound are listed in Appendix B. For all calculations, one-half the detection limit was used when samples were non-detectable. Organic analyses flagged as quantifiable estimates below the reporting level, but above the detection limit, were used as reported.

RESULTS

There was a wide range of rainfall characteristics of the storms sampled across the Southern California region during the 2013-14 study year (Table 3). Storm rainfall totals ranged from 0.09 to 2.58 inches per storm event, with an event median of 0.16 inches. The greatest rainfall generally occurred in the north. For example, Malibu had triple the amount of rain measured at San Onofre on March 1, 2014 (2.58 vs. 0.91 inches) and double the amount of rain measured at Laguna on February 27, 2014 (0.79 vs. 0.32 inches). Storm rainfall intensity ranged from 0.06 to 0.66 inches per hour, with a median of 0.16. In general, the islands tended to have the least intense rainfall, never exceeding 0.27 inches per hour and the majority of storm events less than 0.11 inches per hour. Storm durations ranged from 2.9 to 50 hours, with a median of 9.4 hours. Except for Laguna, every site had at least one storm that exceeded 20 hours.

Table 3. Rainfall by region within southern California.

Region	Sampling Dates	Maximum Intensity (inches/hr)	Storm Total (inches)	Storm Duration (hr)
Malibu	2/19/2013	0.14	0.20	2.9
	3/8/2013	0.20	0.33	33.3
	2/27/2014	0.28	0.79	8.7
	3/1/2014	0.53	2.58	20.0
Laguna	2/19/2013	0.66	0.30	11.5
	3/8/2013	0.64	0.36	3.6
	2/27/2014	0.29	0.32	4.0
San Onofre	3/1/2014	0.15	0.91	50.0
La Jolla	1/25/2013	0.10	0.43	22.3
	2/8/2013	0.11	0.19	6.5
	2/20/2013	0.16	0.37	8.5
Catalina Island	2/20/2013	0.11	0.20	4.0
	3/8/2013	0.11	0.17	4.1
	2/28/2014	0.27	1.08	32.8
San Nicolas Island	1/25/2013	0.06	0.33	32.0
	2/20/2013	0.07	0.09	8.0
	3/8/2013	0.13	0.22	8.0
	2/28/2014	0.25	0.41	10.0
San Clemente Island	1/25/2013	0.07	0.21	26.2
	2/28/2014	0.17	0.91	32.0
	Min	0.06	0.17	2.9
	Max	0.66	2.58	50.0
	Median	0.16	0.33	9.4

Post-storm reference drainage site concentrations were similar to post-storm ASBS discharge site concentrations (Table 4). For 18 parameters (including TSS, nutrients, total PAH, total pyrethroids, and total trace metals), none were significantly different between reference and discharge sites following storm events ($p < 0.05$). No constituent differed by more than an order of magnitude between mean reference and discharge site concentration; half of the constituents differed by less than a factor of two. The two largest differences were for mercury, where 95% of all samples were below detection limits and TSS, which had roughly three times greater concentration at reference drainage sites than ASBS discharge sites.

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Table 4. Summary statistics for regional monitoring of southern California Areas of Special Biological Significance.

Analyte	Reference					Discharge				
	% Non-detects	Minimum	Maximum	Median	Mean	% Non-detects	Minimum	Maximum	Median	Mean
General (mg/L)										
Ammonia as N	85	0.01	0.38	0.010	0.03	80	0.010	0.13	0.010	0.026
Nitrate as N	59	0.01	0.84	0.005	0.13	30	0.005	3.0	0.19	0.37
Oil and Grease	94	0.50	1.60	0.50	0.56	90	0.50	1.3	0.50	0.58
Ortho-Phosphate as P	53	0.01	1.00	0.005	0.09	48	0.005	0.2	0.03	0.04
TSS	11	0.25	1692	7.70	132.7	3	0.25	680	12.0	45.6
Metals (µg/L)										
Arsenic	4	0.0025	14.08	1.49	2.00	3	0.003	4.1	1.5	1.6
Cadmium	4	0.0013	0.95	0.030	0.10	3	0.0013	0.36	0.02	0.06
Chromium	7	0.0063	30.55	0.37	2.25	7	0.006	5.0	0.52	0.93
Copper	4	0.0025	63.99	0.44	3.28	3	0.003	21.1	0.60	1.9
Lead	11	0.0013	71.26	0.08	3.14	3	0.0013	4.0	0.19	0.4
Mercury	100	0.0006	0.0006	0.0006	0.0006	90	0.0005	0.026	0.0006	0.002
Nickel	4	0.0013	15.84	0.44	1.76	3	0.0013	4.3	0.43	0.79
Selenium	76	0.0025	0.89	0.0025	0.06	57	0.003	0.155	0.0025	0.026
Silver	52	0.0050	0.13	0.0100	0.04	67	0.005	0.18	0.005	0.03
Zinc	7	0.0013	129.3	1.92	10.28	3	0.0013	79.6	6.6	13.5
Organics (µg/L)										
Organophosphate	100	0.0015	0.006	0.006	0.004	100	0.0005	0.136	0.006	0.011
PAH	77	0.011	1.85	0.013	0.09	77	0.007	1.96	0.013	0.12
Pyrethroid	100	0.007	0.007	0.007	0.01	90	0.007	0.058	0.007	0.010

In general, there was no consistent increase or decrease in concentrations pre- to post-storm at reference drainage or ASBS discharge sites (Figure 2). Pre:Post-storm concentration ratios were not significantly different between reference drainage and ASBS discharge sites for any of the trace metals. Nearly every trace metal, whether from reference drainage or ASBS discharge sites, encompassed unity within its interquartile distribution indicating that pre- and post-storm concentrations were similar. The only exception was copper, with over 75% of the ASBS discharge site distribution greater than 1. This would indicate that receiving water concentrations of copper increased following storm events. However, the maximum pre:post storm ratio at reference drainage sites was greater than the ratio at ASBS discharge sites.

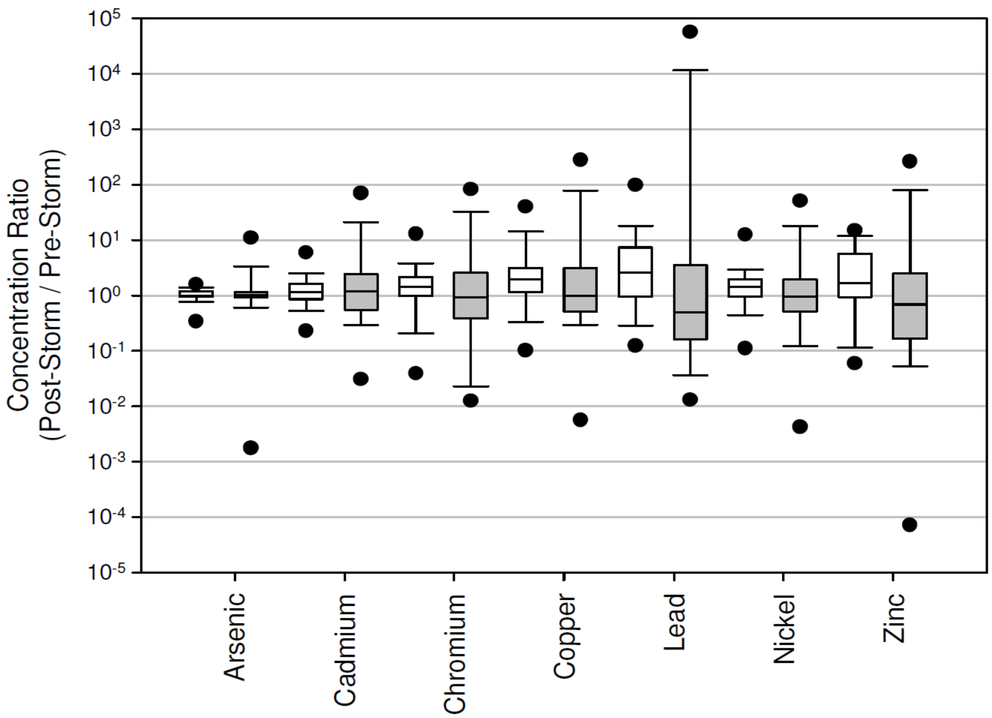

Figure 2. Box plot of pre/post-storm concentrations at reference drainage (grey) and ASBS discharge (white) sites for total trace metals.

Most relationships of discharge post-storm concentrations with storm characteristics were poor (Table 5). Correlation coefficients of constituent concentrations with storm characteristics were generally low and most were non-significant. No significant correlation was observed between storm duration and receiving water concentration. Three of 16 constituents had significant relationships with rainfall quantity, with correlation coefficients ranging from -0.37 to 0.40. Zinc concentrations increased with increasing rainfall, while nitrate and oil and grease had decreased with increasing rainfall. Eight of 16 constituents had significant relationships between constituent concentration and rainfall intensity. While most significantly correlated constituents had positive relationships with rainfall intensity, correlation coefficients ranged from -0.39 to 0.61.

Table 5. Relationships (correlation r-values) between storm characteristics or conservative tracers [salinity and total suspended solids (TSS)] and pollution concentrations at southern California discharge sites. Bold values are significant (p <0.05).

Analyte	Average Intensity	Storm Rainfall	Storm Duration	Salinity	TSS
TSS	0.12	0.07	0.10	-0.24	
Ammonia as N	-0.22	0.05	0.15	-0.14	-0.12
Nitrate as N	-0.01	**-0.37**	-0.19	0.05	0.18
Oil and Grease	**-0.39**	**-0.40**	-0.09	0.01	0.28
Ortho-Phosphate as P	0.33	0.26	0.19	0.03	0.20
Arsenic	0.12	0.14	0.07	-0.28	0.20
Cadmium	**0.61**	0.11	-0.14	0.03	**0.50**
Chromium	**0.39**	0.28	0.00	-0.24	0.25
Copper	**0.49**	0.18	0.17	-0.13	**0.43**
Lead	0.23	0.17	0.13	-0.15	**0.42**
Mercury	-0.08	0.17	0.26	0.22	0.34
Nickel	**0.38**	0.25	0.05	-0.13	**0.54**
Selenium	**0.50**	0.24	0.01	-0.01	**0.48**
Silver	0.05	0.30	0.28	0.27	0.01
Zinc	**0.40**	**0.42**	0.18	0.21	0.19
Organophosphate	0.07	-0.24	-0.09	**0.38**	0.09
PAH	0.00	-0.29	-0.09	**0.47**	0.21
Pyrethroid	**0.38**	-0.02	-0.13	0.09	0.05

Salinity, a conservative marker of freshwater inputs, was not well correlated with constituent concentrations. Only organophosphorus pesticides and PAHs were significantly correlated, but both relationships were positive indicating runoff plumes were not the source of these constituents. Perhaps the strongest and most consistently correlated parameters were between TSS and constituent concentrations, particularly for trace metals that ranged from 0.44 to 0.54

Exceedance of reference drainage site based thresholds ranged from 35 to 32% of all analyses at each ASBS (Figure 3). ASBS 32 (Robert Badham) had the greatest proportion of analyses that were greater than reference site based thresholds (33% of all analyses). ASBS 31 (San Diego-Scripps) had the smallest proportion of analyses that were greater than reference site based thresholds (3% of all analyses). Cumulatively across all ASBS, 14% of all analyses were greater than reference site based thresholds.

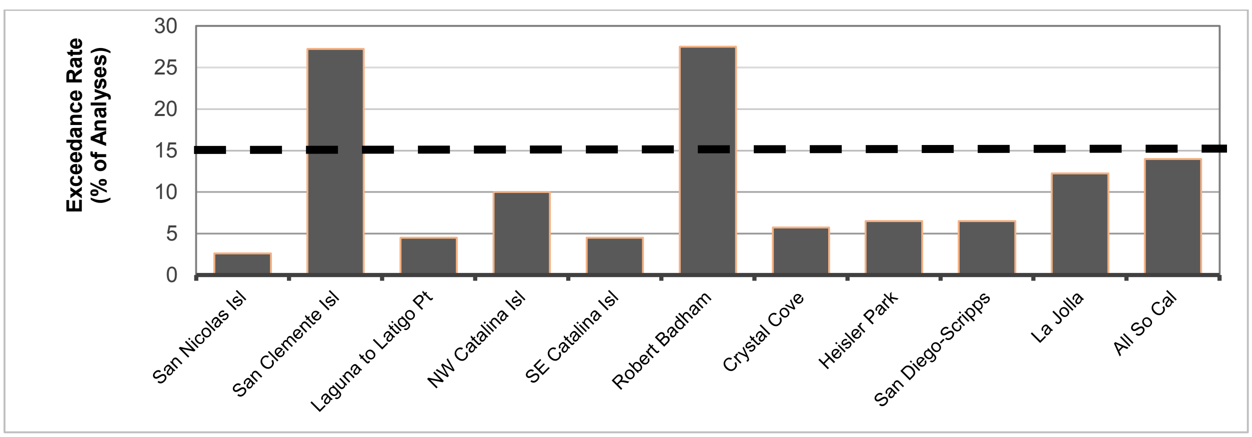

Figure 3. Exceedance of reference site based thresholds by ASBS. The 15% reference line is the expected exceedance rate for reference sites.

There were relatively minor differences in exceedance rate among constituent types (Figure 4). Total PAH (19% of all analyses) and nutrients (17% of all analyses) exceeded reference site based thresholds most frequently. TSS exceeded reference site based thresholds least frequently (10% of all analyses). Significant toxicity was rarely observed during this study. No toxicity was observed with either the mussel embryo development or sea urchin fertilization tests. Only three ASBS discharge samples exhibited toxicity utilizing the kelp germination and growth test, and none of these appeared correlated with maximum contaminant concentrations (see Appendix A).

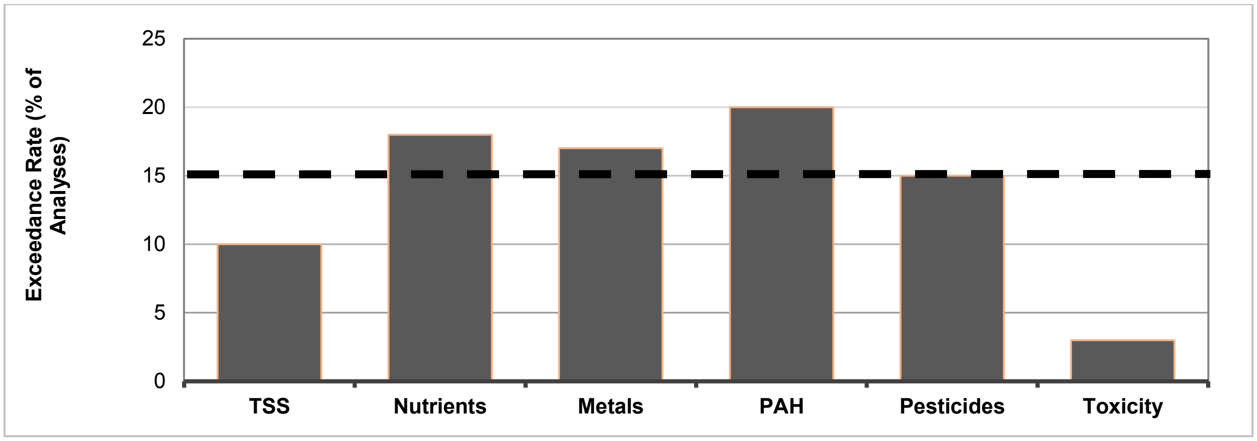

Figure 4. Exceedance of reference site based thresholds by parameter group. The 15% reference line is the expected exceedance rate for reference sites.

DISCUSSION

Based on the data reported in this study, water quality in southern California ASBS was generally comparable to natural water quality following storm events. On average, the range of post-storm pollutant concentrations in receiving waters sampled near ASBS discharge sites were not significantly different from post-storm concentrations at reference drainage sites, which included stormwater inputs free of (or minimally influenced by) anthropogenic sources. When comparing cutpoint exceedances, which focused on the 85th percentile of the reference site distribution, the southern California ASBS discharge sites cumulatively exceeded these thresholds 14% of the time for all chemical and toxicological analysis. This is similar to the 15% expected from a reference drainage site distribution (e.g., inverse of the 85th percentile). Moreover, few relationships with storm characteristics such as rainfall quantity, or with conservative tracers in the receiving water such as salinity or TSS, were observed in large part because pollutant concentrations were so low. Furthermore, synthetic anthropogenic contaminants such as organophosphorus and pyrethroid pesticides were not detectable across the wide variety of reference drainage sample locations in ASBS, and were infrequently detectable at discharge sites in ASBS. Moreover, toxicity in post-storm samples collected near ASBS discharges was rare even though multiple species were tested.

Although ASBS on average were maintaining natural water quality, there were some individual ASBS sites that appeared to have anthropogenic contributions. ASBS 32 (Robert Badham) had an unusually large proportion of analyses that were greater than reference site based thresholds. This site recently had a large structural BMP installed to help reduce constituent concentrations including a large infiltration gallery and a small restoration project near the terminus of the discharge. As a result, samples collected from the discharge to the ASBS during storm events should be examined to assess the potential for local and direct stormwater discharges to cause or contribute to the exceedances of reference site thresholds. These results should also be compared to other nearby sources that could be impacting the ASBS. For example, a recent study identified that this site potentially receives influence from the nearby Newport Harbor (Rogowski *et al.* 2014), which includes several 303d listed waterbodies. However, Newport Harbor does not discharge directly to ASBS 32 and is not subject to ASBS Special Protection regulatory requirements.

Supplementary studies examining bioaccumulation have largely supported the finding that natural water quality is being supported in southern California ASBS (Dodder *et al.* 2014). Bioaccumulation measurements were taken in mussels (*Mytilus californianus*), often considered a sentinel organism by state and federal agencies (Sericano *et al.* 1995, O'Connor 1998). Samples were collected at reference sites (to generate reference based thresholds similar to the water column sampling study design) and then compared to mussels collected near ASBS discharges. The results indicated that the number and magnitude of reference threshold exceedances were quite small. Interestingly, only San Clemente Island exceeded reference drainage site bioaccumulation and water column chemistry thresholds. This site drains a naval installation with limited development including municipal and industrial land uses, and exceeded reference based thresholds for several contaminants in mussel tissues. The exceedances could be a result of runoff from these land-based activities, or they could be associated with local geology associated with naturally high levels of metals (Weigand 1994). Repeated mussel sampling is being conducted at San Clemente Island to confirm these results.

Supplementary studies examining biodiversity have also supported the general finding that natural water quality is being supported in southern California ASBS (Raimondi *et al.* 2014). Similar in study design to the water column and tissue chemistry, rocky intertidal habitats were quantitatively surveyed near reference and ASBS discharges following the wet season. Results indicated that these biological communities, which are perhaps the habitat most at risk from direct storm drain discharges, were largely similar to reference site communities. Where sites near ASBS discharges did appear to be different from reference sites, resampling has indicated that these differences are relatively short-lived.

This study in 2012-14 was not the first regional survey of water concentrations in ASBS of southern California. The previous regional survey in 2008-09 listed several recommendations that the current study has addressed (Schiff *et al.* 2011). The primary recommendation was to increase sample size to confirm and provide greater confidence in the reference-based thresholds. Interestingly, reference-based thresholds changed little even though the sample size more than doubled, and included new sites and a wider range of storm conditions. The second recommendation from 2008-09 was to better define the extent and magnitude of exceedances at ASBS discharge locations. In 2008-09, the cumulative exceedance rate was 15% of all chemical and toxicological analysis. In 2012-14, the same cumulative exceedance rate was 14%. The similarities of these results, separated by five years, should provide managers with added confidence for making environmental decisions.

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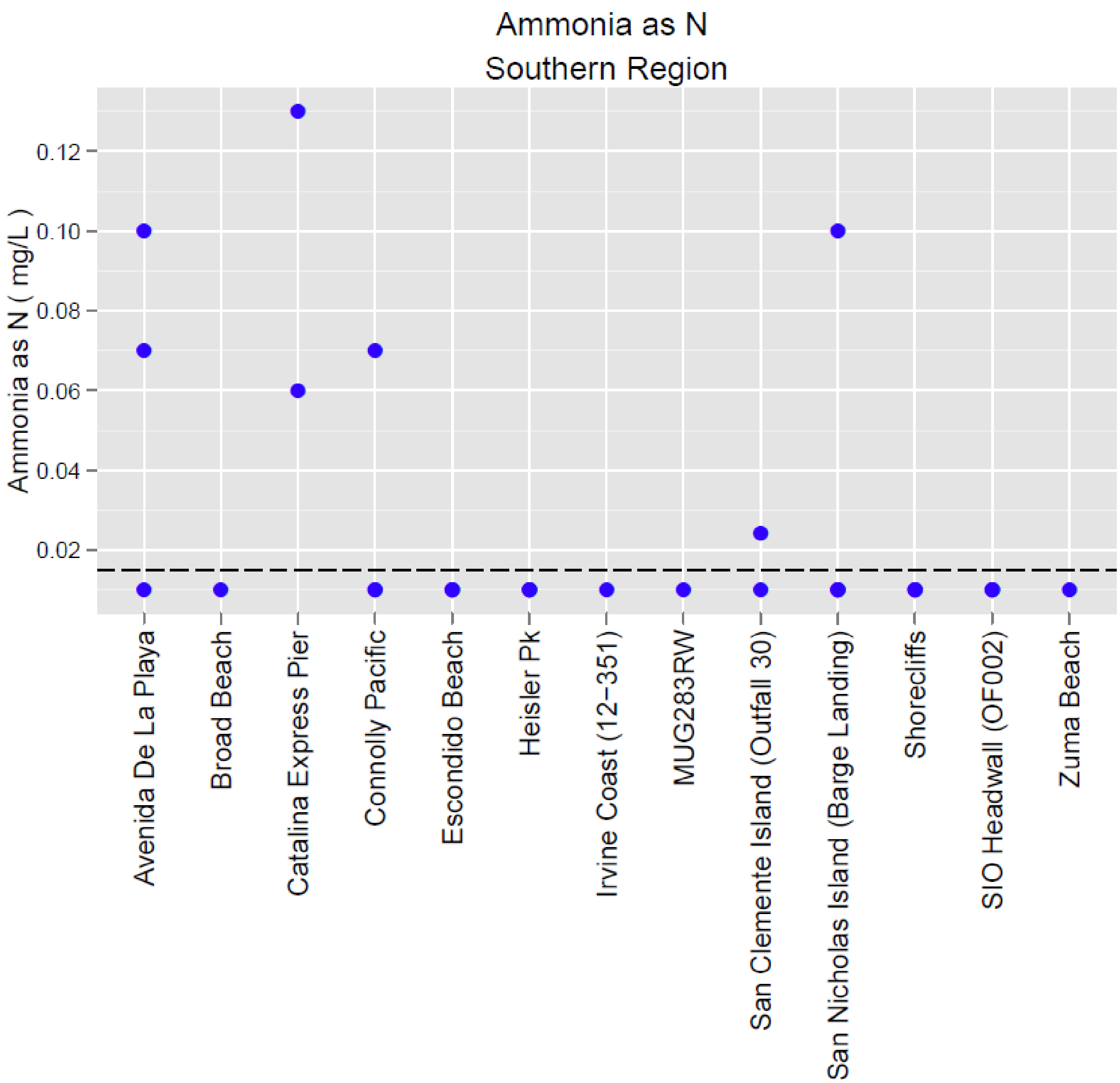
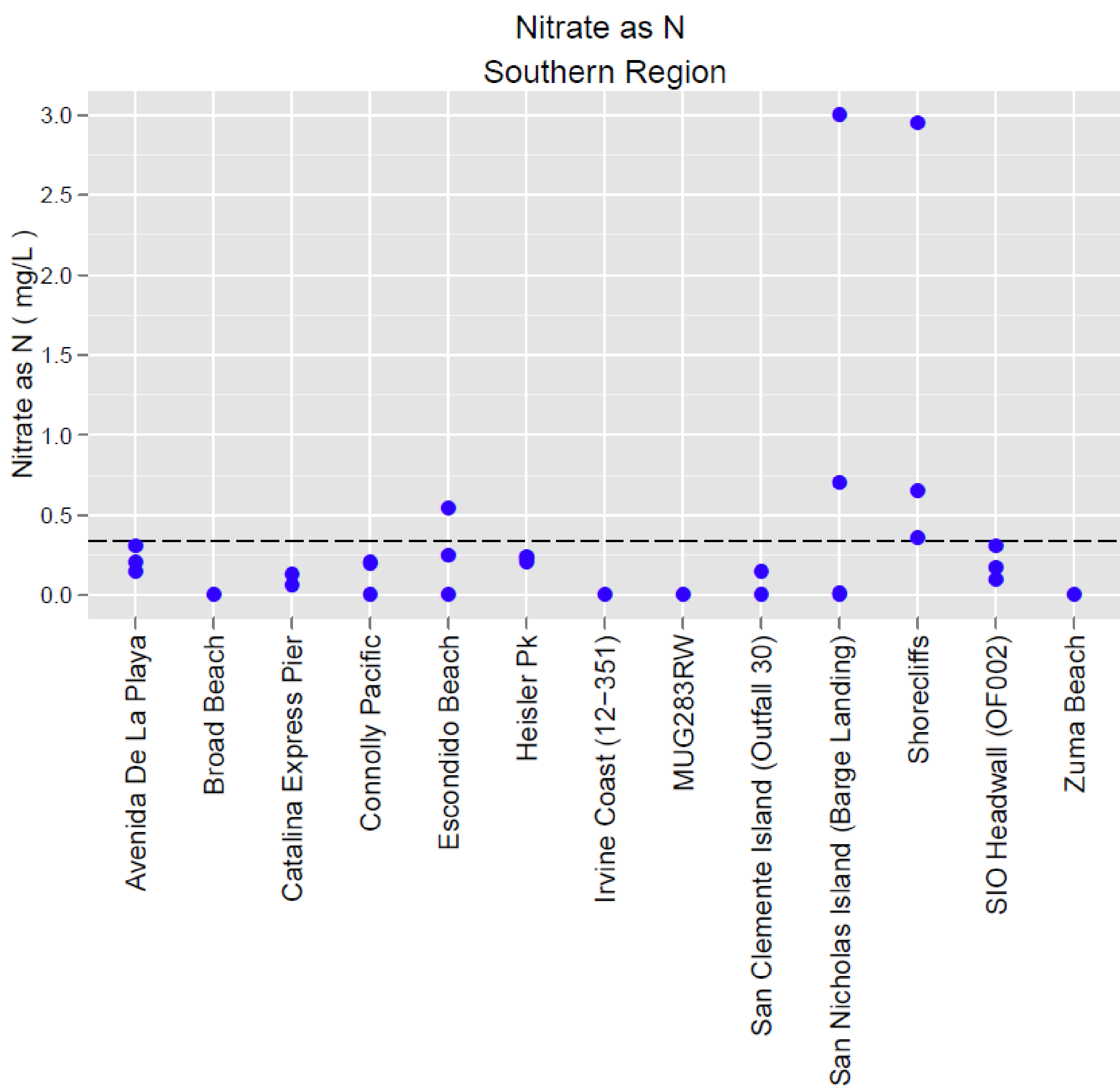
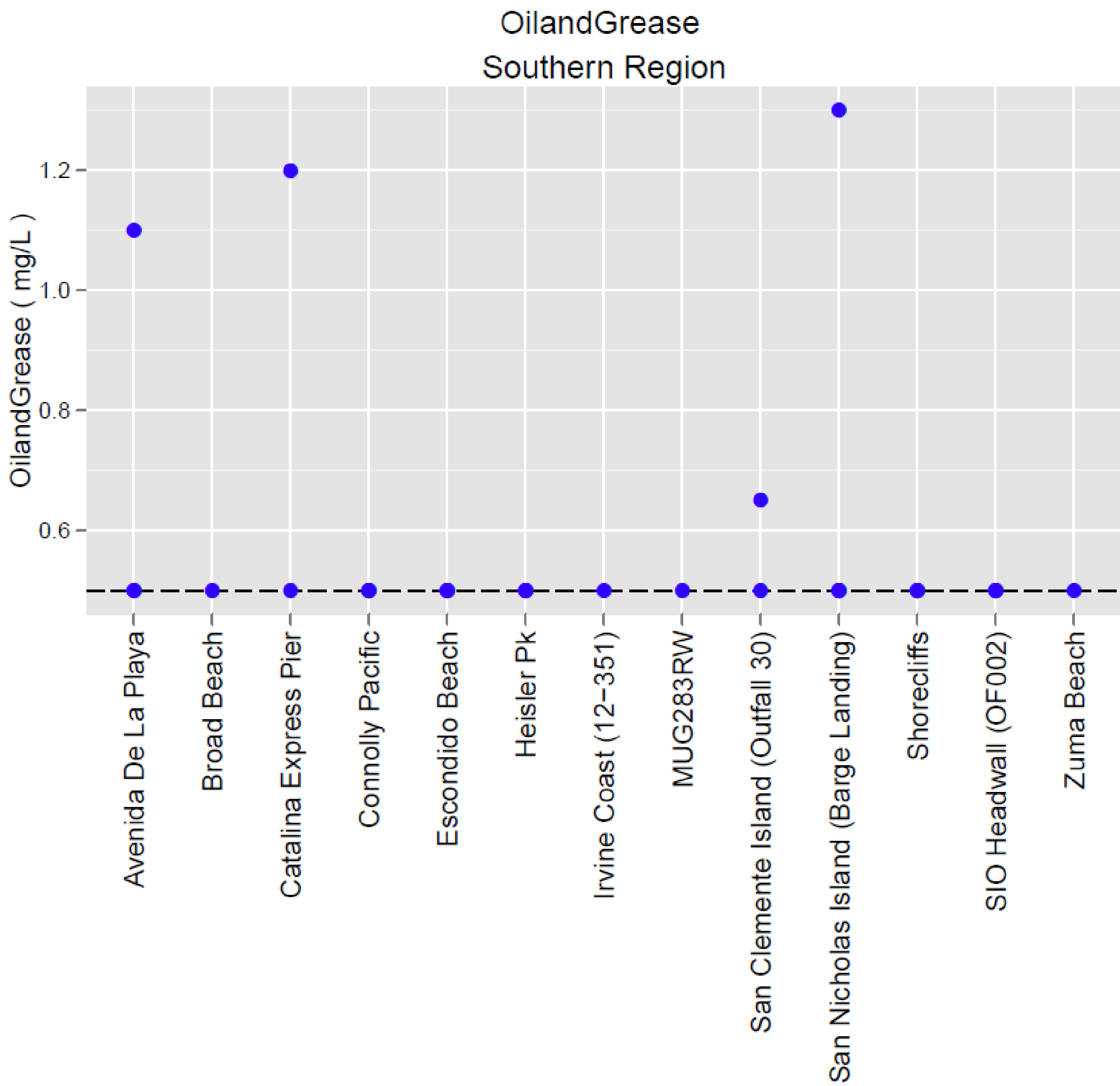
APPENDIX A – POST-STORM CONCENTRATION PLOTS FOR SOUTHERN REGION ASBS AT DISCHARGE RECEIVING WATER SITES


Ammonia as N
Southern Region
Ammonia as N (mg/L)
0.12
0.10
0.08
0.06
0.04
0.02
Avenida De La Playa
Broad Beach
Catalina Express Pier
Connolly Pacific
Escondido Beach
Heisler Pk
Irvine Coast (12−351)
MUG283RW
San Clemente Island (Outfall 30)
San Nicholas Island (Barge Landing)
Shorecliffs
SIO Headwall (OF002)
Zuma Beach

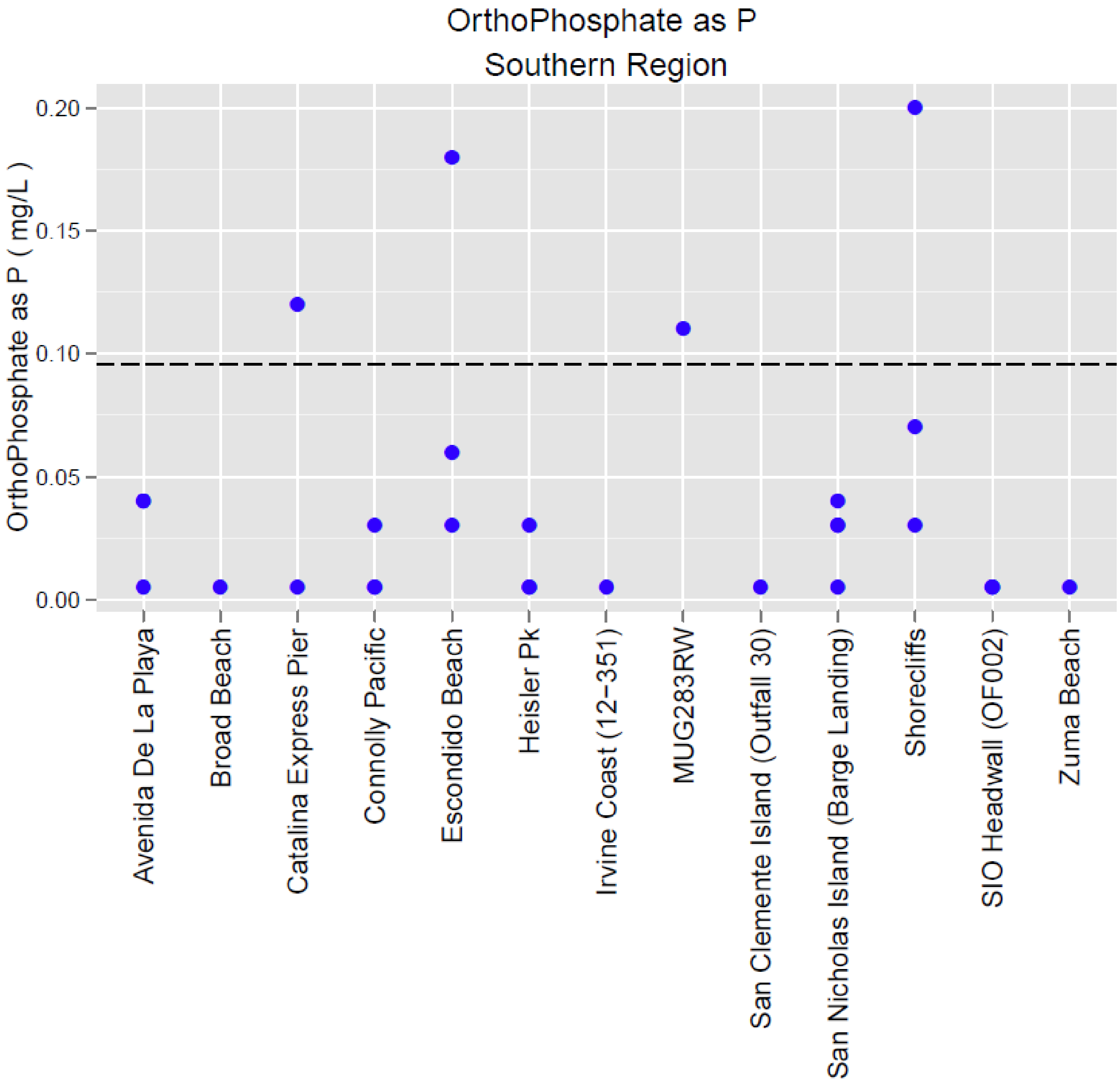
Ammonia as N


Nitrate as N
Southern Region
Nitrate as N (mg/L)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Avenida De La Playa
Broad Beach
Catalina Express Pier
Connolly Pacific
Escondido Beach
Heisler Pk
Irvine Coast (12−351)
MUG283RW
San Clemente Island (Outfall 30)
San Nicholas Island (Barge Landing)
Shorecliffs
SIO Headwall (OF002)
Zuma Beach

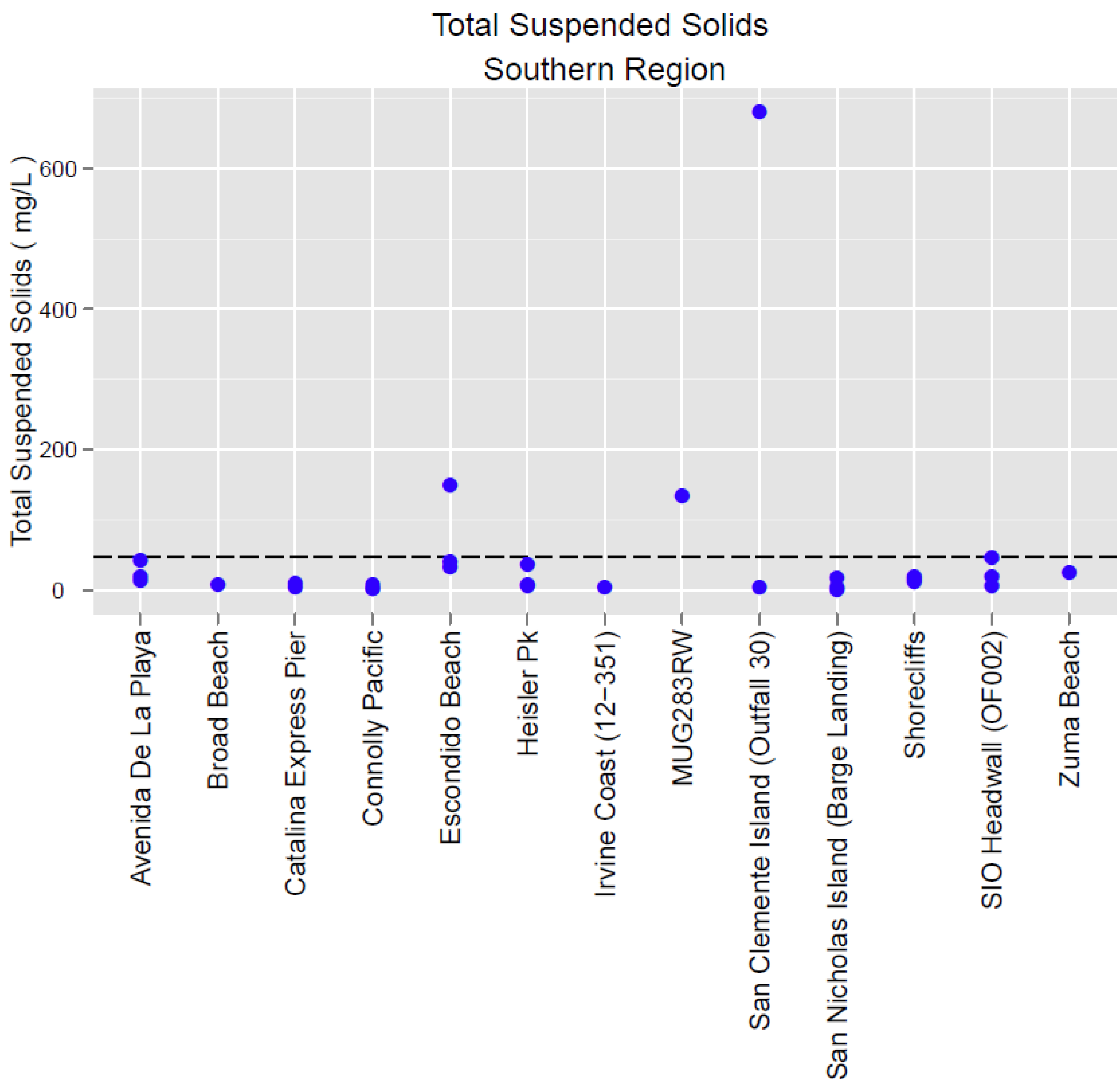
Nitrate as N



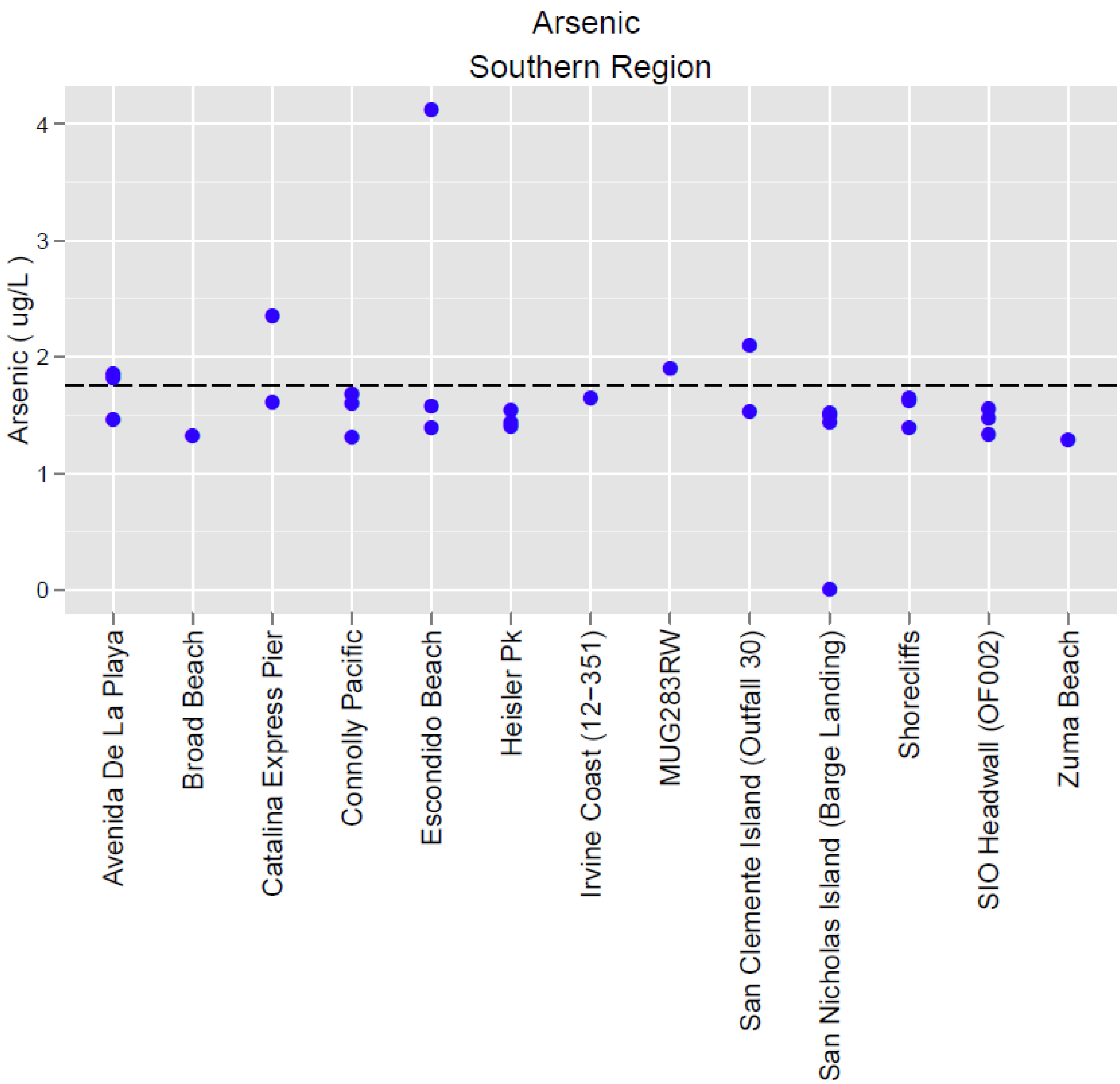
Oil and Grease



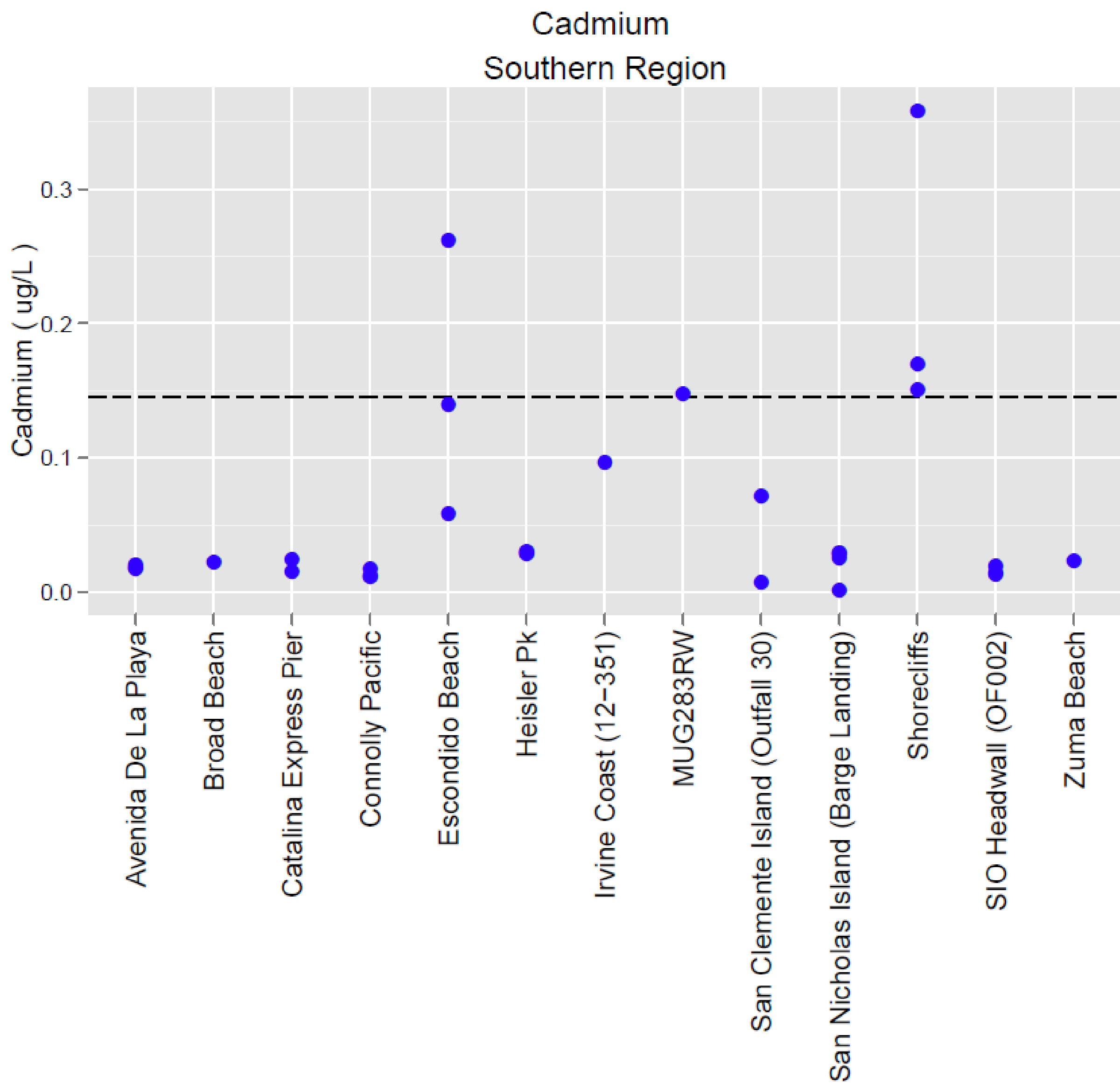
Ortho-phosphate as P



Total Suspended Solids


Arsenic
Southern Region
Arsenic (ug/L)
4
3
2
1
0
Avenida De La Playa
Broad Beach
Catalina Express Pier
Connolly Pacific
Escondido Beach
Heisler Pk
Irvine Coast (12−351)
MUG283RW
San Clemente Island (Outfall 30)
San Nicholas Island (Barge Landing)
Shorecliffs
SIO Headwall (OF002)
Zuma Beach

Arsenic


Cadmium
Southern Region
Cadmium (ug/L)
0.3
0.2
0.1
0.0
Avenida De La Playa
Broad Beach
Catalina Express Pier
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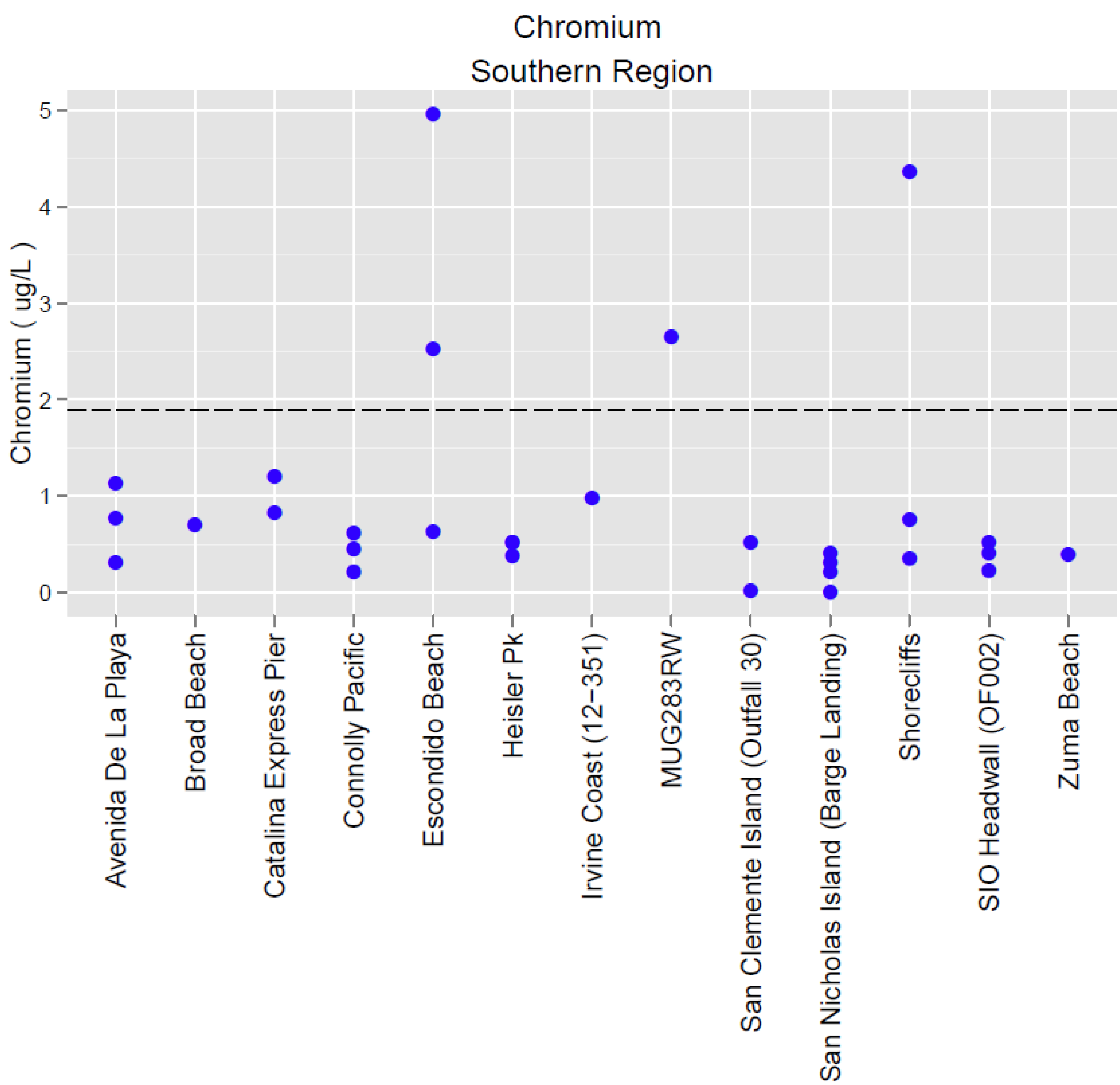
Escondido Beach
Heisler Pk
Irvine Coast (12−351)
MUG283RW
San Clemente Island (Outfall 30)
San Nicholas Island (Barge Landing)
Shorecliffs
SIO Headwall (OF002)
Zuma Beach

Cadmium


Chromium
Southern Region
Chromium (ug/L)
5
4
3
2
1
0
Avenida De La Playa
Broad Beach
Catalina Express Pier
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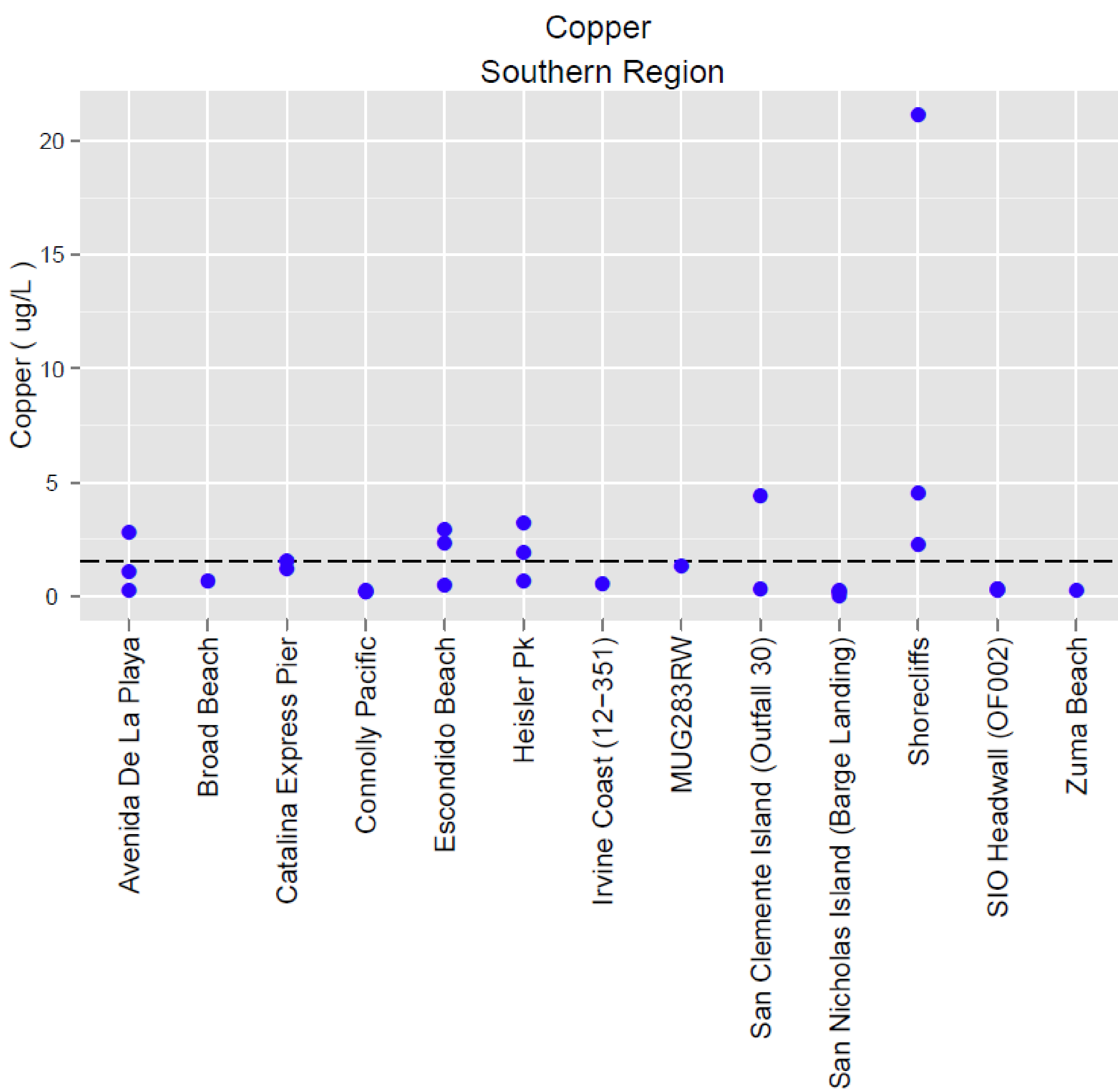
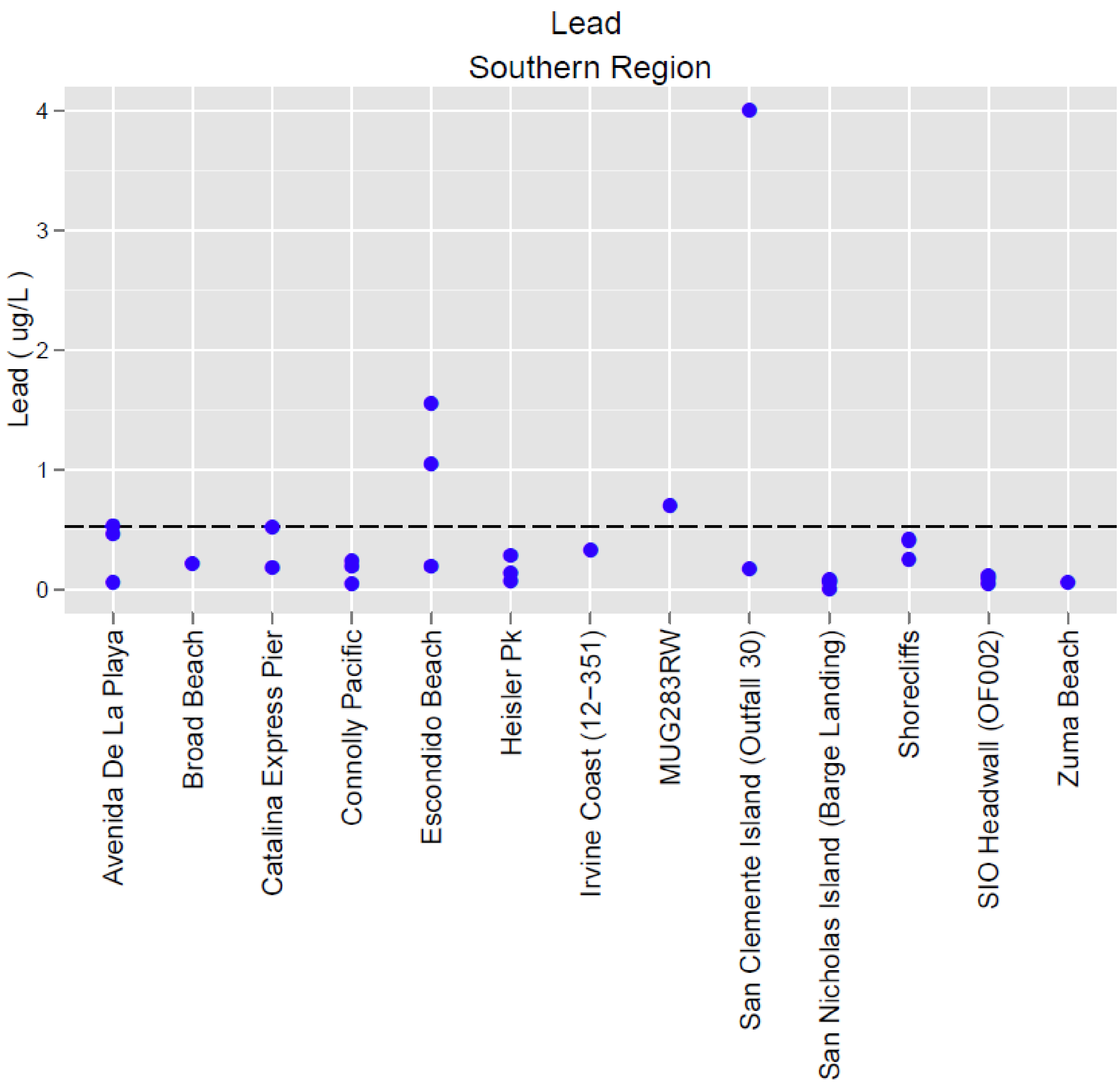
Escondido Beach
Heisler Pk
Irvine Coast (12−351)
MUG283RW
San Clemente Island (Outfall 30)
San Nicholas Island (Barge Landing)
Shorecliffs
SIO Headwall (OF002)
Zuma Beach

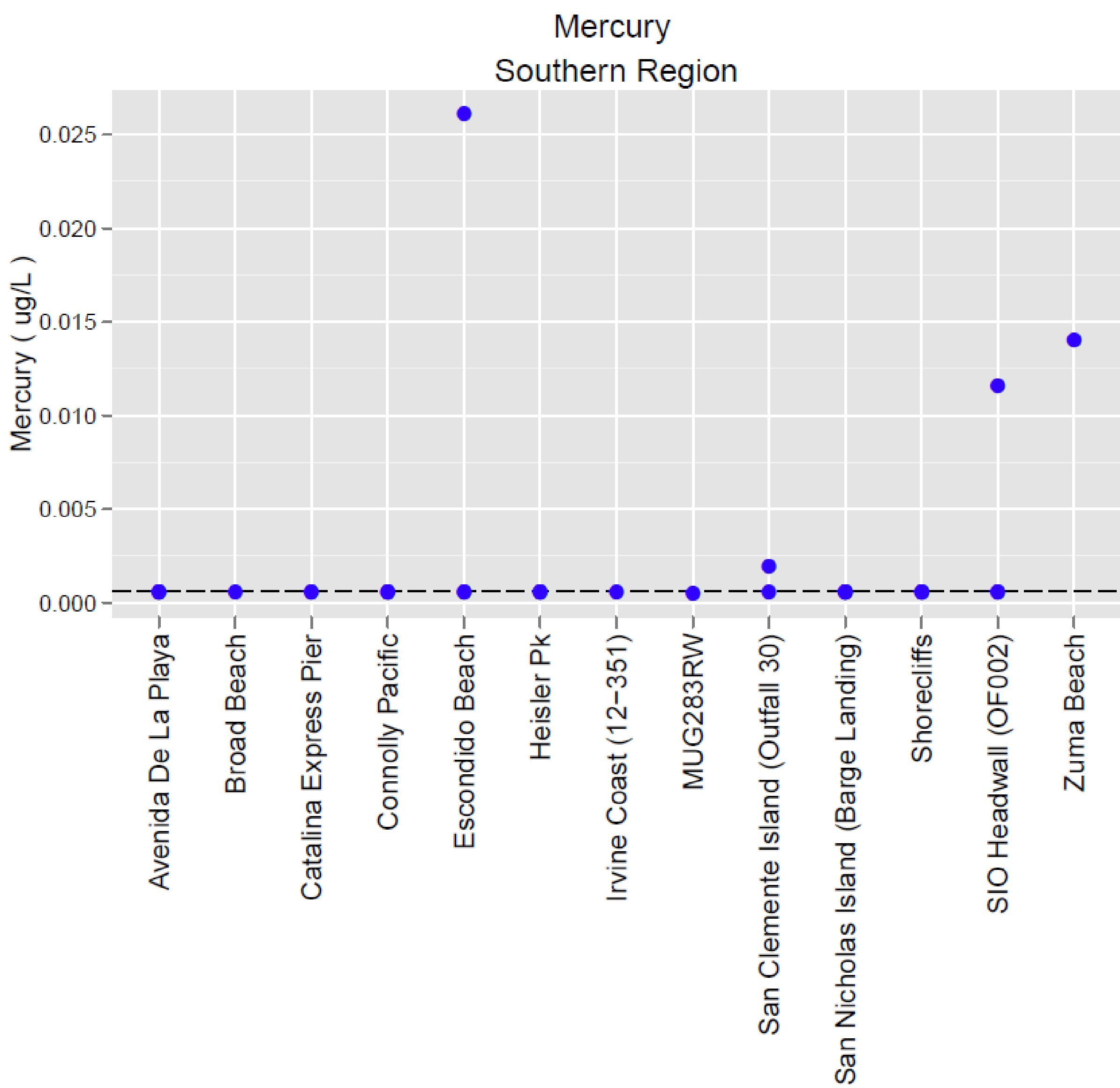
Chromium


Copper
Southern Region
Copper (ug/L)
20
15
10
5
0
Avenida De La Playa
Broad Beach
Catalina Express Pier
Connolly Pacific
Escondido Beach
Heisler Pk
Irvine Coast (12−351)
MUG283RW
San Clemente Island (Outfall 30)
San Nicholas Island (Barge Landing)
Shorecliffs
SIO Headwall (OF002)
Zuma Beach

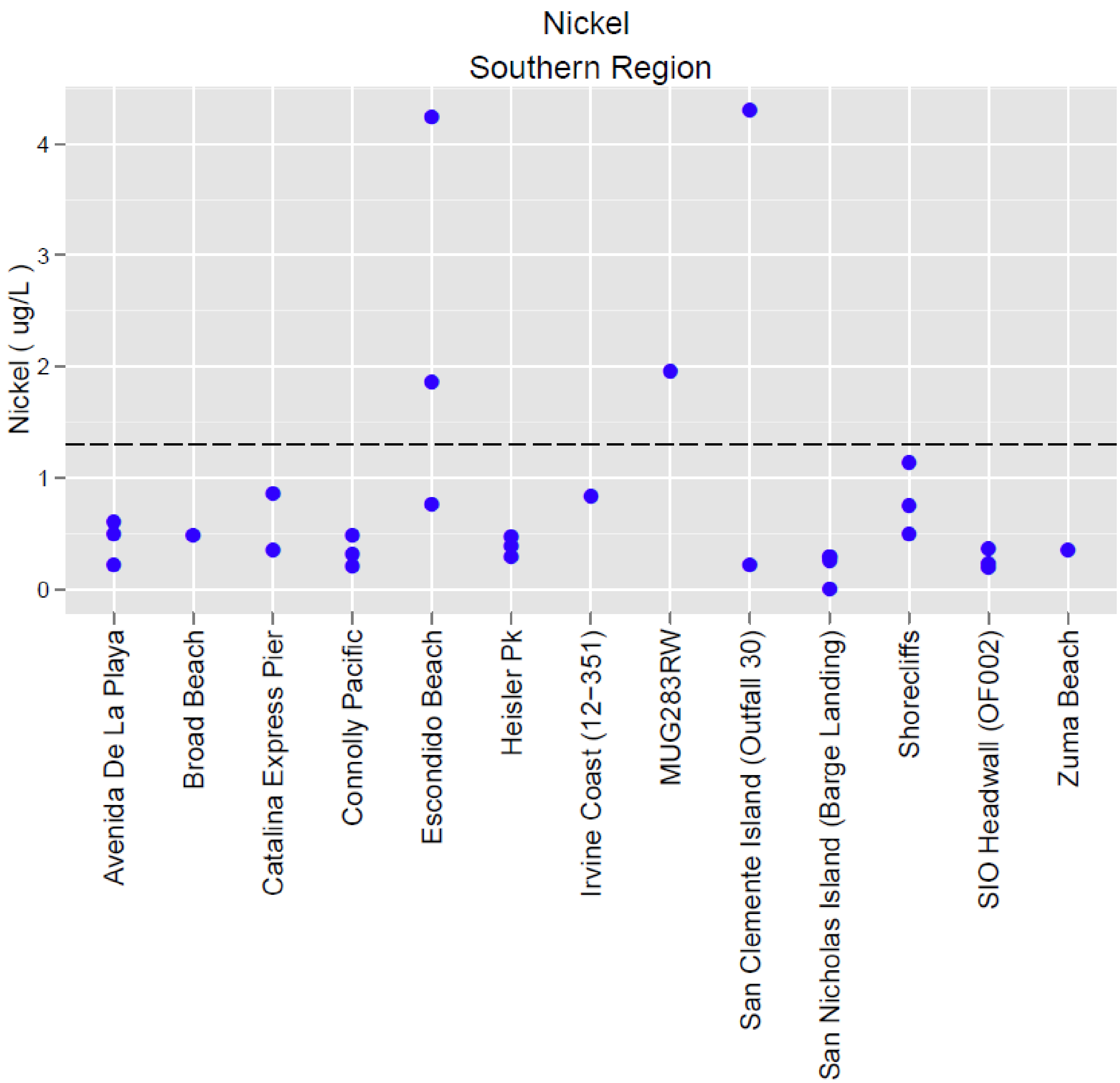
Copper


Lead
Southern Region
Lead (ug/L)
4
3
2
1
0
Avenida De La Playa
Broad Beach
Catalina Express Pier
Connolly Pacific
Escondido Beach
Heisler Pk
Irvine Coast (12−351)
MUG283RW
San Clemente Island (Outfall 30)
San Nicholas Island (Barge Landing)
Shorecliffs
SIO Headwall (OF002)
Zuma Beach

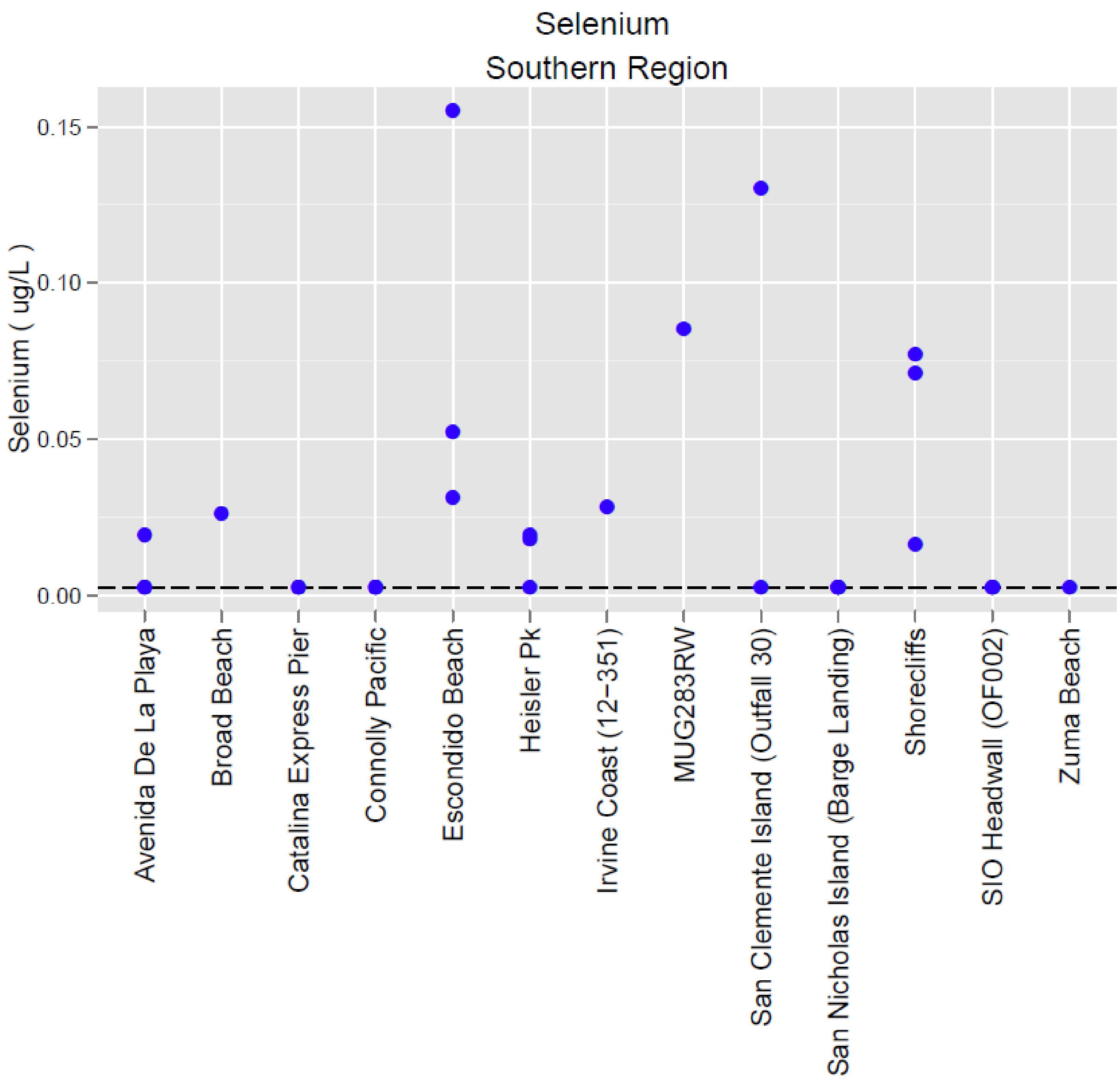
Lead


Mercury
Southern Region
Mercury (ug/L)
0.025
0.020
0.015
0.010
0.005
0.000
Avenida De La Playa
Broad Beach
Catalina Express Pier
Connolly Pacific
Escondido Beach
Heisler Pk
Irvine Coast (12−351)
MUG283RW
San Clemente Island (Outfall 30)
San Nicholas Island (Barge Landing)
Shorecliffs
SIO Headwall (OF002)
Zuma Beach

Mercury

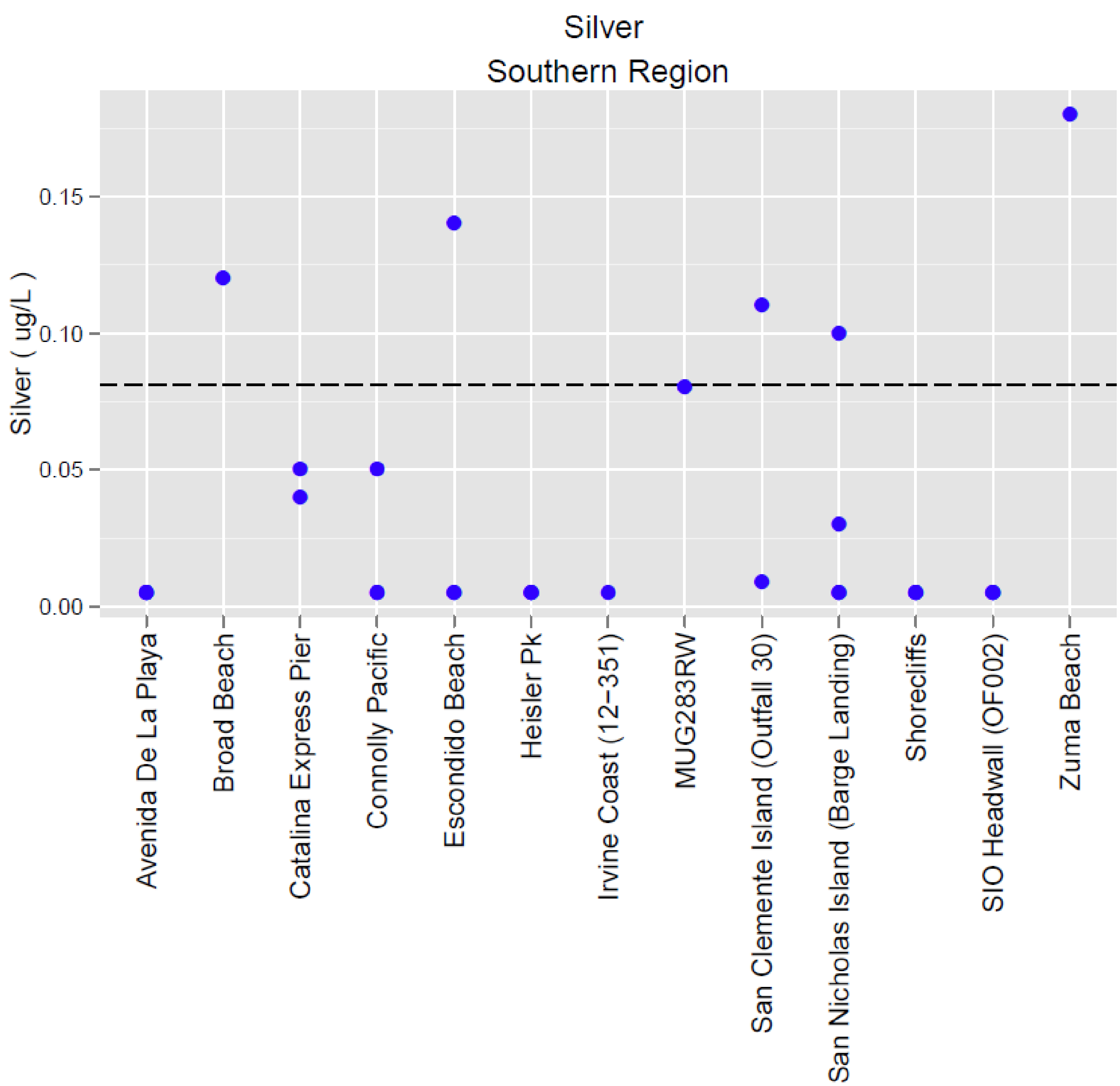

Nickel
Southern Region
Nickel (ug/L)
0
1
2
3
4
Avenida De La Playa
Broad Beach
Catalina Express Pier
Connolly Pacific
Escondido Beach
Heisler Pk
Irvine Coast (12−351)
MUG283RW
San Clemente Island (Outfall 30)
San Nicholas Island (Barge Landing)
Shorecliffs
SIO Headwall (OF002)
Zuma Beach

Nickel

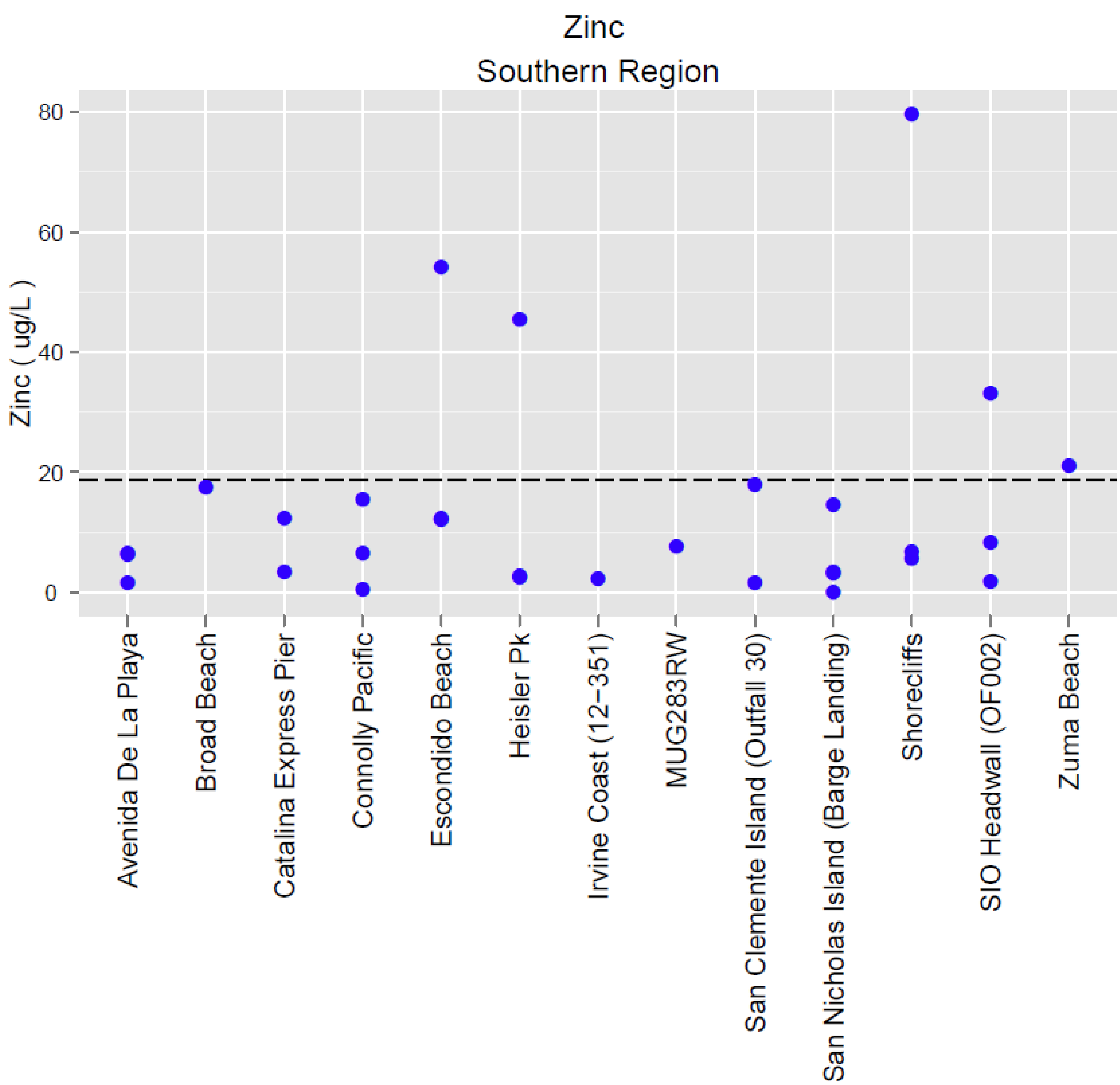


Selenium
Southern Region
Selenium (ug/L)
0.15
0.10
0.05
0.00
Avenida De La Playa
Broad Beach
Catalina Express Pier
Connolly Pacific
Escondido Beach
Heisler Pk
Irvine Coast (12−351)
MUG283RW
San Clemente Island (Outfall 30)
San Nicholas Island (Barge Landing)
Shorecliffs
SIO Headwall (OF002)
Zuma Beach

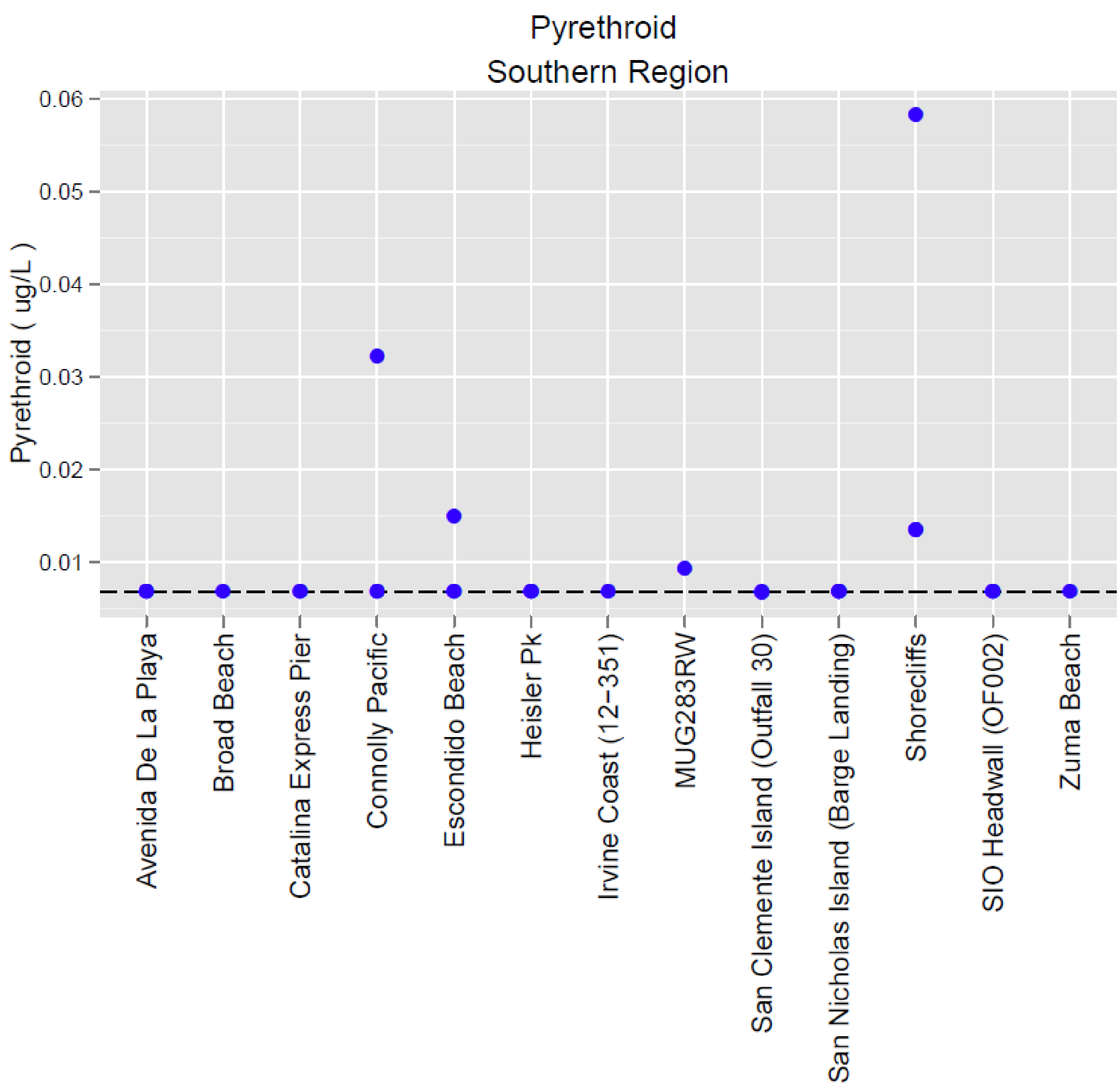
Selenium


Silver
Southern Region
Silver (ug/L)
0.15
0.10
0.05
0.00
Avenida De La Playa
Broad Beach
Catalina Express Pier
Connolly Pacific
Escondido Beach
Heisler Pk
Irvine Coast (12−351)
MUG283RW
San Clemente Island (Outfall 30)
San Nicholas Island (Barge Landing)
Shorecliffs
SIO Headwall (OF002)
Zuma Beach

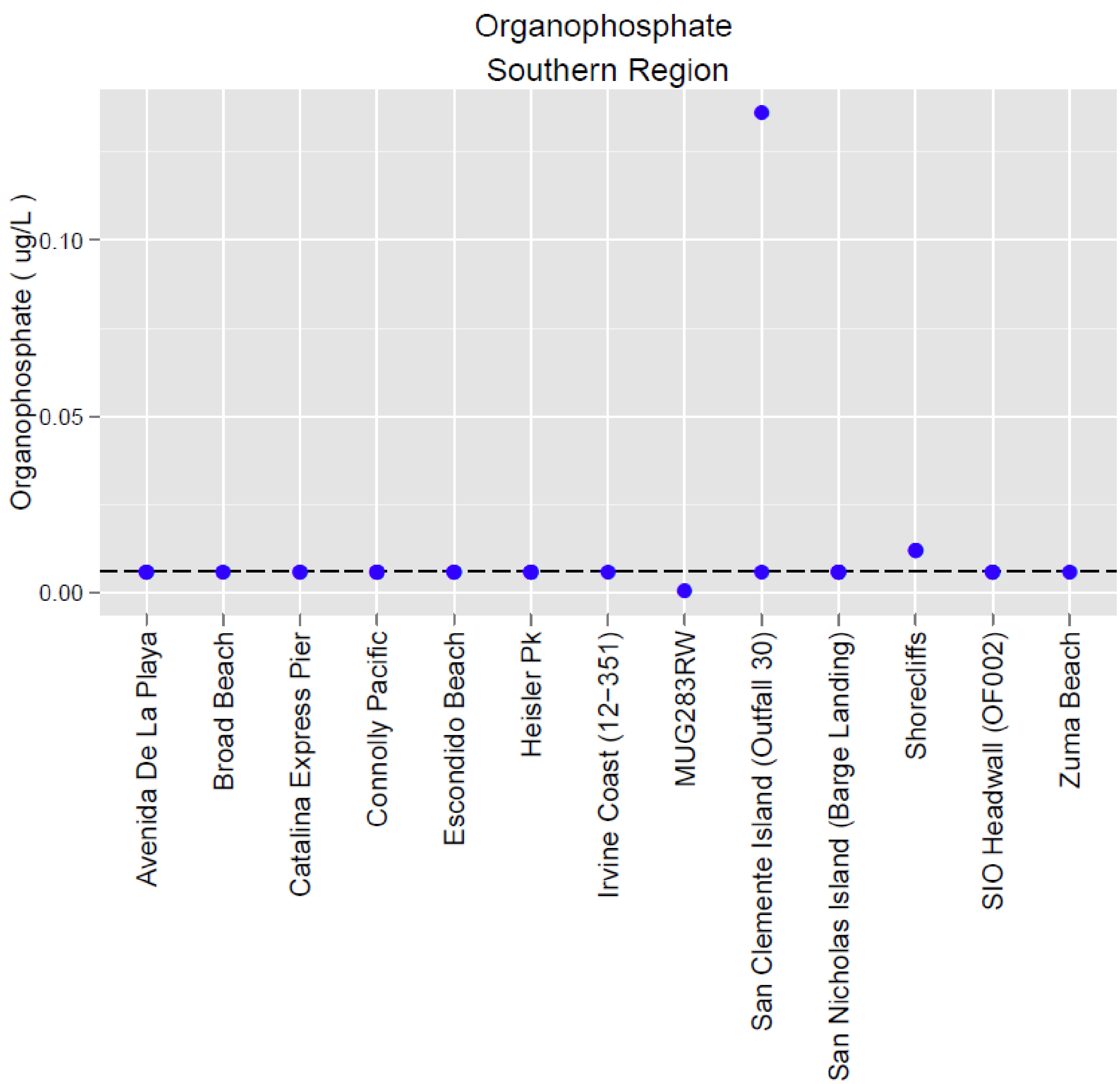
Silver


Zinc
Southern Region
Zinc (ug/L)
80
60
40
20
0
Avenida De La Playa
Broad Beach
Catalina Express Pier
Connolly Pacific
Escondido Beach
Heisler Pk
Irvine Coast (12−351)
MUG283RW
San Clemente Island (Outfall 30)
San Nicholas Island (Barge Landing)
Shorecliffs
SIO Headwall (OF002)
Zuma Beach

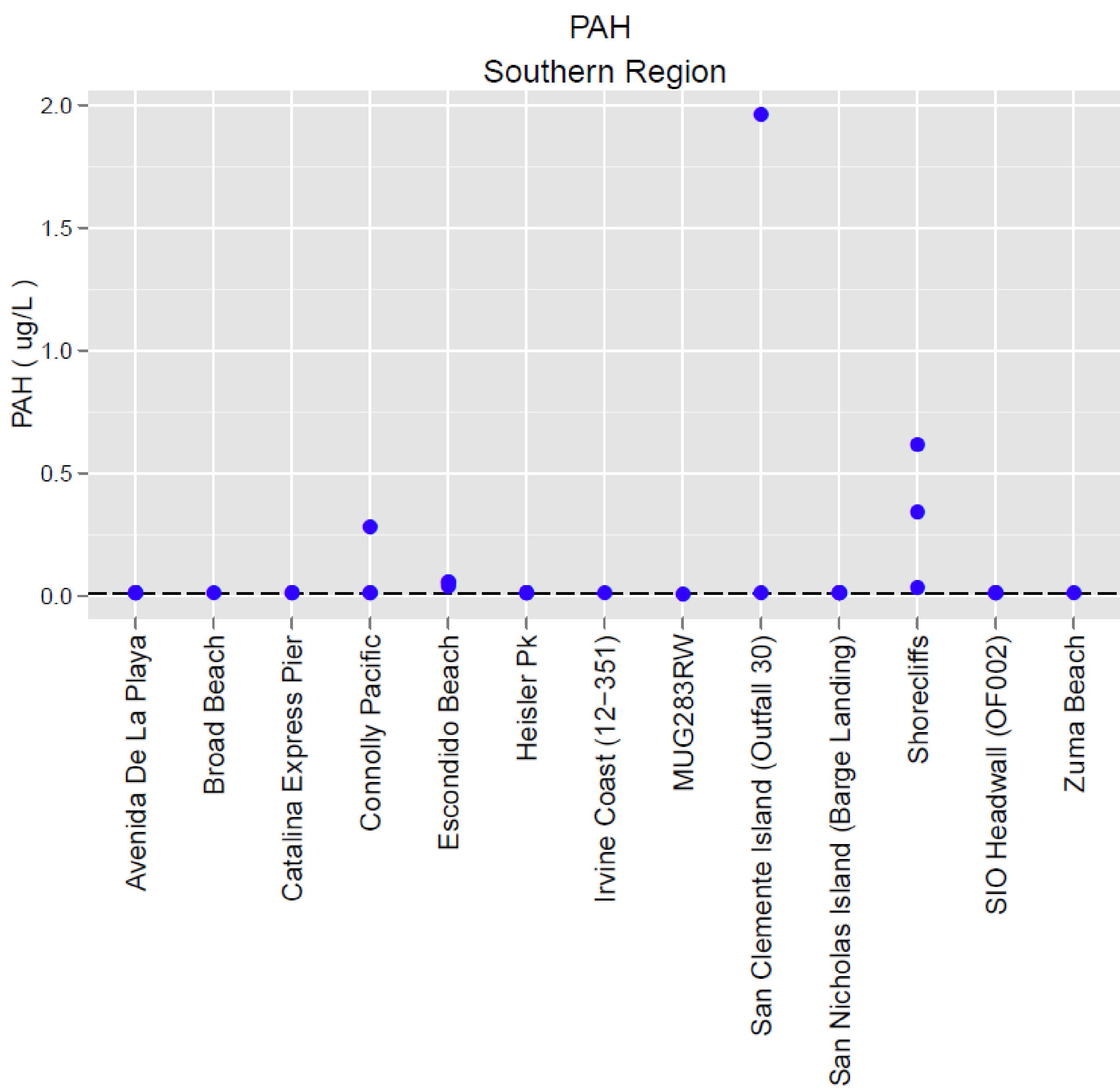
Zinc



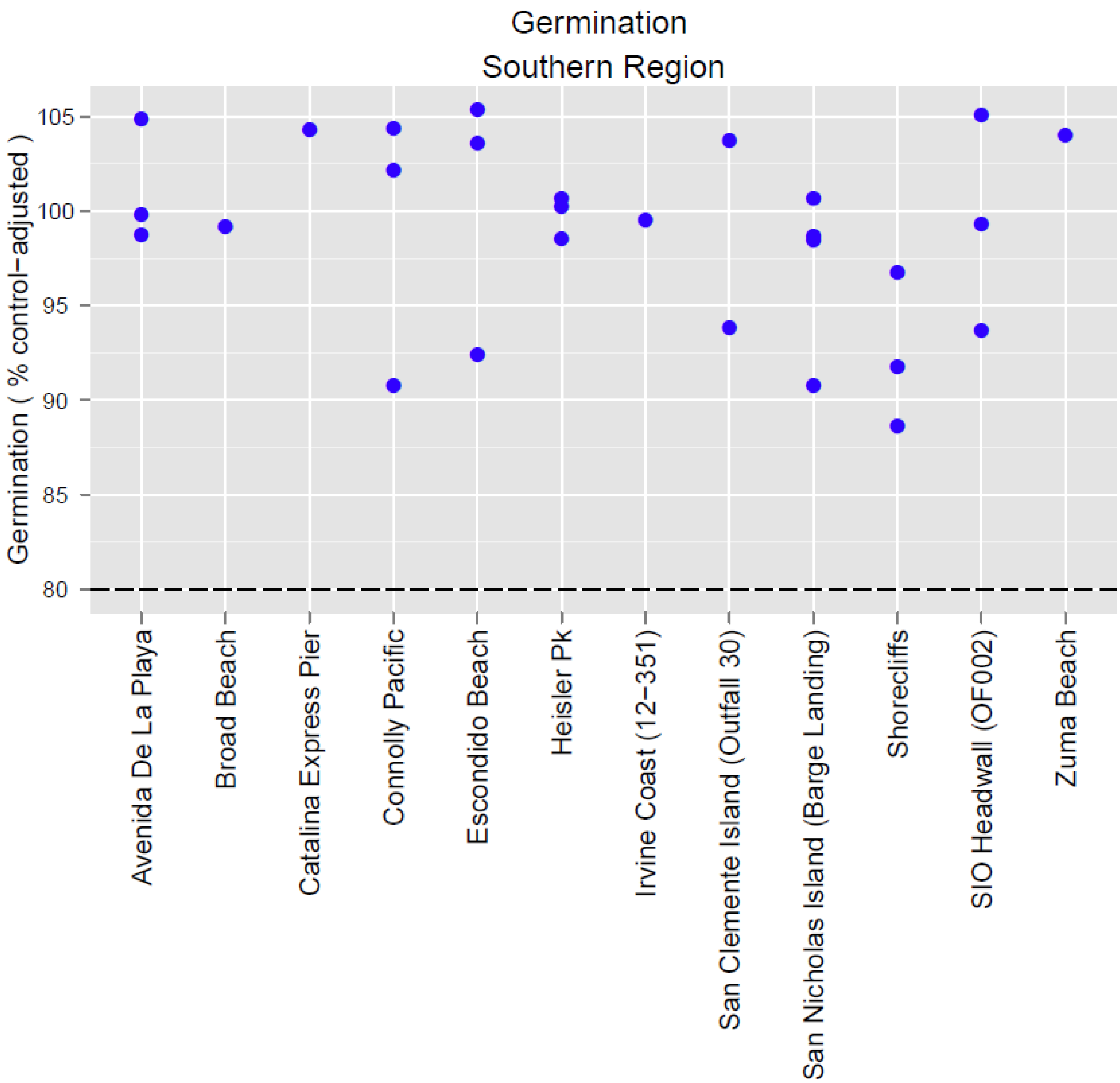
Pyrethroid pesticides



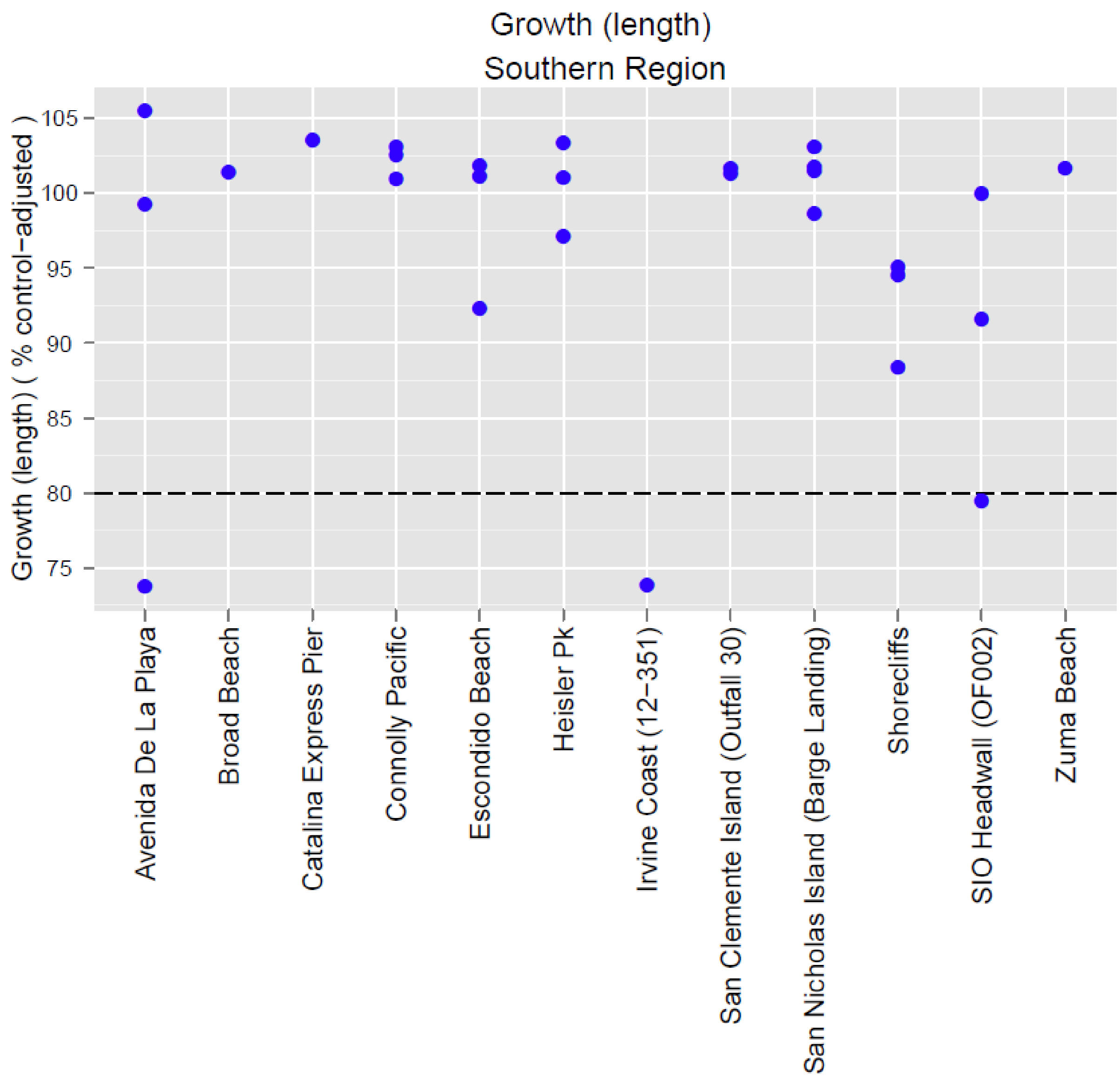
Organophosphate pesticides


PAH
Southern Region
PAH (ug/L)
2.0
1.5
1.0
0.5
0.0
Avenida De La Playa
Broad Beach
Catalina Express Pier
Connolly Pacific
Escondido Beach
Heisler Pk
Irvine Coast (12−351)
MUG283RW
San Clemente Island (Outfall 30)
San Nicholas Island (Barge Landing)
Shorecliffs
SIO Headwall (OF002)
Zuma Beach

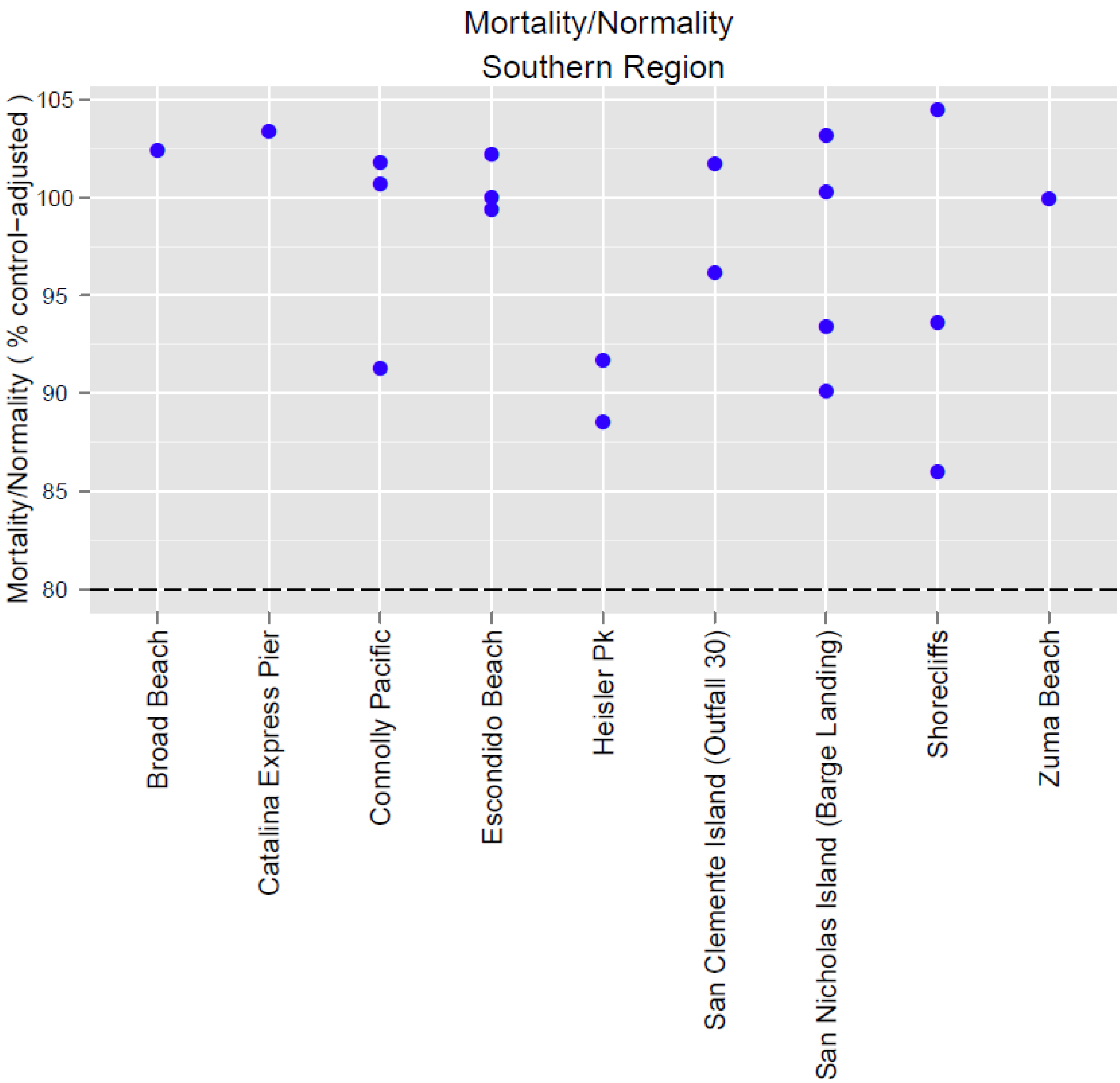
Total PAH



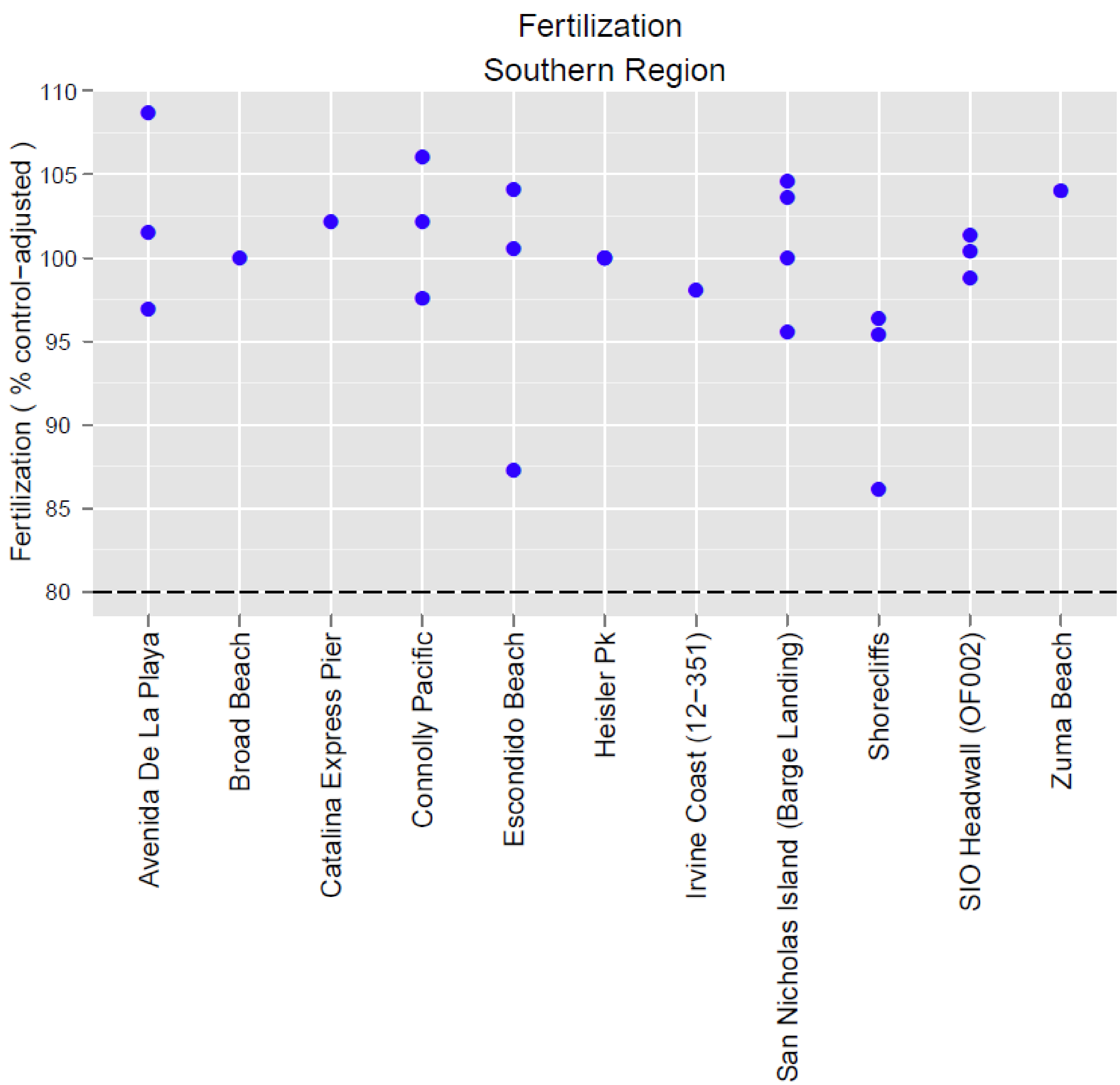
Kelp Germination



Kelp Growth (Length)



Mussel Enbryo Mortality/Normality



Sea Urchin Egg Fertilization

APPENDIX B - ANALYTES AND MINIMUM DETECTION LIMITS

Analyte (units)	Range of Minimum Detection Limits
Ammonia as N (mg/L)	0.02, 0.03
Nitrate as N (mg/L)	0.01
Oil and Grease (mg/L)	1
Orthophosphate as P (mg/L)	0.01
Total Suspended Solids (mg/L)	0.5
Arsenic (µg/L)	0.005, 0.01
Cadmium (µg/L)	0.0025, 0.005
Chromium (µg/L)	0.0125, 0.025
Copper (µg/L)	0.005, 0.01
Lead (µg/L)	0.0025, 0.005
Mercury (µg/L)	0.0012
Nickel (µg/L)	0.0025, 0.005
Selenium (µg/L)	0.005
Silver (µg/L)	0.01, 0.02
Zinc (µg/L)	0.0025, 0.005
Total PAHs (µg/L)	0.021, 0.025
Total Organophosphorus pesticides (µg/L)	0.006, 0.024
Total Pyrethroid pesticides (µg/L)	0.013, 0.0135

State Water Resources Control Board

MAR 17 2015

Ms. Gail Farber
Director of Public Works
County of Los Angeles
900 South Fremont Avenue
Alhambra, CA 91803

Dear Ms. Farber:

COMMENTS ON DRAFT COMPLIANCE PLAN FOR LAGUNA POINT TO LATIGO POINT (NO. 24) AREA OF SPECIAL BIOLOGICAL SIGNIFICANCE FROM THE COUNTY OF LOS ANGELES, THE LOS ANGELES COUNTY FLOOD CONTROL DISTRICT, AND THE CITY OF MALIBU

The State Water Resources Control Board (State Water Board) received the Areas of Special Biological Significance (ASBS) draft Compliance Plan and draft Pollution Prevention Plan from the County of Los Angeles, the Los Angeles County Flood Control District, and the City of Malibu dated September 20, 2014. A draft compliance plan and draft pollution prevention plan are required under sections I.A.3.b and I.B.2.a of Attachment B of the State Water Board's Resolution No. 2012-0012 *Approving Exceptions to the California Ocean Plan for Selected Discharges into ASBS, Including Special Protections for Beneficial Uses, and Certifying a Program Environmental Impact Report* (General Exception). Attachment B in the General Exception contains the *Special Protections for ASBS, Governing Point Source Discharges of Storm Water and Nonpoint Source Waste Discharges* (Special Protections), which describes special conditions required of the discharger.

State Water Board staff has reviewed the draft Compliance Plan and draft Pollution Prevention Plan and provides the following comments:

1. **Map of storm water runoff**: Section I.A.2.a. of the Special Protections requires a map of storm water runoff that highlights the prioritized discharges and a description of any structural Best Management Practices (BMPs) already employed or to be employed. Priority discharges are those that pose the greatest water quality threat and which are identified to require installation of structural BMPs. Section I.A.2.f. states that the ASBS Compliance Plan shall describe structural BMPs, including any low impact development (LID) measures, currently employed and planned for higher threat discharges and shall include an implementation schedule. Higher threat discharges include permitted storm drains equal to or greater than 18 inches in diameter or width.

   Appendix A in the draft Compliance Plan includes a map of storm water runoff and the planned structural BMP at Broad Beach Road. However, the draft Compliance Plan does not identify priority discharges, stating that none of the evaluated outfalls fall into this category, since receiving water monitoring results met the Table B Instantaneous Maximum Water Quality Objectives in Chapter II of the Ocean Plan, and consequently that additional structural BMPs are not necessary. To clarify, in determining exceedances of the natural water quality and identifying priority discharge locations, receiving water monitoring data is compared to the 85th percentile of the threshold of reference water quality data, not to Ocean Plan Table B Instantaneous Maximum Water Quality Objectives. In the draft Compliance Plan, the receiving water monitoring results show levels of constituents higher than the 85th percentile threshold of reference water quality data, indicating that additional structural BMPs are required. Staff noted similarities in elevated levels of constituents at core discharge ASBS-028 and its associated receiving water site ASBS-S02. Therefore, core discharge ASBS-028 should be identified as a priority discharge location. In the final Compliance Plan, please identify priority discharges on the map, describe additional structural BMPs and explain how they will reduce pollutants in storm water runoff, and update the implementation schedule accordingly.

2. **Non-authorized non-storm water runoff**: Section I.A.2.b. of the Special Protections requires a description of the measures by which all non-authorized non-storm water runoff has been eliminated, how the measures will be maintained over time, and how these measures are monitored and documented.

   The draft Compliance Plan describes actions being taken to eliminate flows that reach the surf. Although dry weather flows that did not reach the surf were observed during dry weather inspections of outfalls, there is no explanation of how these flows will be eliminated. In the final Compliance Plan, please address how dry weather flows will be eliminated as well as how these measures will be maintained over time and how they will be monitored and documented.

3. **Implementation schedule**: Section I.A.3.d. of the Special Protections stipulates that any structural controls identified in the final Compliance Plan be operational within six years of the effective date. Section I.A.3.e. specifies that all dischargers must comply with the requirement that their discharges into the affected ASBS maintain natural ocean water quality within six years of the effective date.

   The draft Compliance Plan lists March 20, 2019 as the date by which necessary structural controls shall be operational and by which all discharges must be in compliance with the General Exception requirements. The 12-month extension that was granted by the State Water Board applies to the deadlines for the draft and final Compliance Plans. This extension does not apply to the March 20, 2018 deadline for necessary structural controls or compliance with the General Exception requirements. Please be aware that the correct date is March 20, 2018 and that this is the date that should be listed in the implementation schedule.

4. **Exceedances in natural water quality**: Section I.A.3.e. of the Special Protections requires that, if initial results of post-storm receiving water quality testing indicate levels higher than the 85th percentile threshold of reference water quality data and the pre-storm receiving water levels, then the discharger must re-sample the receiving water pre- and post-storm.

   The results for receiving water site ASBS-S02 indicate that exceedances in water quality were detected for multiple constituents during receiving water monitoring. Therefore, ASBS-S02 must be re-sampled pre- and post-storm for an additional storm event. If after re-sampling the post-storm levels are still higher than the 85th percentile threshold of reference water quality data and pre-storm receiving water levels for any constituent, then natural ocean water quality is exceeded, and consequently an exceedance report must be submitted as stipulated in Section I.A.2.h of the Special Protections.

5. **Ocean receiving water monitoring**: Section IV.B.2.b. of the Special Protections requires that a minimum of three ocean receiving water samples must be collected during each storm season from each station, each from a separate storm. It further specifies that a minimum of one receiving water location shall be sampled in each ASBS per responsible party in that ASBS.

   Due to participation in the Southern California Bight 2008 regional monitoring effort, monitoring requirements for the County of Los Angeles, the Los Angeles County Flood Control District, and the City of Malibu were limited to only one storm season. The data from the remaining storm season were included in the draft Compliance Plan and indicate that only one receiving water site (ASBS-S02) was sampled successfully for three storm events. The remaining two sites (ASBS-S01 and 24-BB-03R) were only successfully sampled pre- and post-storm during one storm event. Staff understands that the City of Malibu will continue wet weather monitoring into the 2014-2015 wet season and that this sampling may be performed before submittal of the final Compliance Plan. Additionally, receiving water site ASBS-S01 and its associated core discharge ASBS-016 must be sampled for two additional storm events, to account for the incomplete previous monitoring events.

   Also, staff noticed that outfall 24-BB-01Z is included on the map and the outfall descriptions, yet there were no results presented for this outfall, even though the draft Compliance Plan states that it was successfully sampled during the February 28, 2014 storm event. Please include results from that sampling event in the final Compliance Plan.

Staff appreciates the efforts of the County of Los Angeles, the Los Angeles County Flood District, and the City of Malibu on the draft Compliance Plan and will continue to collaborate to resolve the comments mentioned in this letter as needed. Please submit the final Compliance Plan addressing these comments for approval by the State Water Board Executive Director by September 20, 2015.

For further questions pertaining to this subject matter, please contact Dr. Kimberly Tenggardjaja at (916) 341-5473 or Kimberly.Tenggardjaja@waterboards.ca.gov or Dr. Maria de la Paz Carpio-Obeso, Ocean Unit Chief, at (916) 341-5858 or MarielaPaz.Carpio-Obeso@waterboards.ca.gov.

Sincerely,

Victoria A. Whitney

Victoria A. Whitney, Deputy Director
Division of Water Quality

cc: Mr. Jonathan Bishop

Chief Deputy Director
State Water Resources Control Board
1001 I Street
Sacramento, CA 95814

Ms. Marleigh Wood
Office of Chief Counsel
State Water Resources Control Board
1001 I Street
Sacramento, CA 95814

Mr. Samuel Unger
Executive Officer II
Los Angeles Regional Water Quality Control Board
320 W. Fourth Street, Suite 200
Los Angeles, CA 90013

WATER QUALITY CONTROL PLAN

OCEAN WATERS OF CALIFORNIA

CALIFORNIA
Water Boards
STATE WATER RESOURCES CONTROL BOARD
REGIONAL WATER QUALITY CONTROL BOARDS

2015

STATE WATER RESOURCES CONTROL BOARD

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

RB-AR 7258

CALIFORNIA
Water Boards
STATE WATER RESOURCES CONTROL BOARD
REGIONAL WATER QUALITY CONTROL BOARDS

State of California
Edmund G. Brown Jr. Governor

California Environmental Protection Agency
Matthew Rodriquez, Secretary

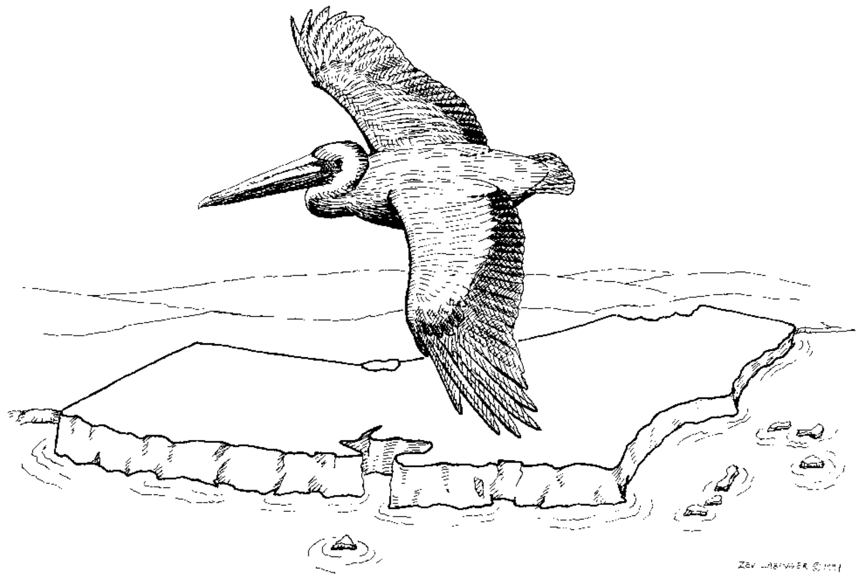
State Water Resources Control Board
1001 I Street
Sacramento, CA 95814
(916) 341-5250
Homepage: http://www.waterboards.ca.gov

Cover Art by:
Ivy Liao, 10th Grade, 2012
California Coastal Art & Poetry Contest
California Coastal Commission
www.coast4u.org

Title Page Drawing by:
Zev Labinger, 1997

State of California

STATE WATER RESOURCES CONTROL BOARD



2015

CALIFORNIA OCEAN PLAN

WATER QUALITY CONTROL PLAN

OCEAN WATERS OF CALIFORNIA

Amendments to the Water Quality Control Plan for the Ocean Waters of California

Name	Date Adopted	Resolution Number	Effective Date
1. Amendment to the statewide for the Ocean Plan of California addressing desalination facility intakes, brine discharges, and to incorporate other non-substantive changes	5/06/2015	2015-0033	1/28/2016
2. Amendment to the Water Quality Control Plan for Ocean Waters of California to control trash and part 1 trash provisions of the Water Quality Control Plan for inland surface waters, enclosed bays, and estuaries in California	4/7/2015	2015-0019	1/12/2016
3. Adoption of the California Ocean Plan Amendments regarding model monitoring, vessel discharges, and non-substantive changes	10/16/2012	2012-0057	7/01/2013
4. Adopting the California Ocean Plan Amendment implementing State Water Board resolutions 2010-0057 and 2011-013 regarding State Water Quality Protection Areas and Marine Protected Areas	10/16/2012	2012-0056	7/01/2013
5. Adoption of Proposed Amendments to the California Ocean Plan regarding total recoverable metals, compliance schedules, toxicity definitions, and the list of exceptions	9/15/2009	2009-0072	3/10/2010
6. Amendment to the California Ocean Plan: (1) Reasonable Potential, Determining When California Ocean Plan Water Quality-Based Effluent Limitations are Required, and (2) Minor Changes to the Areas of Special Biological Significance, and Exception Provisions	4/21/2005	2005-0035	10/12/2005
7. Amendment to California Ocean Plan Water Contact Bacterial Standards	1/20/2005	2005-0013	10/12/2005
8. Adoption of the Proposed Amendments to the California Ocean Plan regarding Table A, chemical water quality objectives, provisions of compliance, special protection for water quality and designated uses, and administrative changes	11/16/2000	2000-108	12/03/2001
9. Adoption of an Amendment to the Water Quality Control Plan for Ocean Waters of California regarding revisions to the list of critical life stage protocols used in testing the toxicity of waste discharges	3/20/1997	97-026	7/23/1997
10. Approval of Amendment to the Water Quality Control Plan for Ocean Waters of California regarding new water quality objectives in Table B	3/22/1990	90-027	3/22/1990

11. Water Quality Control Plan for Ocean Waters of California, California Ocean Plan	9/22/1988	88-111	9/22/1988
12. Water Quality Control Plan for Ocean Waters of California	11/17/1983	83-087	11/17/1983
13. Water Quality Control Plan for Ocean Waters of California	1/19/1978	78-002	1/19/1978
14. Water Quality Control Plan for Ocean Waters of California	7/06/1972	72-045	7/06/1972

CALIFORNIA OCEAN PLAN

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CALIFORNIA OCEAN PLAN

WATER QUALITY CONTROL PLAN FOR
OCEAN WATERS OF CALIFORNIA

INTRODUCTION

A. Purpose and Authority

1. In furtherance of legislative policy set forth in section 13000 of Division 7 of the California Water Code (CWC) (Stats. 1969, Chap. 482) pursuant to the authority contained in section 13170 and 13170.2 (Stats. 1971, Chap. 1288) the State Water Resources Control Board (State Water Board) hereby finds and declares that protection of the quality of the ocean* waters for use and enjoyment by the people of the State requires control of the discharge of waste* to ocean* waters and control of intake seawater* in accordance with the provisions contained herein. The Board finds further that this plan shall be reviewed at least every three years to guarantee that the current standards are adequate and are not allowing degradation* to marine species or posing a threat to public health.

B. Principles

1. Harmony Among Water Quality Control Plans and Policies.

   a. In the adoption and amendment of water quality control plans, it is the intent of this Board that each plan will provide for the attainment and maintenance of the water quality standards of downstream waters.*

   b. To the extent there is a conflict between a provision of this plan and a provision of another statewide plan or policy, or a regional water quality control plan (basin plan), the more stringent provision shall apply except where pursuant to Chap. III.J of this Plan, the State Water Board has approved an exception to the Plan requirements, and except in chapter III.M, in which the provisions of this plan shall govern.

C. Applicability

1. This plan is applicable, in its entirety, to point source discharges to the ocean.* Nonpoint sources of waste* discharges to the ocean* are subject to Chapter I Beneficial Uses, Chapter II - WATER QUALITY OBJECTIVES (wherein compliance with water quality objectives shall, in all cases, be determined by direct measurements in the receiving waters*) and Chapter III - PROGRAM OF IMPLEMENTATION Parts A.2, D, E, and I.

2. This plan is not applicable to discharges to enclosed* bays and estuaries* or inland waters or the control of dredged material.*

* See Appendix I for definition of terms.

3. Provisions regulating the thermal aspects of waste* discharged to the ocean* are set forth in the Water Quality Control Plan for the Control of Temperature in the Coastal and Interstate Waters and Enclosed* Bays and Estuaries* of California.

4. Provisions regulating the intake of seawater* for desalination facilities* are established pursuant to the authority contained in section 13142.5 subdivision (b) of the California Water Code (Stats. 1976, Chap. 1330).

5. Within this Plan, references to the State Board or State Water Board shall mean the State Water Resources Control Board. References to a Regional Board or Regional Water Board shall mean a California Regional Water Quality Control Board. References to the Environmental Protection Agency, USEPA, or EPA shall mean the federal Environmental Protection Agency.

* See Appendix I for definition of terms.

I. BENEFICIAL USES

A. The beneficial uses of the ocean* waters of the State that shall be protected include industrial water supply; water contact and non-contact recreation, including aesthetic enjoyment; navigation; commercial and sport fishing; mariculture*; preservation and enhancement of designated Areas* of Special Biological Significance (ASBS); rare and endangered species; marine habitat; fish migration; fish spawning and shellfish* harvesting.

* See Appendix I for definition of terms.

II. WATER QUALITY OBJECTIVES

A. General Provisions

1. This chapter sets forth limits or levels of water quality characteristics for ocean* waters to ensure the reasonable protection of beneficial uses and the prevention of nuisance. The discharge of waste* shall not cause violation of these objectives.

2. The Water Quality Objectives and Effluent Limitations are defined by a statistical distribution when appropriate. This method recognizes the normally occurring variations in treatment efficiency and sampling and analytical techniques and does not condone poor operating practices.

3. Compliance with the water quality objectives of this chapter shall be determined from samples collected at stations representative of the area within the waste* field where initial* dilution is completed.

B. Bacterial Characteristics

1. Water-Contact Standards

   Both the State Water Board and the California Department of Public Health (CDPH) have established standards to protect water contact recreation in coastal waters from bacterial contamination. Subsection a of this section contains bacterial objectives adopted by the State Water Board for ocean* waters used for water contact recreation. Subsection b describes the bacteriological standards adopted by CDPH for coastal waters adjacent to public beaches and public water contact sports areas in ocean waters.

   a. State Water Board Water-Contact Standards

   (1) Within a zone bounded by the shoreline and a distance of 1,000 feet from the shoreline or the 30-foot depth contour, whichever is further from the shoreline, and in areas outside this zone used for water contact sports, as determined by the Regional Board (i.e., waters designated as REC-1), but including all kelp beds,* the following bacterial objectives shall be maintained throughout the water column:

   30-day Geometric Mean – The following standards are based on the geometric mean of the five most recent samples from each site:

   i. Total coliform density shall not exceed 1,000 per 100 mL;
   ii. Fecal coliform density shall not exceed 200 per 100 mL; and
   iii. Enterococcus density shall not exceed 35 per 100 mL.

   Single Sample Maximum:

   i. Total coliform density shall not exceed 10,000 per 100 mL;
   ii. Fecal coliform density shall not exceed 400 per 100 mL;
   iii. Enterococcus density shall not exceed 104 per 100 mL; and

* See Appendix I for definition of terms.

iv. Total coliform density shall not exceed 1,000 per 100 mL when the fecal coliform/total coliform ratio exceeds 0.1.

(2) The “Initial Dilution* Zone” of wastewater outfalls shall be excluded from designation as kelp beds* for purposes of bacterial standards, and Regional Boards should recommend extension of such exclusion zone where warranted to the State Water Board (for consideration under chapter III. J). Adventitious assemblages of kelp on waste discharge structures (e.g.,outfall pipes and multiport diffusers*) do not constitute kelp beds* for purposes of bacterial standards.

b. CDPH Standards

CDPH has established minimum protective bacteriological standards for coastal waters adjacent to public beaches and for public water-contact sports areas in ocean* waters. These standards are found in the California Code of Regulations, title 17, section 7958, and they are identical to the objectives contained in subsection a. above. When a public beach or public water-contact sports area fails to meet these standards, CDPH or the local public health officer may post with warning signs or otherwise restrict use of the public beach or public water-contact sports area until the standards are met. The CDPH regulations impose more frequent monitoring and more stringent posting and closure requirements on certain high-use public beaches that are located adjacent to a storm drain that flows in the summer.

For beaches not covered under AB 411 regulations, CDPH imposes the same standards as contained in Title 17 and requires weekly sampling but allows the county health officer more discretion in making posting and closure decisions.

2. Shellfish* Harvesting Standards

a. At all areas where shellfish* may be harvested for human consumption, as determined by the Regional Board, the following bacterial objectives shall be maintained throughout the water column:

(1) The median total coliform density shall not exceed 70 per 100 mL, and not more than 10 percent of the samples shall exceed 230 per 100 mL.

C. Physical Characteristics

1. Floating particulates and grease and oil shall not be visible.

2. The discharge of waste* shall not cause aesthetically undesirable discoloration of the ocean* surface.

3. Natural light* shall not be significantly* reduced at any point outside the initial* dilution zone as the result of the discharge of waste.*

4. The rate of deposition of inert solids and the characteristics of inert solids in ocean* sediments shall not be changed such that benthic communities are degraded.*

* See Appendix I for definition of terms.

5. Trash* shall not be present in ocean waters, along shorelines or adjacent areas in amounts that adversely affect beneficial uses or cause nuisance.

D. Chemical Characteristics

1. The dissolved oxygen concentration shall not at any time be depressed more than 10 percent from that which occurs naturally, as the result of the discharge of oxygen demanding waste* materials.*
2. The pH shall not be changed at any time more than 0.2 units from that which occurs naturally.
3. The dissolved sulfide concentration of waters in and near sediments shall not be significantly* increased above that present under natural conditions.
4. The concentration of substances set forth in chapter II, Table 1, in marine sediments shall not be increased to levels which would degrade* indigenous biota.
5. The concentration of organic materials* in marine sediments shall not be increased to levels that would degrade* marine life.
6. Nutrient materials* shall not cause objectionable aquatic growths or degrade* indigenous biota.
7. Numerical Water Quality Objectives
   a. Table 1 water quality objectives apply to all discharges within the jurisdiction of this Plan. Unless otherwise specified, all metal concentrations are expressed as total recoverable concentrations.
   b. Table 1 Water Quality Objectives

* See Appendix I for definition of terms.

TABLE 1 (formerly TABLE B)
WATER QUALITY OBJECTIVES

	Units of Measurement	Limiting Concentrations: 6-Month Median	Daily Maximum	Instantaneous Maximum
OBJECTIVES FOR PROTECTION OF MARINE AQUATIC LIFE				
Arsenic	µg/L	8.	32.	80.
Cadmium	µg/L	1.	4.	10.
Chromium (Hexavalent) (see below, a)	µg/L	2.	8.	20.
Copper	µg/L	3.	12.	30.
Lead	µg/L	2.	8.	20.
Mercury	µg/L	0.04	0.16	0.4
Nickel	µg/L	5.	20.	50.
Selenium	µg/L	15.	60.	150.
Silver	µg/L	0.7	2.8	7.
Zinc	µg/L	20.	80.	200.
Cyanide (see below, b)	µg/L	1.	4.	10.
Total Chlorine Residual (For intermittent chlorine sources see below, c)	µg/L	2.	8.	60.
Ammonia (expressed as nitrogen)	µg/L	600.	2400.	6000.
Acute* Toxicity	TUa	N/A	0.3	N/A
Chronic* Toxicity	TUc	N/A	1.	N/A
Phenolic Compounds (non-chlorinated)	µg/L	30.	120.	300.
Chlorinated Phenolics	µg/L	1.	4.	10.
Endosulfan*	µg/L	0.009	0.018	0.027
Endrin	µg/L	0.002	0.004	0.006
HCH*	µg/L	0.004	0.008	0.012
Radioactivity	Not to exceed limits specified in Title 17, Division 1, Chapter 5, Subchapter 4, Group 3, Article 3, section 30253 of the California Code of Regulations. Reference to section 30253 is prospective, including future changes to any incorporated provisions of federal law, as the changes take effect.			

* See Appendix I for definition of terms.

TABLE 1 (formerly TABLE B) Continued

Chemical	30-day Average (µg/L) Decimal Notation	Scientific Notation
OBJECTIVES FOR PROTECTION OF HUMAN HEALTH – NONCARCINOGENS		
acrolein	220.	2.2×10^{2}
antimony	1,200.	1.2×10^{3}
bis(2-chloroethoxy) methane	4.4	4.4×10^{0}
bis(2-chloroisopropyl) ether	1,200.	1.2×10^{3}
chlorobenzene	570.	5.7×10^{2}
chromium (III)	190,000.	1.9×10^{5}
di-n-butyl phthalate	3,500.	3.5×10^{3}
dichlorobenzenes*	5,100.	5.1×10^{3}
diethyl phthalate	33,000.	3.3×10^{4}
dimethyl phthalate	820,000.	8.2×10^{5}
4,6-dinitro-2-methylphenol	220.	2.2×10^{2}
2,4-dinitrophenol	4.0	4.0×10^{0}
ethylbenzene	4,100.	4.1×10^{3}
fluoranthene	15.	1.5×10^{1}
hexachlorocyclopentadiene	58.	5.8×10^{1}
nitrobenzene	4.9	4.9×10^{0}
thallium	2.	$2. \times 10^{0}$
toluene	85,000.	8.5×10^{4}
tributyltin	0.0014	1.4×10^{-3}
1,1,1-trichloroethane	540,000.	5.4×10^{5}
OBJECTIVES FOR PROTECTION OF HUMAN HEALTH – CARCINOGENS		
acrylonitrile	0.10	1.0×10^{-1}
aldrin	0.000022	2.2×10^{-5}
benzene	5.9	5.9×10^{0}
benzidine	0.000069	6.9×10^{-5}
beryllium	0.033	3.3×10^{-2}
bis(2-chloroethyl) ether	0.045	4.5×10^{-2}
bis(2-ethylhexyl) phthalate	3.5	3.5×10^{0}
carbon tetrachloride	0.90	9.0×10^{-1}
chlordane*	0.000023	2.3×10^{-5}
chlorodibromomethane	8.6	8.6×10^{0}

* See Appendix I for definition of terms.

TABLE 1 (formerly TABLE B) Continued

Chemical	30-day Average (µg/L) Decimal Notation	Scientific Notation
OBJECTIVES FOR PROTECTION OF HUMAN HEALTH – CARCINOGENS		
chloroform	130.	1.3×10^{2}
DDT*	0.00017	1.7×10^{-4}
1,4-dichlorobenzene	18.	1.8×10^{1}
3,3'-dichlorobenzidine	0.0081	8.1×10^{-3}
1,2-dichloroethane	28.	2.8×10^{1}
1,1-dichloroethylene	0.9	9×10^{-1}
dichlorobromomethane	6.2	6.2×10^{0}
dichloromethane	450.	4.5×10^{2}
1,3-dichloropropene	8.9	8.9×10^{0}
dieldrin	0.00004	4.0×10^{-5}
2,4-dinitrotoluene	2.6	2.6×10^{0}
1,2-diphenylhydrazine	0.16	1.6×10^{-1}
halomethanes*	130.	1.3×10^{2}
heptachlor	0.00005	5×10^{-5}
heptachlor epoxide	0.00002	2×10^{-5}
hexachlorobenzene	0.00021	2.1×10^{-4}
hexachlorobutadiene	14.	1.4×10^{1}
hexachloroethane	2.5	2.5×10^{0}
isophorone	730.	7.3×10^{2}
N-nitrosodimethylamine	7.3	7.3×10^{0}
N-nitrosodi-N-propylamine	0.38	3.8×10^{-1}
N-nitrosodiphenylamine	2.5	2.5×10^{0}
PAHs*	0.0088	8.8×10^{-3}
PCBs*	0.000019	1.9×10^{-5}
TCDD equivalents*	0.0000000039	3.9×10^{-9}
1,1,2,2-tetrachloroethane	2.3	2.3×10^{0}
tetrachloroethylene	2.0	2.0×10^{0}
toxaphene	0.00021	2.1×10^{-4}
trichloroethylene	27.	2.7×10^{1}
1,1,2-trichloroethane	9.4	9.4×10^{0}
2,4,6-trichlorophenol	0.29	2.9×10^{-1}
vinyl chloride	36.	3.6×10^{1}

* See Appendix I for definition of terms.

Table 1 Notes:

a) Dischargers may at their option meet this objective as a total chromium objective.

b) If a discharger can demonstrate to the satisfaction of the Regional Water Board (subject to EPA approval) that an analytical method is available to reliably distinguish between strongly and weakly complexed cyanide, effluent limitations for cyanide may be met by the combined measurement of free cyanide, simple alkali metal cyanides, and weakly complexed organometallic cyanide complexes. In order for the analytical method to be acceptable, the recovery of free cyanide from metal complexes must be comparable to that achieved by the approved method in 40 CFR PART 136, as revised May 14, 1999.

c) Water quality objectives for total chlorine residual applying to intermittent discharges not exceeding two hours, shall be determined through the use of the following equation:

$$\log y = -0.43 (\log x) + 1.8$$

where: y = the water quality objective (in µg/L) to apply when chlorine is being discharged;
x = the duration of uninterrupted chlorine discharge in minutes.

E. Biological Characteristics

1. Marine communities, including vertebrate, invertebrate, algae, and plant species, shall not be degraded.*

2. The natural taste, odor, and color of fish, shellfish,* or other marine resources used for human consumption shall not be altered.

3. The concentration of organic materials* in fish, shellfish* or other marine resources used for human consumption shall not bioaccumulate to levels that are harmful to human health.

F. Radioactivity

1. Discharge of radioactive waste* shall not degrade* marine life.

* See Appendix I for definition of terms.

III. PROGRAM OF IMPLEMENTATION

A. General Provisions

1. Effective Date

a. The *Water Quality Control Plan, Ocean Waters of California, California Ocean Plan* was adopted and has been effective since 1972. There have been multiple amendments of the Ocean Plan since its adoption.

2. General Requirements For Management Of Waste Discharge To The Ocean*

a. Waste* management systems that discharge to the ocean* must be designed and operated in a manner that will maintain the indigenous marine life and a healthy and diverse marine community.

b. Waste* discharged to the ocean* must be essentially free of:

(1) Material* that is floatable or will become floatable upon discharge.

(2) Settleable material* or substances that may form sediments which will degrade* benthic communities or other aquatic life.

(3) Substances which will accumulate to toxic levels in marine waters, sediments or biota.

(4) Substances that significantly* decrease the natural light* to benthic communities and other marine life.

(5) Materials* that result in aesthetically undesirable discoloration of the ocean* surface.

c. Waste* effluents shall be discharged in a manner which provides sufficient initial* dilution to minimize the concentrations of substances not removed in the treatment.

d. Location of waste* discharges must be determined after a detailed assessment of the oceanographic characteristics and current patterns to assure that:

(1) Pathogenic organisms and viruses are not present in areas where shellfish* are harvested for human consumption or in areas used for swimming or other body-contact sports.

(2) Natural water quality conditions are not altered in areas designated as being of special biological significance or areas that existing marine laboratories use as a source of seawater.*

(3) Maximum protection is provided to the marine environment.

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* See Appendix I for definition of terms.

e. Waste* that contains pathogenic organisms or viruses should be discharged a sufficient distance from shellfishing* and water-contact sports areas to maintain applicable bacterial standards without disinfection. Where conditions are such that an adequate distance cannot be attained, reliable disinfection in conjunction with a reasonable separation of the discharge point from the area of use must be provided. Disinfection procedures that do not increase effluent toxicity and that constitute the least environmental and human hazard should be used.

3. Areas of Special Biological Significance*

a. ASBS* shall be designated by the State Water Board following the procedures provided in Appendix IV. A list of ASBS* is available in Appendix V.

4. Combined Sewer Overflow: Not withstanding any other provisions in this plan, discharges from the City of San Francisco's combined sewer system are subject to the US EPA's Combined Sewer Overflow Policy.

B. Table 2 Effluent Limitations

TABLE 2 (formerly TABLE A)
EFFLUENT LIMITATIONS

		Limiting Concentrations		
	Unit of Measurement	Monthly (30-day Average)	Weekly (7-day Average)	Maximum at any time
Grease and Oil	mg/L	25.	40.	75.
Suspended Solids			See below +	
Settleable Solids	mL/L	1.0	1.5	3.0
Turbidity	NTU	75.	100.	225.
pH	Units		Within limit of 6.0 to 9.0 at all times	

Table 2 Notes:

\+ Suspended Solids: Dischargers shall, as a 30-day average, remove 75% of suspended solids from the influent stream before discharging wastewaters to the ocean,* except that the effluent limitation to be met shall not be lower than 60 mg/l. Regional Boards may recommend that the State Water Board (chapter III section J), with the concurrence of the Environmental Protection Agency, adjust the lower effluent concentration limit (the 60 mg/l above) to suit the environmental and effluent characteristics of the discharge. As a further consideration in making such recommendation for adjustment, Regional Water Boards should evaluate effects on existing and potential water* reclamation projects.

If the lower effluent concentration limit is adjusted, the discharger shall remove 75% of suspended solids from the influent stream at any time the influent concentration exceeds four times such adjusted effluent limit.

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1. Table 2 effluent limitations apply only to publicly owned treatment works and industrial discharges for which Effluent Limitations Guidelines have not been established pursuant to sections 301, 302, 304, or 306 of the Federal Clean Water Act.

* See Appendix I for definition of terms.

2. Table 2 effluent limitations shall apply to a discharger's total effluent, of whatever origin (i.e., gross, not net, discharge), except where otherwise specified in this Plan.

3. The State Water Board is authorized to administer and enforce effluent limitations established pursuant to the Federal Clean Water Act. Effluent limitations established under sections 301, 302, 306, 307, 316, 403, and 405 of the aforementioned Federal Act and administrative procedures pertaining thereto are included in this plan by reference. Compliance with Table 2 effluent limitations, or Environmental Protection Agency Effluent Limitations Guidelines for industrial discharges, based on Best Practicable Control Technology, shall be the minimum level* of treatment acceptable under this plan, and shall define reasonable treatment and waste* control technology.

4. Compliance with Table 2 effluent limitations for brine discharges from desalination facilities that commingle brine and wastewater prior to discharge to the ocean may be measured after the brine has been commingled with wastewater, provided that the permittee for the commingled discharge accepts responsibly for any exceedances of the Table 2 effluent limitations.

C. Implementation Provisions for Table 1

1. Effluent concentrations calculated from Table 1 water quality objectives shall apply to a discharger's total effluent, of whatever origin (i.e., gross, not net, discharge), except where otherwise specified in this Plan.

2. If the Regional Water Board determines, using the procedures in Appendix VI, that a pollutant is discharged into ocean* waters at levels which will cause, have the reasonable potential to cause, or contribute to an excursion above a Table 1 water quality objective, the Regional Water Board shall incorporate a water quality-based effluent limitation in the Waste Discharge Requirement for the discharge of that pollutant.

3. Effluent limitations shall be imposed in a manner prescribed by the State Water Board such that the concentrations set forth below as water quality objectives shall not be exceeded in the receiving water* upon completion of initial* dilution, except that objectives indicated for radioactivity shall apply directly to the undiluted waste* effluent.

4. Calculation of Effluent Limitations

a. Effluent limitations for water quality objectives listed in Table 1, with the exception of acute toxicity and radioactivity, shall be determined through the use of the following equation:

Equation 1: $Ce = Co + Dm (Co - Cs)$

where:

Ce = the effluent concentration limit, µg/L

Co = the concentration (water quality objective) to be met at the completion of initial* dilution, µg/L

Cs = background seawater* concentration (see Table 3 below, with all metals expressed as total recoverable concentrations), µg/L

Dm = minimum probable initial* dilution expressed as parts seawater* per part wastewater.

* See Appendix I for definition of terms.

TABLE 3 (formerly TABLE C)
BACKGROUND SEAWATER* CONCENTRATIONS (Cs)

Waste Constituent	Cs (µg/L)
Arsenic	3.
Copper	2.
Mercury	0.0005
Silver	0.16
Zinc	8.
For all other Table 1 parameters, Cs = 0.	

b. Determining a Mixing Zone for the Acute Toxicity* Objective

The mixing zone for the acute toxicity* objective shall be ten percent (10%) of the distance from the edge of the outfall structure to the edge of the chronic mixing zone (zone of initial dilution*). There is no vertical limitation on this zone. The effluent limitation for the acute toxicity* objective listed in Table 1 shall be determined through the use of the following equation:

Equation 2: $Ce = Ca + (0.1)\ Dm\ (Ca)$

where:

Ca = the concentration (water quality objective) to be met at the edge of the acute mixing zone.

Dm = minimum probable initial* dilution expressed as parts seawater* per part wastewater (This equation applies only when $Dm > 24$).

c. Toxicity Testing Requirements based on the Minimum Initial* Dilution Factor for Ocean Waste* Discharges

(1) Dischargers shall conduct acute toxicity* testing if the minimum initial* dilution of the effluent is greater than 1,000:1 at the edge of the mixing zone.

(2) Dischargers shall conduct either acute or chronic toxicity* testing if the minimum initial* dilution ranges from 350:1 to 1,000:1 depending on the specific discharge conditions. The Regional Water Board shall make this determination.

(3) Dischargers shall conduct chronic toxicity* testing for ocean waste* discharges with minimum initial* dilution factors ranging from 100:1 to 350:1. The Regional Water Board may require that acute toxicity* testing be conducted in addition to chronic as necessary for the protection of beneficial uses of ocean* waters.

(4) Dischargers shall conduct chronic toxicity* testing if the minimum initial* dilution of the effluent falls below 100:1 at the edge of the mixing zone.

* See Appendix I for definition of terms.

d. For the purpose of this Plan, minimum initial* dilution is the lowest average initial* dilution within any single month of the year. Dilution estimates shall be based on observed waste* flow characteristics, observed receiving water* density structure, and the assumption that no currents, of sufficient strength to influence the initial* dilution process, flow across the discharge structure.

e. The Executive Director of the State Water Board shall identify standard dilution models for use in determining Dm, and shall assist the Regional Board in evaluating Dm for specific waste* discharges. Dischargers may propose alternative methods of calculating Dm, and the Regional Board may accept such methods upon verification of its accuracy and applicability.

f. The six-month median shall apply as a moving median of daily values for any 180-day period in which daily values represent flow weighted average concentrations within a 24-hour period. For intermittent discharges, the daily value shall be considered to equal zero for days on which no discharge occurred.

g. The daily maximum shall apply to flow weighted 24 hour composite samples.

h. The instantaneous maximum shall apply to grab sample determinations.

i. If only one sample is collected during the time period associated with the water quality objective (e.g., 30-day average or 6-month median), the single measurement shall be used to determine compliance with the effluent limitation for the entire time period.

j. Discharge requirements shall also specify effluent limitations in terms of mass emission rate limits utilizing the general formula:

Equation 3: lbs/day = 0.00834 x Ce x Q

where:

Ce = the effluent concentration limit, µg/L

Q = flow rate, million gallons per day (MGD)

k. The six-month median limit on daily mass emissions shall be determined using the six-month median effluent concentration as Ce and the observed flow rate Q in millions of gallons per day. The daily maximum mass emission shall be determined using the daily maximum effluent concentration limit as Ce and the observed flow rate Q in millions of gallons per day.

l. Any significant* change in waste* flow shall be cause for reevaluating effluent limitations.

5. Minimum* Levels

For each numeric effluent limitation, the Regional Board must select one or more Minimum* Levels (and their associated analytical methods) for inclusion in the permit. The "reported" Minimum* Level is the Minimum* Level (and its associated analytical

* See Appendix I for definition of terms.

method) chosen by the discharger for reporting and compliance determination from the Minimum* Levels included in their permit.

a. Selection of Minimum* Levels from Appendix II

The Regional Water Board must select all Minimum* Levels from Appendix II that are below the effluent limitation. If the effluent limitation is lower than all the Minimum* Levels in Appendix II, the Regional Board must select the lowest Minimum* Level from Appendix II.

b. Deviations from Minimum* Levels in Appendix II

The Regional Board, in consultation with the State Water Board's Quality Assurance Program, must establish a Minimum* Level to be included in the permit in any of the following situations:

1. A pollutant is not listed in Appendix II.
2. The discharger agrees to use a test method that is more sensitive than those described in 40 CFR 136 (revised May 14, 1999).
3. The discharger agrees to use a Minimum* Level lower than those listed in Appendix II.
4. The discharger demonstrates that their calibration standard matrix is sufficiently different from that used to establish the Minimum* Level in Appendix II and proposes an appropriate Minimum* Level for their matrix.
5. A discharger uses an analytical method having a quantification practice that is not consistent with the definition of Minimum* Level (e.g., US EPA methods 1613, 1624, 1625).

6. Use of Minimum* Levels

a. Minimum* Levels in Appendix II represent the lowest quantifiable concentration in a sample based on the proper application of method-specific analytical procedures and the absence of matrix interferences. Minimum* Levels also represent the lowest standard concentration in the calibration curve for a specific analytical technique after the application of appropriate method-specific factors.

Common analytical practices may require different treatment of the sample relative to the calibration standard. Some examples are given below:

Substance or Grouping	Method-Specific Treatment	Most Common Factor
Volatile Organics	No differential treatment	1
Semi-Volatile Organics	Samples concentrated by extraction	1000
Metals	Samples diluted or concentrated	½ , 2 , and 4
Pesticides	Samples concentrated by extraction	100

b. Other factors may be applied to the Minimum* Level depending on the specific sample preparation steps employed. For example, the treatment typically applied when there are matrix effects is to dilute the sample or sample aliquot by a factor of ten. In such cases, this additional factor must be applied during the

* See Appendix I for definition of terms.

computation of the reporting limit. Application of such factors will alter the reported Minimum* Level.

c. Dischargers are to instruct their laboratories to establish calibration standards so that the Minimum* Level (or its equivalent if there is differential treatment of samples relative to calibration standards) is the lowest calibration standard. At no time is the discharger to use analytical data derived from *extrapolation* beyond the lowest point of the calibration curve. In accordance with section 4b, above, the discharger's laboratory may employ a calibration standard lower than the Minimum* Level in Appendix II.

7. Sample Reporting Protocols

a. Dischargers must report with each sample result the reported Minimum* Level (selected in accordance with section 4, above) and the laboratory's current MDL.*

b. Dischargers must also report the results of analytical determinations for the presence of chemical constituents in a sample using the following reporting protocols:

(1) Sample results greater than or equal to the reported Minimum* Level must be reported "as measured" by the laboratory (i.e., the measured chemical concentration in the sample).

(2) Sample results less than the reported Minimum* Level, but greater than or equal to the laboratory's MDL,* must be reported as "Detected, but Not Quantified", or DNQ. The laboratory must write the estimated chemical concentration of the sample next to DNQ as well as the words "Estimated Concentration" (may be shortened to "Est. Conc.").

(3) Sample results less than the laboratory's MDL* must be reported as "Not Detected", or ND.

8. Compliance Determination

Sufficient sampling and analysis shall be required to determine compliance with the effluent limitation.

a. Compliance with Single-Constituent Effluent Limitations

Dischargers are out of compliance with the effluent limitation if the concentration of the pollutant (see section 7c, below) in the monitoring sample is greater than the effluent limitation and greater than or equal to the reported Minimum* Level.

b. Compliance with Effluent Limitations expressed as a Sum of Several Constituents

Dischargers are out of compliance with an effluent limitation which applies to the sum of a group of chemicals (e.g., PCBs*) if the sum of the individual pollutant concentrations is greater than the effluent limitation. Individual pollutants of the group will be considered to have a concentration of zero if the constituent is reported as ND or DNQ.

* See Appendix I for definition of terms.

c. Multiple Sample Data Reduction

The concentration of the pollutant in the effluent may be estimated from the result of a single sample analysis or by a measure of central tendency (arithmetic mean, geometric mean, median, etc.) of multiple sample analyses when all sample results are quantifiable (i.e., greater than or equal to the reported Minimum* Level). When one or more sample results are reported as ND or DNQ, the central tendency concentration of the pollutant shall be the median (middle) value of the multiple samples. If, in an even number of samples, one or both of the middle values is ND or DNQ, the median will be the lower of the two middle values.

d. Powerplants and Heat Exchange Dischargers

Due to the large total volume of powerplant and other heat exchange discharges, special procedures must be applied for determining compliance with Table 1 objectives on a routine basis. Effluent concentration values (Ce) shall be determined through the use of equation 1 considering the minimal probable initial* dilution of the combined effluent (in-plant waste* streams plus cooling water flow). These concentration values shall then be converted to mass emission limitations as indicated in equation 3. The mass emission limits will then serve as requirements applied to all in-plant waste* streams taken together which discharge into the cooling water flow, except that limits for total chlorine residual, acute (if applicable per section (3)(c)) and chronic* toxicity* and instantaneous maximum concentrations in Table 1 shall apply to, and be measured in, the combined final effluent, as adjusted for dilution with ocean water. The Table 1 objective for radioactivity shall apply to the undiluted combined final effluent.

9. Pollutant Minimization Program

a. Pollutant Minimization Program Goal

The goal of the Pollutant Minimization Program is to reduce all potential sources of a pollutant through pollutant minimization (control) strategies, including pollution prevention measures, in order to maintain the effluent concentration at or below the effluent limitation.

Pollution prevention measures may be particularly appropriate for persistent bioaccumulative priority pollutants where there is evidence that beneficial uses are being impacted. The completion and implementation of a Pollution Prevention Plan, required in accordance with CA Water Code section 13263.3 (d) will fulfill the Pollution Minimization Program requirements in this section.

b. Determining the need for a Pollutant Minimization Program

1. The discharger must develop and conduct a Pollutant Minimization Program if all of the following conditions are true:

(a) The calculated effluent limitation is less than the reported Minimum Level*

(b) The concentration of the pollutant is reported as DNQ

* See Appendix I for definition of terms.

(c) There is evidence showing that the pollutant is present in the effluent above the calculated effluent limitation.

2. Alternatively, the discharger must develop and conduct a Pollutant Minimization Program if all of the following conditions are true:

   (a) The calculated effluent limitation is less than the Method Detection Limit.*

   (b) The concentration of the pollutant is reported as ND.

   (c) There is evidence showing that the pollutant is present in the effluent above the calculated effluent limitation.

c. Regional Water Boards may include special provisions in the discharge requirements to require the gathering of evidence to determine whether the pollutant is present in the effluent at levels above the calculated effluent limitation. Examples of evidence may include:

   1. health advisories for fish consumption,
   2. presence of whole effluent toxicity,
   3. results of benthic or aquatic organism tissue sampling,
   4. sample results from analytical methods more sensitive than methods included in the permit (in accordance with section 4b, above).
   5. the concentration of the pollutant is reported as DNQ and the effluent limitation is less than the MDL*

d. Elements of a Pollutant Minimization Program

   The Regional Board may consider cost-effectiveness when establishing the requirements of a Pollutant Minimization Program. The program shall include actions and submittals acceptable to the Regional Board including, but not limited to, the following:

   1. An annual review and semi-annual monitoring of potential sources of the reportable pollutant, which may include fish tissue monitoring and other bio-uptake sampling;
   2. Quarterly monitoring for the reportable pollutant in the influent to the wastewater treatment system;
   3. Submittal of a control strategy designed to proceed toward the goal of maintaining concentrations of the reportable pollutant in the effluent at or below the calculated effluent limitation;
   4. Implementation of appropriate cost-effective control measures for the pollutant, consistent with the control strategy; and,
   5. An annual status report that shall be sent to the Regional Board including:

      (a) All Pollutant Minimization Program monitoring results for the previous year;

      (b) A list of potential sources of the reportable pollutant;

      (c) A summary of all action taken in accordance with the control strategy; and,

* See Appendix I for definition of terms.

(d) A description of actions to be taken in the following year.

10. Toxicity Reduction Requirements

a. If a discharge consistently exceeds an effluent limitation based on a toxicity objective in Table 1, a toxicity reduction evaluation (TRE) is required. The TRE shall include all reasonable steps to identify the source of toxicity. Once the source(s) of toxicity is identified, the discharger shall take all reasonable steps necessary to reduce toxicity to the required level.

b. The following shall be incorporated into waste* discharge requirements: (1) a requirement to conduct a TRE if the discharge consistently exceeds its toxicity effluent limitation, and (2) a provision requiring a discharger to take all reasonable steps to reduce toxicity once the source of toxicity is identified.

D. Implementation Provisions for Bacterial Characteristics

1. Water-Contact Monitoring

a. Weekly samples shall be collected from each site. The geometric mean shall be calculated using the five most recent sample results.

b. If a single sample exceeds any of the single sample maximum (*SSM*) standards, repeat sampling at that location shall be conducted to determine the extent and persistence of the exceedance. Repeat sampling shall be conducted within 24 hours of receiving analytical results and continued until the sample result is less than the SSM standard or until a sanitary survey is conducted to determine the source of the high bacterial densities.

i) Total coliform density will not exceed 10,000 per 100 mL; or
ii) Fecal coliform density will not exceed 400 per 100 mL; or
iii) Total coliform density will not exceed 1,000 per 100 mL when the ratio of fecal/total coliform exceeds 0.1;
iv) enterococcus density will not exceed 104 per 100 mL.

When repeat sampling is required because of an exceedance of any one single sample density, values from all samples collected during that 30-day period will be used to calculate the geometric mean.

c. It is state policy that the geometric mean bacterial objectives are strongly preferred for use in water body assessment decisions, for example, in developing the Clean Water Act section 303(d) list of impaired waters, because the geometric mean objectives are a more reliable measure of long-term water body conditions. In making assessment decisions on bacterial quality, single sample maximum data must be considered together with any available geometric mean data. The use of only single sample maximum bacterial data is generally inappropriate unless there is a limited data set, the water is subject to short-term spikes in bacterial concentrations, or other circumstances justify the use of only single sample maximum data.

* See Appendix I for definition of terms.

d. For monitoring stations outside of the defined water-contact recreation zone (REC-1), samples will be analyzed for total coliform only.

E. Implementation Provisions for Marine Managed Areas*

1. Section E addresses the following Marine Managed Areas*:

(a) State Water Quality Protection Areas (SWQPAs)* consisting of:

(1) SWQPA – Areas of Special Biological Significance (ASBS)* designated by the State Water Board that require special protections as defined under section 4 below.

(2) SWQPA – General Protection (GP) designated by the State Water Board to protect water quality within Marine Protected Areas (MPAs) that require protection under the provisions described under section 5 below.

(b) Marine Protected Areas as defined in the California Public Resources Code as State Marine Reserves, State Marine Parks and State Marine Conservation Areas, established by the Fish and Game Commission, or the Parks and Recreation Commission.

2. The designation of State Marine Parks and State Marine Conservation Areas may not serve as the sole basis for new or modified limitations, substantive conditions, or prohibitions upon existing municipal point source wastewater discharge outfalls. This provision does not apply to State Marine Reserves.

3. The State Water Board may designate SWQPAs* to prevent the undesirable alteration of natural water quality within MPAs. These designations may include either SWQPA-ASBS or SWQPA-GP or in combination. In considering the designation of SWQPAs over MPAs, the State Water Board will consult with the affected Regional Water Quality Control Board, the Department of Fish and Game and the Department of Parks and Recreation, in accordance with the requirements of Appendix IV.

4. Implementation Provisions For SWQPA-ASBS*

(a) Waste* shall not be discharged to areas designated as being of special biological significance. Discharges shall be located a sufficient distance from such designated areas to assure maintenance of natural water quality conditions in these areas.

(b) Regional Water Boards may approve waste* discharge requirements or recommend certification for limited-term (i.e. weeks or months) activities in ASBS.* Limited-term activities include, but are not limited to, activities such as maintenance/repair of existing boat facilities, restoration of sea walls, repair of existing storm water pipes, and replacement/repair of existing bridges. Limited-term activities may result in temporary and short-term changes in existing water quality. Water quality degradation shall be limited to the shortest possible time. The activities must not permanently degrade* water quality or result in water quality

* See Appendix I for definition of terms.

lower than that necessary to protect existing uses, and all practical means of minimizing such degradation shall be implemented.

5. Implementation Provisions for SWQPAs-GP*

(a) Implementation provisions for existing point source wastewater discharges (NPDES)

(1) An SWQPA-GP shall not be designated over existing permitted point source wastewater outfalls or encroach upon the zone of initial dilution* associated with an existing discharge. This requirement does not apply to discharges less than one million gallons per day.

(2) Designation of an SWQPA-GP shall not include conditions to move existing point source wastewater outfalls.

(3) Where a new SWQPA-GP is established in the vicinity of existing municipal wastewater outfalls, there shall be no new or modified limiting condition or prohibitions for the SWQPA-GP relative to those wastewater outfalls.

(4) Regulatory requirements for discharges from existing treated municipal wastewater outfalls shall be derived from the Chapter II – Water Quality Objectives and Chapter III – Program of Implementation.

(b) Implementation provisions for existing seawater* intakes

(1) Existing permitted seawater* intakes other than those serving desalination facilities* must be controlled to minimize entrainment and impingement by using best technology available. Existing permitted seawater* intakes with a capacity less than one million gallons per day are excluded from this requirement.

(2) Existing permitted seawater* intakes serving desalination facilities are governed by the provisions set forth in chapter III.M of this Plan.

(c) Implementation provisions for permitted separate storm sewer system (MS4) discharges and nonpoint source discharges.

(1) Existing waste* discharges are allowed, but shall not cause an undesirable alteration in natural water quality. For purposes of SWQPA-GP, an undesirable alteration in natural water quality means that for intermittent (e.g. wet weather) discharges, Table 1 instantaneous maximum concentrations for chemical constituents, and daily maximum concentrations for chronic toxicity,* must not be exceeded in the receiving water.*

(2) An NPDES permitting authority* may authorize NPDES-permitted non-storm water discharges* to an MS4 with a direct discharge to an SWQPA-GP only to the extent the NPDES permitting authority* finds that the discharge does not cause an undesirable alteration in natural water quality in an SWQPA-GP.

(3) Non-storm water (dry weather) flows are effectively prohibited as required by the applicable permit. Where capacity and infrastructure exists, all dry weather flows

* See Appendix I for definition of terms.

shall be diverted to municipal sanitary sewer systems. The permitting authority* may allow discharges essential for emergency response purposes, structural stability, and slope stability, which may include but are not limited the following:

a. Discharges associated with emergency fire-fighting operations.
b. Foundation and footing drains
c. Water from crawl space or basement pumps.
d. Hillside dewatering.

(4) The following naturally occurring discharges are allowed:

a. Naturally occurring groundwater seepage via a storm drain
b. Non-anthropogenic flows from a naturally occurring stream via a culvert or storm drain, as long as there are no contributions of anthropogenic runoff.

(5) Existing storm water discharges into an SWQPA-GP shall be characterized and assessed to determine what effect if any these inputs are having on natural water quality in the State Water Quality Protection Area. Such assessments shall include an evaluation of cumulative impacts as well as impacts stemming from individual discharges. Information to be considered shall include:

a. Water quality;
b. Flow;
c. Watershed pollutant sources; and
d. Intertidal and/ or subtidal biological surveys.

Within each SWQPA-GP the assessment shall be used to rank these existing discharges into low, medium and high threat impact categories. Cumulative impacts will be ranked similarly as well.

(6) An initial analysis shall be performed for pre- and post-storm receiving water* quality of Table 1 constituents and chronic toxicity.* If post-storm receiving water* quality has larger concentrations of constituents relative to pre-storm, and Table 1 instantaneous maximum concentrations for chemical constituents, and daily maximum concentrations for chronic toxicity,* are exceeded, then receiving water* shall be re-analyzed along with storm runoff (end of pipe) for the constituents that are exceeded.

(7) If undesirable alterations of natural water quality and/or biological communities are identified, control strategies/measures shall be implemented for those dischargers characterized as a high threat or those contributing to higher threat cumulative impacts first.

(8) If those strategies fail, additional control strategies/measures will be implemented for dischargers characterized as medium impact dischargers. If these strategies do not result in improvement of water quality, those discharges classified as low threat shall also implement control strategies/measures.

(d) Implementation Provisions for New Discharges

* See Appendix I for definition of terms.

(1) Point Source Wastewater Outfalls
No new point source wastewater outfalls shall be established within an SWQPA-GP.

(2) Seawater* intakes
No new surface water seawater* intakes shall be established within an SWQPA-GP. This does not apply to subsurface* intakes where studies are prepared showing there is no predictable entrainment, impingement, or construction-related marine life mortality.

(3) All Other New Discharges
There shall be no increase in nonpoint sources or permitted storm drains directly into an SWQPA-GP.

6. Impaired Tributaries to MPAs, SWQPA-ASBS and SWQPA-GP

All water bodies draining to, or that are designated as, MPAs and SWQPAs that appear on the State's CWA section 303(d) list shall be given a high priority to have a TMDL developed and implemented.

F. Revision of Waste* Discharge Requirements

1. The Regional Water Boards may establish more restrictive water quality objectives and effluent limitations than those set forth in this Plan as necessary for the protection of beneficial uses of ocean* waters.

2. Regional Water Boards may impose alternative less restrictive provisions than those contained within Table 1 of the Plan, provided an applicant can demonstrate that:

   a. Reasonable control technologies (including source control, material* substitution, treatment and dispersion) will not provide for complete compliance; or

   b. Any less stringent provisions would encourage water* reclamation;

3. Provided further that:

   a. Any alternative water quality objectives shall be below the conservative estimate of chronic toxicity,* as given in Table 4 (with all metal concentrations expressed as total recoverable concentrations), and such alternative will provide for adequate protection of the marine environment;

   b. A receiving water* quality toxicity objective of 1 TUc is not exceeded; and

   c. The State Water Board grants an exception (chapter III.J) to the Table 1 limits as established in the Regional Board findings and alternative limits.

G. Compliance Schedules in National Pollutant Discharge Elimination System (NPDES) Permits

1. Compliance schedules in NPDES permits are authorized in accordance with the provisions of the State Water Board's Policy for Compliance Schedules in [NPDES] Permits (2008).

* See Appendix I for definition of terms.

TABLE 4 (formerly TABLE D)
CONSERVATIVE ESTIMATES OF CHRONIC* TOXICITY

Constituent	**Estimate of Chronic* Toxicity (µg/L)**
Arsenic	19.
Cadmium	8.
Hexavalent Chromium	18.
Copper	5.
Lead	22.
Mercury	0.4
Nickel	48.
Silver	3.
Zinc	51.
Cyanide	10.
Total Chlorine Residual	10.0
Ammonia	4000.0
Phenolic Compounds (non-chlorinated)	a) (see below)
Chlorinated Phenolics	a)
Chlorinated Pesticides and PCBs*	b)

Table 4 Notes:

a) There are insufficient data for phenolics to estimate chronic* toxicity levels. Requests for modification of water quality objectives for these waste* constituents must be supported by chronic* toxicity data for representative sensitive species. In such cases, applicants seeking modification of water quality objectives should consult the Regional Water Quality Control Board to determine the species and test conditions necessary to evaluate chronic effects.

b) Limitations on chlorinated pesticides and PCBs* shall not be modified so that the total of these compounds is increased above the objectives in Table 1.

H. Monitoring Program

1. The Regional Water Boards shall require dischargers to conduct self-monitoring programs and submit reports necessary to determine compliance with the waste* discharge requirements, and may require dischargers to contract with agencies or persons acceptable to the Regional Water Board to provide monitoring reports. Monitoring provisions contained in waste* discharge requirements shall be in accordance with the Monitoring Procedures provided in Appendices III and VI.

2. The Regional Water Board may require monitoring of bioaccumulation of toxicants in the discharge zone. Organisms and techniques for such monitoring shall be chosen by the Regional Water Board on the basis of demonstrated value in waste* discharge monitoring.

* See Appendix I for definition of terms.

I. Discharge Prohibitions

1. <u>Hazardous Substances</u>

   a. The discharge of any radiological, chemical, or biological warfare agent or high-level radioactive waste* into the ocean* is prohibited.

2. <u>Areas Designated for Special Water Quality Protection</u>

   a. Waste* shall not be discharged to designated Areas* of Special Biological Significance except as provided in chapter III.E Implementation Provisions for Marine Managed Areas.*

3. <u>Sludge</u>

   a. Pipeline discharge of sludge to the ocean* is prohibited by federal law; the discharge of municipal and industrial waste* sludge directly to the ocean,* or into a waste* stream that discharges to the ocean,* is prohibited by this Plan. The discharge of sludge digester supernatant directly to the ocean,* or to a waste* stream that discharges to the ocean* without further treatment, is prohibited.

   b. It is the policy of the State Water Board that the treatment, use and disposal of sewage sludge shall be carried out in the manner found to have the least adverse impact on the total natural and human environment. Therefore, if federal law is amended to permit such discharge, which could affect California waters, the State Water Board may consider requests for exceptions to this section under Chapter III. J of this Plan, provided further that an Environmental Impact Report on the proposed project shows clearly that any available alternative disposal method will have a greater adverse environmental impact than the proposed project.

4. <u>By-Passing</u>

   a. The by-passing of untreated wastes* containing concentrations of pollutants in excess of those of Table 2 or Table 1 to the ocean* is prohibited.

5. <u>Vessels</u>

   a. Discharges of hazardous waste (as defined in California Health and Safety Code § 25117 et seq. [but not including sewage]), oily bilge water,* medical waste (as defined in § 117600 et seq. of the California Health and Safety Code) dry-cleaning waste, and film-processing waste from large passenger vessels* and oceangoing vessels* are prohibited.

   b. Discharges of graywater* and sewage* from large passenger vessels* are prohibited.

   c. Discharges of sewage and sewage sludge from vessels are prohibited in No Discharge Zones* promulgated by U.S. EPA.

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* See Appendix I for definition of terms.

6. Trash*

The discharge of Trash* to surface waters of the State or the deposition of Trash* where it may be discharged into surface waters of the State is prohibited. Compliance with this prohibition of discharge shall be achieved as follows:

a. Dischargers with NPDES permits that contain specific requirements for the control of Trash* that are consistent with these Trash Provisions* shall be determined to be in compliance with this prohibition if the dischargers are in full compliance with such requirements.

b. Dischargers with non-NPDES waste discharge requirements (WDRs) or waivers of WDRs that contain specific requirements for the control of Trash* shall be determined to be in compliance with this prohibition if the dischargers are in full compliance with such requirements.

c. Dischargers with NPDES permits, WDRs, or waivers of WDRs that do not contain specific requirements for the control of Trash* are exempt from these Trash Provisions*.

d. Dischargers without NPDES permits, WDRs, or waivers of WDRs must comply with this prohibition of discharge.

e. Chapter III.I.6.b and Chapter III.L.3 notwithstanding, this prohibition of discharge applies to the discharge of preproduction plastic* by manufacturers of preproduction plastics*, transporters of preproduction plastics*, and manufacturers that use preproduction plastics* in the manufacture of other products to surface waters of the State, or the deposition of preproduction plastic* where it may be discharged into surface waters of the State, unless the discharger is subject to a NPDES permit for discharges of storm water* associated with industrial activity.

J. State Board Exceptions to Plan Requirements

1. The State Water Board may, in compliance with the California Environmental Quality Act, subsequent to a public hearing, and with the concurrence of the Environmental Protection Agency, grant exceptions where the Board determines:

   a. The exception will not compromise protection of ocean* waters for beneficial uses, and,

   b. The public interest will be served.

2. All exceptions issued by the State Water Board and in effect at the time of the Triennial Review will be reviewed at that time. If there is sufficient cause to re-open or revoke any exception, the State Water Board may direct staff to prepare a report and to schedule a public hearing. If after the public hearing the State Water Board decides to re-open, revoke, or re-issue a particular exception, it may do so at that time.

* See Appendix I for definition of terms.

K. Implementation Provisions for Vessel Discharges

1. Vessel discharges must comply with State Lands Commission (SLC) requirements for ballast water discharges and hull fouling to control and prevent the introduction of non-indigenous species, found in the Public Resources Code sections 71200 et seq. and title 2, California Code of Regulations, section 22700 et. seq.

2. Discharges incidental to the normal operation large passenger vessels* and ocean-going vessels must be covered and comply with an individual or general NPDES permit.

3. Vessel discharges must not result in violations of water quality objectives in this plan.

4. Vessels subject to the federal NPDES Vessel General Permit (VGP) which are not large passenger vessels* must follow the best management practices for graywater* as required in the VGP, including the use of only those cleaning agents (e.g., soaps and detergents) that are phosphate-free, non-toxic, and non-bioaccumulative.

L. Implementation Provisions for Trash* [(Section L only) effective January 12, 2016]

1. Applicability

a. These Trash Provisions* shall be implemented through a prohibition of discharge (Chapter III.I.6) and through NPDES permits issued pursuant to section 402(p) of the Federal Clean Water Act, waste discharge requirements (WDRs), or waivers of WDRs (as set forth in Chapter III.L.2 and Chapter III.L.3 below).

b. These Trash Provisions* apply to all surface waters of the State, with the exception of those waters within the jurisdiction of the Los Angeles Regional Water Quality Control Board (Los Angeles Water Board) for which trash Total Maximum Daily Loads (TMDLs) are in effect prior to the effective date of these Trash Provisions*[1]; provided, however, that:

(1) Upon the effective date of these Trash Provisions*, the Los Angeles Water Board shall cease its full capture system* certification process and provide that any new full capture systems* shall be certified by the State Water Board in accordance with these Trash Provisions*.

(2) Within one year of the effective date of these Trash Provisions*, the Los Angeles Water Board shall convene a public meeting to reconsider the scope of its trash TMDLs, with the exception of those for the Los Angeles River and Ballona Creek watersheds, to particularly consider an approach

[1] In the Los Angeles Region, there are fifteen (15) trash TMDLs for the following watersheds and water bodies: Los Angeles River Watershed, Ballona Creek, Malibu Creek Watershed, Santa Monica Bay Nearshore and Offshore, San Gabriel River East Fork, Revolon Slough and Beardsley Wash, Ventura River Estuary, Machado Lake, Lake Elizabeth, Lake Hughes, Munz Lake, Peck Road Park Lake, Echo Park Lake, Lincoln Park Lake and Legg Lake. Three of these were established by the U.S. EPA: Peck Road Park Lake, Echo Park Lake and Lincoln Park Lake.

* See Appendix I for definition of terms.

that would focus MS4* permittees' trash-control efforts on high-trash generation areas within their jurisdictions.

2. Dischargers Permitted Pursuant to Federal Clean Water Act Section 402(p)

Permitting authorities* shall include the following requirements in NPDES permits issued pursuant to Federal Clean Water Act section 402(p):

a. MS4* permittees with regulatory authority over priority land uses* shall be required to comply with the prohibition of discharge in Chapter III.I.6.a herein by either of the following measures:

(1) Track 1: Install, operate, and maintain full capture systems* for all storm drains that captures runoff from the priority land uses* in their jurisdictions; or

(2) Track 2: Install, operate, and maintain any combination of full capture systems*, multi-benefit projects*, other treatment controls*, and/or institutional controls* within either the jurisdiction of the MS4* permittee or within the jurisdiction of the MS4* permittee and contiguous MS4* permittees. The MS4* permittee may determine the locations or land uses within its jurisdiction to implement any combination of controls. The MS4* permittee shall demonstrate that such combination achieves full capture system equivalency*. The MS4* permittee may determine which controls to implement to achieve compliance with full capture system equivalency*. It is, however, the State Water Board's expectation that the MS4* permittee will elect to install full capture systems* where such installation is not cost-prohibitive.

b. The California Department of Transportation (Department) shall be required to comply with the prohibition of discharge in Chapter III.I.6.a herein in all significant trash generating areas* by installing, operating, and maintaining any combination of full capture systems*, multi-benefit projects*, other treatment controls*, and/or institutional controls* for all storm drains that captures runoff from significant trash generating areas*. The Department shall demonstrate that such combination achieves full capture system equivalency*. In furtherance of this provision, the Department and MS4* permittees that are subject to the provisions of Chapter III.L.2.a herein shall coordinate their efforts to install, operate, and maintain full capture systems*, multi-benefit projects*, other treatment controls*, and/or institutional controls* in significant trash generating areas* and/or priority land uses*.

c. Dischargers that are subject to NPDES permits for discharges of storm water* associated with industrial activity (including construction activity) shall be required to comply with the prohibition of discharge in Chapter III.I.6.a herein by eliminating Trash* from all storm water* and authorized non-storm water* discharges consistent with an outright prohibition of the discharge of Trash* contained within the applicable NPDES permit regulating the industrial or construction facility. If the discharger can satisfactorily demonstrate to the permitting authority* its inability to comply with the outright prohibition of the

* See Appendix I for definition of terms.

discharge of Trash* contained within the applicable NPDES permit, then the permitting authority* may require the discharger to either:

(1) Install, operate, and maintain full capture systems* for all storm drains that captures runoff from the facility or site regulated by the NPDES permit; or,

(2) Install, operate, and maintain any combination of full capture systems*, multi-benefit projects*, other treatment controls*, and/or institutional controls* for the facility or site regulated by the NPDES permit. The discharger shall demonstrate that such combination achieves full capture system equivalency*.

Termination of permit coverage for industrial and construction storm water* dischargers shall be conditioned upon the proper operation and maintenance of all controls (e.g., full capture systems*, multi-benefit projects*, other treatment controls*, and/or institutional controls*) used at their facility(ies).

d. A permitting authority* may determine that specific land uses or locations (e.g., parks, stadia, schools, campuses, or roads leading to landfills) generate substantial amounts of Trash*. In the event that the permitting authority* makes that determination, the permitting authority* may require the MS4* to comply with Chapter III.L.2.a.1 or Chapter III.L.2.a.2, as determined by the permitting authority*, with respect to such land uses or locations.

3. Other Dischargers

A permitting authority* may require dischargers, described in Chapter III.I.6.c or Chapter III.I.6.d, that are not subject to Chapter III.L.2 herein, to implement any appropriate Trash* controls in areas or facilities that may generate Trash*. Such areas or facilities may include (but are not limited to) high usage campgrounds, picnic areas, beach recreation areas, parks not subject to an MS4* permit, or marinas.

4. Time Schedule

The permitting authority* shall modify, re-issue, or newly adopt NPDES permits issued pursuant to section 402(p) of the Federal Clean Water Act that are subject to the provisions of Chapter III.L.2 herein to include requirements consistent with these Trash Provisions*. The permitting authorities* shall abide by the following time schedules:

a. NPDES Permits Regulating MS4* Permittees that have Regulatory Authority over Priority Land Uses*.[2]

[2] The time schedule requirement in Chapter III.L.4.a.1 requiring MS4* permittees to elect Chapter III.L.2.a.1 (Track 1) or Chapter III.L.2.a.2 (Track 2) does not apply to MS4* permittees subject to the Municipal Regional Stormwater NPDES Permit (MRP) issued by the San Francisco Bay Regional Water Quality Control Board (San Francisco Bay Water Board) or the East Contra Costa Municipal Storm Water Permit issued by the Central Valley Regional Water Quality Control Board (Central Valley Water Board) because those permits already require control requirements substantially equivalent to Track 2. The time schedule requirement in Chapter III.L.4.a.1 requiring MS4* permittees to submit an implementation plan

* See Appendix I for definition of terms.

(1) Within eighteen (18) months of the effective date of these Trash Provisions*, for each permittee, each permitting authority* shall either:

A. Modify, re-issue, or adopt the applicable MS4* permit to add requirements to implement these Trash Provisions*. The implementing permit shall require written notice from each MS4* permittee stating whether it has elected to comply under Chapter III.L.2.a.1 (Track 1) or Chapter III.L.2.a.2 (Track 2) and such notice shall be submitted to the permitting authority* no later than three (3) months from the effective date of the implementing permit, or for MS4s* designated after the effective date of these Trash Provisions*, three (3) months from the effective date of that designation. The implementing permit shall also require that within eighteen (18) months of the effective date of the implementing permit or new designation, MS4* permittees that have elected to comply with Track 2 shall submit an implementation plan to the permitting authority*. The implementation plan shall describe: (i) the combination of controls selected by the MS4* permittee and the rationale for the selection, (ii) how the combination of controls is designed to achieve full capture system equivalency*, and (iii) how full capture system equivalency* will be demonstrated. The implementation plan is subject to approval by the permitting authority*.

B. Issue an order pursuant to Water Code section 13267 or 13383 requiring the MS4* permittee to submit, within three (3) months from receipt of the order, written notice to the permitting authority* stating whether such MS4* permittee will comply with the prohibition of discharge under Chapter III.L.2.a.1 (Track 1) or Chapter III.L.2.a.2 (Track 2). For MS4s* designated after the effective date of these Trash Provisions*, the order pursuant to Water Code section 13267 or 13383 shall be issued at the time of designation. Within eighteen (18) months of the receipt of the Water Code section 13267 or 13383 order, MS4* permittees that have elected to comply with Track 2 shall submit an implementation plan to the permitting authority* that describes: (i) the combination of controls selected by the MS4* permittee and the rationale for the selection, (ii) how the combination of controls is designed to achieve full capture system equivalency*, and (iii) how full capture system equivalency* will be demonstrated. The implementation plan is subject to approval by the permitting authority*.

(2) For MS4* permittees that elect to comply with Chapter III.L.2.a.1 (Track1), the implementing permit shall state that full compliance shall occur within

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does not apply to the above permittees if the pertinent permitting authority* determines that such permittee has already submitted an implementation plan prior to the effective date of the Trash Provisions* that is equivalent to the implementation plan required by Chapter III.L.4.a.1. In the aforementioned permits, the pertinent permitting authority* may establish an earlier full compliance deadline than that specified in Chapter III.L.4.a.3.

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* See Appendix I for definition of terms.

ten (10) years of the effective date of the first implementing permit except as specified in Chapter III.L.4.a.5. The permit shall also require these permittees to demonstrate achievement of interim milestones such as average load reductions of ten percent (10%) per year or other progress to full implementation. In no case may the final compliance date be later than fifteen (15) years from the effective date of these Trash Provisions*.

(3) For MS4* permittees that elect to comply with Chapter III.L.2.a.2 (Track 2), the implementing permit shall state that full compliance shall occur within ten (10) years of the effective date of the first implementing permit except as specified in Chapter III.L.4.a.5. The permit shall also require these permittees to demonstrate achievement of interim milestones such as average load reductions of ten percent (10%) per year or other progress to full implementation. In no case may the final compliance date be later than fifteen (15) years from the effective date of these Trash Provisions*.

(4) The implementing permit shall state that for MS4* permittees designated after the effective date of the implementing permit, full compliance shall occur within ten (10) years of the effective date of the designation. The permit shall also require such designations to demonstrate achievement of interim milestones such as average load reductions of ten percent (10%) per year or other progress to full implementation.

(5) Where a permitting authority* makes a determination pursuant to Chapter III.L.2.d that a specific land use generates a substantial amount of Trash*, that permitting authority* has discretion to determine the time schedule for full compliance. In no case may the final compliance date be later than ten (10) years from the determination.

b. NPDES Permits Regulating the Department.

(1) Within eighteen (18) months of the effective date of these Trash Provisions*, the State Water Board shall issue an order pursuant to Water Code section 13267 or 13383 requiring the Department to submit an implementation plan to the Executive Director of the State Water Board that: (i) describes the specific locations of its significant trash generating areas*, (ii) the combination of controls selected by the Department and the rationale for the selections, and (iii) how it will demonstrate full capture system equivalency*.

(2) The Department must demonstrate full compliance with Chapter III.L.2.b herein within ten (10) years of the effective date of the first implementing NPDES permit, along with achievements of interim milestones such as average load reductions of ten percent (10%) per year. In no case may the final compliance date be later than fifteen (15) years from the effective date of these Trash Provisions*.

c. NPDES Permits Regulating the Discharges of Storm Water* Associated with Industrial Activity (Including Construction Activity). Dischargers that are subject

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* See Appendix I for definition of terms.

to the provisions of Chapter III.L.2.c herein must demonstrate full compliance in accordance with the deadlines contained in the first implementing NPDES permits. Such deadlines may not exceed the terms of the first implementing permits.

5. Monitoring and Reporting

The permitting authority* must include monitoring and reporting requirements in its implementing permits. The following monitoring and reporting provisions are the minimum requirements that must be included within the implementing permits:

a. MS4* permittees that elect to comply with Chapter III.L.2.a.1 (Track 1) shall provide a report to the applicable permitting authority* demonstrating installation, operation, maintenance, and the Geographic Information System- (GIS-) mapped location and drainage area served by its full capture systems* on an annual basis.

b. MS4* permittees that elect to comply with Chapter III.L.2.b.2 (Track 2) shall develop and implement monitoring plans that demonstrate the effectiveness of the full capture systems*, multi-benefit projects*, other treatment controls*, and/or institutional controls* and compliance with full capture system equivalency*. Monitoring reports shall be provided to the applicable permitting authority* on an annual basis, and shall include GIS-mapped locations and drainage area served for each of the full capture systems*, multi-benefit projects*, other treatment controls*, and/or institutional controls* installed or utilized by the MS4* permittee. In developing the monitoring reports the MS4* permittee should consider the following questions:

(1) What type of and how many treatment controls*, institutional controls*, and/or multi-benefit projects* have been used and in what locations?

(2) How many full capture systems* have been installed (if any), in what locations have they been installed, and what is the individual and cumulative area served by them?

(3) What is the effectiveness of the total combination of treatment controls*, institutional controls*, and multi-benefit projects* employed by the MS4* permittee?

(4) Has the amount of Trash* discharged from the MS4* decreased from the previous year? If so, by how much? If not, explain why.

(5) Has the amount of Trash* in the MS4's* receiving water(s) decreased from the previous year? If so, by how much? If not, explain why.

c. The Department, as subject to the provisions of Chapter III.L.2.b, shall develop and implement monitoring plans that demonstrate the effectiveness of the controls and compliance with full capture system equivalency*. Monitoring reports shall be provided to the State Water Board on an annual basis, and shall include GIS-mapped locations and drainage area served for each of the full

* See Appendix I for definition of terms.

capture systems*, multi-benefit projects*, other treatment controls*, and/or institutional controls* installed or utilized by the Department. In developing the monitoring report, the Department should consider the following questions:

(1) What type of and how many treatment controls* institutional controls*, and/or multi-benefit projects* have been used and in what locations?

(2) How many full capture systems* have been installed (if any), in what locations have they been installed, and what is the individual and cumulative area served by them?

(3) What is the effectiveness of the total combination of treatment controls*, institutional controls*, and multi-benefit projects* employed by the Department?

(4) Has the amount of Trash* discharged from the Department's MS4* decreased from the previous year? If so, by how much? If not, explain why.

(5) Has the amount of Trash* in the receiving waters decreased from the previous year? If so, by how much? If not, explain why.

d. Dischargers that are subject to the provisions of Chapter III.L.2.c herein shall be required to report the measures used to comply with Chapter III.L.2.c.

M. Implementation Provisions for Desalination Facilities*

1. Applicability and General Provisions

a. Chapter III.M applies to desalination facilities* using seawater.* Chapter III.M.2 does not apply to desalination facilities* operated by a federal agency. Chapter III.M.2, M.3, and M.4 do not apply to portable desalination facilities* that withdraw less than 0.10 million gallons per day (MGD) of seawater* and are operated by a governmental agency. These standards do not alter or limit in any way the authority of any public agency to implement its statutory obligations. The Executive Director of the State Water Board may temporarily waive the application of chapter III.M to desalination facilities* that are operating to serve as a critical short-term water supply during a state of emergency as declared by the Governor.

b. Definitions of New, Expanded, and Existing Facilities:

(1) For purposes of chapter III.M, "existing facilities" means desalination facilities* that have been issued an NPDES permit and all building permits and other governmental approvals necessary to commence construction for which the owner or operator has relied in good faith on those previously-issued permits and approvals and commenced construction of the facility beyond site grading prior to January 28, 2016.

* See Appendix I for definition of terms.

(2) For purposes of chapter III.M, “expanded facilities” means existing facilities for which, after January 28, 2016, the owner or operator does either of the following in a manner that could increase intake or mortality of all forms of marine life * beyond that which was originally approved in any NPDES permit or Water Code section 13142.5, subdivision (b) (hereafter Water Code section 13142.5(b)) determination: 1) increases the amount of seawater* used either exclusively by the facility or used by the facility in conjunction with other facilities or uses, or 2) changes the design or operation of the facility. To the extent that the desalination facility* is co-located with another facility that withdraws water for a different purpose and that other facility reduces the volume of water withdrawn to a level less than the desalination facility’s* volume of water withdrawn, the desalination facility* is considered to be an expanded facility.

(3) For purposes of chapter III.M, “new facilities” means desalination facilities* that are not existing facilities or expanded facilities.

c. Chapter III.M.2 (Water Code §13142.5(b) Determinations for New and Expanded Facilities: Site, Design, Technology, and Mitigation Measures) applies to new and expanded desalination facilities* withdrawing seawater.*

d. Chapter III.M.3 (Receiving Water Limitation for Salinity*) applies to all desalination facilities* that discharge into ocean waters* and wastewater facilities that receive brine* from seawater* desalination facilities* and discharge into ocean waters.*

e. Chapter III.M.4 (Monitoring and Reporting Programs) applies to all desalination facilities* that discharge into ocean waters.* Chapter III.M.4 shall not apply to a wastewater facility that receives brine* from a seawater* desalination facility* and discharges a positively buoyant commingled effluent through an existing wastewater outfall that is covered under an existing NPDES permit, as long as the owner or operator monitors for compliance with the receiving water limitation set forth in chapter III.M.3. For the purposes of chapter III.M.4, a positively buoyant commingled effluent shall mean that the commingled plume rises when it enters the receiving water body due to salinity* levels in the commingled discharge being lower than the natural background salinity.*

f. References to the regional water board include the regional water board acting under delegated authority. For provisions that require consultation between regional water board and State Water Board staff, the regional water board shall notify and consult with the State Water Board staff prior to making a final determination on the item requiring consultation.

g. All desalination facilities must comply with all other applicable sections of the Ocean Plan.

2. Water Code section 13142.5(b) Determinations for New and Expanded Facilities: Site, Design, Technology, and Mitigation Measures Feasibility Considerations

* See Appendix I for definition of terms.

a. General Considerations

(1) The owner or operator shall submit a request for a Water Code section 13142.5(b) determination to the appropriate regional water board as early as practicable. This request shall include sufficient information for the regional water board to conduct the analyses described below. The regional water board in consultation with the State Water Board staff may require an owner or operator to provide additional studies or information if needed, including any information necessary to identify and assess other potential sources of mortality to all forms of marine life. All studies and models are subject to the approval of the regional water board in consultation with State Water Board staff. The regional water board may require an owner or operator to hire a neutral third party entity to review studies and models and make recommendations to the regional water board.

(2) The regional water board shall conduct a Water Code section 13142.5(b) analysis of all new and expanded desalination facilities.* A Water Code section 13142.5(b) analysis may include future expansions at the facility. The regional water board shall first analyze separately as independent considerations a range of feasible* alternatives for the best available site, the best available design, the best available technology, and the best available mitigation measures to minimize intake and mortality of all forms of marine life.* Then, the regional water board shall consider all four factors collectively and determine the best combination of feasible* alternatives to minimize intake and mortality of all forms of marine life.* The best combination of alternatives may not always include the best alternative under each individual factor because some alternatives may be mutually exclusive, redundant, or not feasible* in combination.

(3) The regional water board's Water Code section 13142.5(b) analysis for expanded facilities may be limited to those expansions or other changes that result in the increased intake or mortality of all forms of marine life,* unless the regional water board determines that additional measures that minimize intake and mortality of all forms of marine life* are feasible* for the existing portions of the facility.

(4) In conducting the Water Code section 13142.5(b) determination, the regional water boards shall consult with other state agencies involved in the permitting of that facility, including, but not limited to: California Coastal Commission, California State Lands Commission, and California Department of Fish and Wildlife. The regional water board shall consider project-specific decisions made by other state agencies; however, the regional water board is not limited to project-specific requirements set forth by other agencies and may include additional requirements in a Water Code section 13142.5(b) determination.

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* See Appendix I for definition of terms.

(5) A regional water board may expressly condition a Water Code section 13142.5(b) determination based on the expectation of the occurrence of a future event. Such future events may include, but are not limited to, the permanent shutdown of a co-located power plant with intake structures shared with the desalination facility,* or a reduction in the volume of wastewater available for the dilution of brine.* The regional water board must make a new Water Code section 13142.5(b) determination if the foreseeable future event occurs.

(a) The owner or operator shall provide notice to the regional water board as soon as it becomes aware that the expected future event will occur, and shall submit a new request for a Water Code section 13142.5(b) determination to the regional water board at least one year prior to the event occurring. If the owner or operator does not become aware that the event will occur at least one year prior to the event occurring, the owner or operator shall submit the request as soon as possible.

(b) The regional water board may allow up to five years from the date of the event for the owner or operator to make modifications to the facility required by a new Water Code section 13142.5(b) determination, provided that the regional water board finds that 1) any water supply interruption resulting from the facility modifications requires additional time for water users to obtain a temporary replacement supply, or 2) such a compliance period is otherwise in the public interest and reasonably required for modification of the facility to comply with the determination.

(c) If the regional water board makes a Water Code section 13142.5(b) determination for a desalination facility* that will be co-located with a power plant, the regional water board shall condition its determination on the power plant remaining in compliance with the Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling.

b. Site is the general onshore and offshore location of a new or expanded facility. There may be multiple potential facility design configurations within any given site. The regional water board shall require that the owner or operator evaluate a reasonable range of nearby sites, including sites that would likely support subsurface intakes. For each potential site, in order to determine whether a proposed facility site is the best available site feasible* to minimize intake and mortality of all forms of marine life,* the regional water board shall require the owner or operator to:

(1) Consider whether subsurface intakes* are feasible.*

(2) Consider whether the identified need for desalinated* water is consistent with an applicable adopted urban water management plan

* See Appendix I for definition of terms.

prepared in accordance with Water Code section 10631, or if no urban water management plan is available, other water planning documents such as a county general plan or integrated regional water management plan.

(3) Analyze the feasibility of placing intake, discharge, and other facility infrastructure in a location that avoid impacts to sensitive habitats* and sensitive species.

(4) Analyze the direct and indirect effects on all forms of marine life* resulting from facility construction and operation, individually and in combination with potential anthropogenic effects on all forms of marine life* resulting from other past, present, and reasonably foreseeable future activities within the area affected by the facility.

(5) Analyze oceanographic geologic, hydrogeologic, and seafloor topographic conditions at the site, so that the siting of a facility, including the intakes and discharges, minimizes the intake and mortality of all forms of marine life.*

(6) Analyze the presence of existing discharge infrastructure, and the availability of wastewater to dilute the facility's brine* discharge.

(7) Ensure that the intake and discharge structures are not located within a MPA or SWQPA* with the exception of intake structures that do not have marine life mortality associated with the construction, operation, and maintenance of the intake structures (e.g. slant wells). Discharges shall be sited at a sufficient distance from a MPA or SWQPA* so that the salinity* within the boundaries of a MPA or SWQPA* does not exceed natural background salinity.* To the extent feasible,* surface intakes shall be sited so as to maximize the distance from a MPA or SWQPA.*

c. Design is the size, layout, form, and function of a facility, including the intake capacity and the configuration and type of infrastructure, including intake and outfall structures. The regional water board shall require that the owner or operator perform the following in determining whether a proposed facility design is the best available design feasible* to minimize intake and mortality of all forms of marine life:*

(1) For each potential site, analyze the potential design configurations of the intake, discharge, and other facility infrastructure to avoid impacts to sensitive habitats* and sensitive species.

(2) If the regional water board determines that subsurface intakes* are not feasible* and surface water intakes are proposed instead, analyze potential designs for those intakes in order to minimize the intake and mortality of all forms of marine life.*

* See Appendix I for definition of terms.

(3) Design the outfall so that the brine mixing zone* does not encompass or otherwise adversely affect existing sensitive habitat.*

(4) Design the outfall so that discharges do not result in dense, negatively-buoyant plumes that result in adverse effects due to elevated salinity* or hypoxic conditions occurring outside the brine mixing zone.* An owner or operator must demonstrate that the outfall meets this requirement through plume modeling and/or field studies. Modeling and field studies shall be approved by the regional water board in consultation with State Water Board staff.

(5) Design outfall structures to minimize the suspension of benthic sediments.

d. Technology is the type of equipment, materials,* and methods that are used to construct and operate the design components of the desalination facility.* The regional water board shall apply the following considerations in determining whether a proposed technology is the best available technology feasible* to minimize intake and mortality of all forms of marine life:*

(1) Considerations for Intake Technology:

(a) Subject to chapter M.2.a.(2), the regional water board in consultation with State Water Board staff shall require subsurface intakes* unless it determines that subsurface intakes* are not feasible* based upon a comparative analysis of the factors listed below for surface and subsurface intakes.* A design capacity in excess of the need for desalinated* water as identified in chapter III.M.2.b.(2) shall not be used by itself to declare subsurface intakes* as not feasible.*

i. The regional water board shall consider the following factors in determining feasibility of subsurface intakes:* geotechnical data, hydrogeology, benthic topography, oceanographic conditions, presence of sensitive habitats,* presence of sensitive species, energy use for the entire facility; design constraints (engineering, constructability), and project life cycle cost. Project life cycle cost shall be determined by evaluating the total cost of planning, design, land acquisition, construction, operations, maintenance, mitigation, equipment replacement and disposal over the lifetime of the facility, in addition to the cost of decommissioning the facility. Subsurface intakes* shall not be determined to be economically infeasible solely because subsurface intakes* may be more expensive than surface intakes. Subsurface intakes* may be determined to be economically infeasible if the additional costs or lost profitability associated with subsurface intakes,* as compared to surface intakes, would render the desalination facility* not economically viable. In

* See Appendix I for definition of terms.

addition, the regional water board may evaluate other site- and facility-specific factors.

ii. If the regional water board determines that subsurface intakes* are not feasible* for the proposed intake design capacity, it shall determine whether subsurface intakes* are feasible* for a reasonable range of alternative intake design capacities. The regional water board may find that a combination of subsurface* and surface intakes is the best feasible* alternative to minimize intake and mortality of marine life and meet the identified need for desalinated water as described in chapter III.M.2.b.(2).

(b) Installation and maintenance of a subsurface intake* shall avoid, to the maximum extent feasible,* the disturbance of sensitive habitats* and sensitive species.

(c) If subsurface intakes* are not feasible,* the regional water board may approve a surface water intake, subject to the following conditions:

i. The regional water board shall require that surface water intakes be screened. Screens must be functional while the facility is withdrawing seawater.*

ii. In order to reduce entrainment, all surface water intakes must be screened with a 1.0 mm (0.04 in) or smaller slot size screen when the desalination facility* is withdrawing seawater.*

iii. An owner or operator may use an alternative method of preventing entrainment so long as the alternative method results in intake and mortality of eggs, larvae, and juvenile organisms that is less than or equivalent to a 1.0 mm (0.04 in) slot size screen. The owner or operator must demonstrate the effectiveness of the alternative method to the regional water board. The owner or operator must conduct a study to demonstrate the effectiveness of the alternative method, and use an Empirical Transport Model* (ETM)/ Area of Production Forgone* (APF) approach* to estimate entrainment. The study period shall be at least 12 consecutive months. Sampling for environmental studies shall be designed to account for variation in oceanographic or hydrologic conditions and larval abundance and diversity such that abundance estimates are reasonably accurate. Samples must be collected using a mesh size no larger than 335 microns and individuals collected shall be identified to the lowest taxonomical level practicable. The ETM/APF analysis* shall evaluate entrainment for a broad range of species, species morphologies, and sizes under the environmental and operational conditions that are representative of the entrained species and the conditions at

* See Appendix I for definition of terms.

the full-scale desalination facility.* At their discretion, the regional water boards may permit the use of existing entrainment data to meet this requirement.

iv. In order to minimize impingement, through-screen velocity at the surface water intake shall not exceed 0.15 meters per second (0.5 feet per second).

(2) Considerations for Brine* Discharge Technology:

(a) The preferred technology for minimizing intake and mortality of all forms of marine life* resulting from brine* discharge is to commingle brine* with wastewater (e.g., agricultural, municipal, industrial, power plant cooling water, etc.) that would otherwise be discharged to the ocean. The wastewater must provide adequate dilution to ensure salinity* of the commingled discharge meets the receiving water limitation for salinity* in chapter III.M.3. Nothing in this section shall preclude future recycling of the wastewater.

(b) Multiport diffusers* are the next best method for disposing of brine* when the brine* cannot be diluted by wastewater and when there are no live organisms in the discharge. Multiport diffusers* shall be engineered to maximize dilution, minimize the size of the brine mixing zone,* minimize the suspension of benthic sediments, and minimize mortality of all forms of marine life.*

(c) Brine* discharge technologies other than wastewater dilution and multiport diffusers,* may be used if an owner or operator can demonstrate to the regional water board that the technology provides a comparable level of intake and mortality of all forms of marine life* as wastewater dilution if wastewater is available, or multiport diffusers* if wastewater is unavailable. The owner or operator must evaluate all of the individual and cumulative effects of the proposed alternative discharge method on the intake and mortality of all forms of marine life,* including (where applicable); intake-related entrainment, osmotic stress, turbulence that occurs during water conveyance and mixing, and shearing stress at the point of discharge. When determining the intake and mortality associated with a brine* discharge technology or combination of technologies, the regional water board shall require the owner or operator to use empirical studies or modeling to:

i. Estimate intake entrainment impacts using an ETM/APF approach.*

ii. Estimate degradation of all forms of marine life* from elevated salinity* within the brine mixing zone,* including osmotic stresses, the size of impacted area, and the duration that all forms of marine life* are exposed to the

* See Appendix I for definition of terms.

toxic conditions. Considerations shall be given to the most sensitive species, and community structure and function.

iii. Estimate the intake and mortality of all forms of marine life* that occurs as a result of water conveyance, in-plant turbulence or mixing, and waste* discharge.

iv. Within 18 months of beginning operation, submit to the regional water board an empirical study that evaluates intake and mortality of all forms of marine life* associated with the alternative brine* discharge technology. The study must evaluate impacts caused by any augmented intake volume, intake and pump technology, water conveyance, waste brine* mixing, and effluent discharge. Unless demonstrated otherwise, organisms entrained by the alternative brine* discharge technology are assumed to have a mortality rate of 100 percent. The study period shall be at least 12 consecutive months. If the regional water board requires a study period longer than 12 months, the final report must be submitted to the regional water board within 6 months of the completion of the empirical study.

v. If the empirical study shows that the alternative brine* discharge technology results in more intake and mortality of all forms of marine life* than a facility using wastewater dilution or multiport diffusers,* then the facility must either: (1) cease using the alternative brine* discharge technology and install and use wastewater dilution or multiport diffusers* to discharge brine* waste, or (2) re-design the alternative brine* discharge technology system to minimize intake and mortality of all forms of marine life* to a level that is comparable with wastewater dilution if wastewater is available, or multiport diffusers* if wastewater is unavailable,* subject to regional water board approval.

(d) Flow augmentation* as an alternative brine* discharge technology is prohibited with the following exceptions:

i. At facilities that use subsurface intakes* to supply augmented flow water for dilution. Facilities that use subsurface intakes* to supply augmented flow water for dilution are exempt from the requirements of chapter III.M.2.d.(2)(c) if the facility meets the receiving water limitation for salinity* in chapter III.M.3.

ii. At a facility that has received a conditional Water Code section 13142.5(b) determination and is over 80 percent constructed by January 28, 2016. If the owner or operator of the facility proposes to use flow augmentation* as an

* See Appendix I for definition of terms.

alternative brine* discharge technology, the facility must: use low turbulence intakes (e.g., screw centrifugal pumps or axial flow pumps) and conveyance pipes; convey and mix dilution water in a manner that limits thermal stress, osmotic stress, turbulent shear stress, and other factors that could cause intake and mortality of all forms of marine life*; comply with chapter III.M.2.d.(1); and not discharge through multiport diffusers.*

e. Mitigation for the purposes of this section is the replacement of all forms of marine life* or habitat that is lost due to the construction and operation of a desalination facility* after minimizing intake and mortality of all forms of marine life* through best available site, design, and technology. The regional water board shall ensure an owner or operator fully mitigates for the operational lifetime of the facility and uses the best available mitigation measures feasible* to minimize intake and mortality of all forms of marine life.* The owner or operator may choose whether to satisfy a facility's mitigation measures pursuant to chapter III.M.2.e.(3) or, if available, M.2.e.(4), or a combination of the two.

(1) *Marine Life Mortality Report.* The owner or operator of a facility shall submit a report to the regional water board estimating the marine life mortality resulting from construction and operation of the facility after implementation of the facility's required site, design, and technology measures.

(a) For operational mortality related to intakes, the report shall include a detailed entrainment study. The entrainment study period shall be at least 12 consecutive months and sampling shall be designed to account for variation in oceanographic or hydrologic conditions and larval abundance and diversity such that abundance estimates are reasonably accurate. At their discretion, the regional water boards may permit the use of existing entrainment data from the facility to meet this requirement. Samples must be collected using a mesh size no larger than 335 microns and individuals collected shall be identified to the lowest taxonomical level practicable. The ETM/APF analysis* shall be representative of the entrained species collected using the 335 micron net. The APF* shall be calculated using a one-sided, upper 95 percent confidence bound for the 95th percentile of the APF distribution. An owner or operator with subsurface intakes* is not required to do an ETM/APF analysis* for their intakes and is not required to mitigate for intake-related operational mortality. The regional water board may apply a one percent reduction to the APF* acreage calculated in the Marine Life Mortality Report to account for the reduction in entrainment of all forms of marine life* when using a 1.0 mm slot size screen.

* See Appendix I for definition of terms.

(b) For operational mortality related to discharges, the report shall estimate the area in which salinity* exceeds 2.0 parts per thousand above natural background salinity* or a facility-specific alternative receiving water limitation (see chapter III.M.3). The area in excess of the receiving water limitation for salinity* shall be determined by modeling and confirmed with monitoring. The report shall use any acceptable approach approved by the regional water board for evaluating mortality that occurs due to shearing stress resulting from the facility's discharge, including any incremental increase in mortality resulting from a commingled discharge.

(c) For construction-related mortality, the report shall use any acceptable approach approved by the regional water board for evaluating the mortality that occurs within the area disturbed by the facility's construction. The regional water board may determine that the construction-related disturbance does not require mitigation because the disturbance is temporary and the habitat is naturally restored.

(d) Upon approval of the report by the regional water board in consultation with State Water Board staff, the calculated marine life mortality shall form the basis for the mitigation provided pursuant to this section.

(2) The owner or operator shall mitigate for the mortality of all forms of marine life* determined in the report above by choosing to either complete a mitigation project as described in chapter III.M.2.e.(3) or, if an appropriate fee-based mitigation program is available, provide funding for the program as described in chapter III.M.2.e.(4). The mitigation project or the use of a fee-based mitigation program and the amount of the fee that the owner or operator must pay is subject to regional water board approval.

(3) *Mitigation Option 1: Complete a Mitigation Project.* The mitigation project must satisfy the following provisions:

(a) The owner or operator shall submit a Mitigation Plan. Mitigation Plans shall include: project objectives, site selection, site protection instrument (the legal arrangement or instrument that will be used to ensure the long-term protection of the compensatory mitigation project site), baseline site conditions, a mitigation work plan, a maintenance plan, a long-term management plan, an adaptive management plan, performance standards and success criteria, monitoring requirements, and financial assurances.

(b) The mitigation project must meet the following requirements:

i. Mitigation shall be accomplished through expansion, restoration or creation of one or more of the following:

* See Appendix I for definition of terms.

kelp beds,* estuaries,* coastal wetlands, natural reefs, MPAs, or other projects approved by the regional water board that will mitigate for intake and mortality of all forms of marine life* associated with the facility.

ii. The owner or operator shall demonstrate that the project fully mitigates for intake-related marine life mortality by including expansion, restoration, or creation of habitat based on the APF* acreage calculated in the Marine Life Mortality Report above. The owner or operator using surface water intakes shall do modeling to evaluate the areal extent of the mitigation project's production area to confirm that it overlaps the facility's source water body.* Impacts on the mitigation project due to entrainment by the facility must be offset by adding compensatory acreage to the mitigation project.

iii. The owner or operator shall demonstrate that the project also fully mitigates for the discharge-related marine life mortality projected in the Marine Life Mortality Report above.

iv. The owner or operator shall demonstrate that the project also fully mitigates for the construction-related marine life mortality identified in the Marine Life Mortality Report above.

v. The regional water board may permit out-of-kind mitigation* for mitigation of open water or soft-bottom species. In-kind mitigation* shall be done for all other species whenever feasible.*

vi. For out-of-kind mitigation,* an owner or operator shall evaluate the biological productivity of the impacted open water or soft-bottom habitat calculated in the Marine Life Mortality Report and the proposed mitigation habitat. If the mitigation habitat is a more biologically productive habitat (e.g. wetlands, estuaries,* rocky reefs, kelp beds,* eelgrass beds,* surfgrass beds*), the regional water boards may apply a mitigation ratio based on the relative biological productivity of the impacted open water or soft-bottom habitat and the mitigation habitat. The mitigation ratio shall not be less than one acre of mitigation habitat for every ten acres of impacted open water or soft-bottom habitat.

vii. For in-kind mitigation,* the mitigation ratio shall not be less than one acre of mitigation habitat for every one acre of impacted habitat.

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* See Appendix I for definition of terms.

viii. For both in-kind* and out-of-kind mitigation,* the regional water boards may increase the required mitigation ratio for any species and impacted natural habitat calculated in the Marine Life Mortality Report when appropriate to account for imprecisions associated with mitigation including, but not limited to, the likelihood of success, temporal delays in productivity, and the difficulty of restoring or establishing the desired productivity functions.

ix. The rationale for the mitigation ratios must be documented in the administrative record for the permit action.

(c) The Mitigation Plan is subject to approval by the regional water board in consultation with State Water Board staff and with other agencies having authority to condition approval of the project and require mitigation.

(4) *Mitigation Option 2: Fee-based Mitigation Program*. If the regional water board determines that an appropriate fee-based mitigation program has been established by a public agency, and that payment of a fee to the mitigation program will result in the creation and ongoing implementation of a mitigation project that meets the requirements of chapter M.2.e.(3), the owner or operator may pay a fee to the mitigation program in lieu of completing a mitigation project.

(a) The agency that manages the fee-based mitigation program must have legal and budgetary authority to accept and spend mitigation funds, a history of successful mitigation projects documented by having set and met performance standards for past projects, and stable financial backing in order to manage mitigation sites for the operational life of the facility.

(b) The amount of the fee shall be based on the cost of the mitigation project, or if the project is designed to mitigate cumulative impacts from multiple desalination facilities or other development projects, the amount of the fee shall be based on the desalination facility's* fair share of the cost of the mitigation project.

(c) The manager of the fee-based mitigation program must consult with the California Department of Fish and Wildlife, Ocean Protection Council, Coastal Commission, State Lands Commission, and State and regional water boards to develop mitigation projects that will best compensate for intake and mortality of all forms of marine life* caused by the desalination facility.* Mitigation projects that increase or enhance the viability and sustainability of all forms of marine life* in Marine Protected Areas are preferred, if feasible.*

* See Appendix I for definition of terms.

(5) California Department of Fish and Wildlife, the regional water board, and State Water Board may perform audits or site inspections of any mitigation project.

(6) An owner or operator, or a manager of a fee-based mitigation program, must submit a mitigation project performance report to the regional water board 180 days prior to the expiration date of their NPDES permit.

(7) For conditionally permitted facilities or expanded facilities, the regional water boards may:

(a) Account for previously-approved mitigation projects associated with a facility when making a new Water Code section 13142.5(b) determination.

(b) Require additional mitigation when making a new Water Code section 13142.5(b) determination for any additional mortality of all forms of marine life resulting from the occurrence of the conditional event or the expansion of the facility. The additional mitigation must be to compensate for any additional construction, discharge, or other increases in intake or impacts or an increase in intake and mortality of all forms of marine life.*

3. Receiving Water Limitation for Salinity*

a. Chapter III.M.3 is applicable to all desalination facilities discharging brine* into ocean waters,* including facilities that commingle brine* and wastewater.

b. The receiving water limitation for salinity* shall be established as described below:

(1) Discharges shall not exceed a daily maximum of 2.0 parts per thousand (ppt) above natural background salinity* measured no further than 100 meters (328 ft) horizontally from each discharge point. There is no vertical limit to this zone.

(2) In determining an effluent limit necessary to meet this receiving water limitation, permit writers shall use the formula in chapter III.C.4 that has been modified for brine* discharges as follows:

Equation 1: $Ce = Co + Dm(2.0 \text{ ppt})$
$Ce = (2.0 \text{ ppt} + Cs) + Dm(2.0 \text{ ppt})$

Where:

Ce= the effluent concentration limit, ppt
Co= the salinity* concentration to be met at the completion of initial* dilution= 2.0 ppt + Cs
Cs= the natural background salinity,* ppt
Dm= minimum probable initial dilution* expressed as parts

* See Appendix I for definition of terms.

seawater* per part brine* discharge

(a) The fixed distance referenced in the initial dilution* definition shall be no more than 100 meters (328 feet).

(b) In addition, the owner or operator shall develop a dilution factor (Dm) based on the distance of 100 meters (328 feet) or initial dilution,* whichever is smaller. The dilution factor (Dm) shall be developed within the brine mixing zone* using applicable water quality models that have been approved by the regional water boards in consultation with State Water Board staff.

(c) The value 2.0 ppt in Equation 1 is the maximum incremental increase above natural background salinity* (Cs) allowed at the edge of the brine mixing zone.* A regional water board may substitute an alternative numeric value for 2.0 ppt in Equation 1 based upon the results of a facility-specific alternative salinity* receiving water limitation study, as described in chapter III.M.3.c below.

c. An owner or operator may submit a proposal to the regional water board for approval of an alternative (other than 2 ppt) salinity* receiving water limitation to be met no further than 100 meters horizontally from the discharge. There is no vertical limit to this zone.

(1) To determine whether a proposed facility-specific alternative receiving water limitation is adequately protective of beneficial uses, an owner or operator shall:

(a) Establish baseline biological conditions at the discharge location and at reference locations over a 12-month period prior to commencing brine* discharge. The biologic surveys must characterize the ecologic composition of habitat and marine life using measures established by the regional water board. At their discretion, the regional water boards may permit the use of existing data to meet this requirement.

(b) Conduct at least the following chronic toxicity* Whole Effluent Toxicity (WET) tests: germination and growth for giant kelp (*Macrocystis pyrifera)*; development for red abalone (*Haliotis refescens)*; development and fertilization for purple urchin (*Strongleocentrotus purpuratus)*; development and fertilization for sand dollar (*Dendraster excentricus)*; larval growth rate for topsmelt (*Atherniops affinis)*. WET tests shall be performed by an Environmental Laboratory Accreditation Program (ELAP) certified laboratory.

* See Appendix I for definition of terms.

(c) The regional water board in consultation with State Water Board staff may require an owner or operator to do additional toxicity studies if needed.

(2) The regional water board in consultation with the State Water Board staff may require an owner or operator to provide additional studies or information in order to approve a facility-specific alternative receiving water limitation for salinity.*

(3) The facility-specific alternative receiving water limitation shall be based on the lowest observed effect concentration (LOEC)* for the most sensitive species and toxicity endpoint as determined in the chronic toxicity* studies. The regional water board in consultation with State Water Board staff has discretion to approve the proposed facility-specific alternative receiving water limitation for salinity.*

(4) The regional water board shall review a facility's monitoring data, the studies as required in chapter III.M.4 below, or any other information that the regional water board deems to be relevant to periodically assess whether the facility-specific alternative receiving water limitation for salinity* is adequately protective of beneficial uses. The regional water board may eliminate or revise a facility-specific alternative receiving water limitation for salinity* based on its assessment of the data.

d. The owner or operator of a facility that has received a conditional Water Code section 13142.5(b) determination and is over 80 percent constructed by January 28, 2016 that proposes flow augmentation* using a surface water intake may submit a proposal to the regional water board in consultation with the State Water Board staff for approval of an alternative brine mixing zone* not to exceed 200 meters laterally from the discharge point and throughout the water column. The owner or operator of such a facility must demonstrate, in accordance with chapter III.M.2.d.(2)(c), that the combination of the alternative brine mixing zone* and flow augmentation* using a surface water intake provide a comparable level of intake and mortality of all forms of marine life* as the combination of the standard brine mixing zone* and wastewater dilution if wastewater is available, or multiport diffusers* if wastewater is unavailable. In addition to the analysis of the effects required by chapter III.M.2.d.(2)(c), the owner or operator must also evaluate the individual and cumulative effects of the alternative brine mixing zone* on the intake and mortality of all forms of marine life.* In no case may the discharge result in hypoxic conditions outside of the alternative brine mixing zone.* If an alternative brine mixing zone* is approved, the alternative distance and the areal extent of the alternative brine mixing zone* shall be used in lieu of the standard brine mixing zone* for all purposes, including establishing an effluent limitation and a receiving water limitation for salinity, in chapter III.M.

e. Existing facilities that do not meet the receiving water limitation at the edge of the brine mixing zone* and throughout the water column by January 28, 2016 must either: 1) establish a facility-specific alternative receiving water limitation

* See Appendix I for definition of terms.

for salinity* as described in chapter III.M.3.c; or, 2) upgrade the facility's brine* discharge method in order to meet the receiving watr limitation in chapter III.M.3.b in accordance with the State Water Board's Compliance Schedule Policy, as set forth in chapter III.M.3.f below. An owner or operator that chooses to upgrade the facility's method of brine* discharge:

(1) Must demonstrate to the regional water board that the brine* discharge does not negatively impact sensitive habitats,* sensitive species, MPAs, or SWQPAs.*

(2) Is subject to the Considerations for Brine* Discharge Technology described in chapter III.M.2.d.(2).

f. The regional water board may grant compliance schedules for the requirements for brine* waste discharges for desalination facilities.* All compliance schedules shall be in accordance with the State Water Board's Compliance Schedule Policy, except that the salinity* receiving water limitation set forth in chapters III.M.3.b and III.M.3.c shall be considered to be a "new water quality objective" as used in the Compliance Schedule Policy.

g. The regional water board in consultation with the State Water Board staff may require an owner or operator to provide additional studies or information if needed. All studies and models are subject to the approval of the regional water board in consultation with State Water Board staff. The regional water board may require an owner or operator to hire a neutral third party entity to review studies and models and make recommendations to the regional water board.

4. Monitoring and Reporting Programs

a. The owner or operator of a desalination facility* must submit a Monitoring and Reporting Plan to the regional water board for approval. The Monitoring and Reporting Plan shall include monitoring of effluent and receiving water characteristics and impacts to all forms of marine life.* The Monitoring and Reporting Plan shall, at a minimum, include monitoring for benthic community health, aquatic life toxicity, hypoxia, and receiving water characteristics consistent with Appendix III of this Plan and for compliance with the receiving water limitation in chapter III.M.3. Receiving water monitoring for salinity* shall be conducted at times when the monitoring locations are most likely affected by the discharge. For new or expanded facilities the following additional requirements apply:

(1) An owner or operator must perform facility-specific monitoring to demonstrate compliance with the receiving water limitation for salinity,* and evaluate the potential effects of the discharge within the water column, bottom sediments, and the benthic communities. Facility-specific monitoring is required until the regional water board determines that a regional monitoring program is adequate to ensure compliance with the receiving water limitation. The monitoring and

* See Appendix I for definition of terms.

reporting plan shall be reviewed, and revised if necessary, upon NPDES permit renewal.

(2) Baseline biological conditions shall be established at the discharge location and at a reference location prior to commencement of construction. The owner or operator is required to conduct biological surveys (e.g., Before-After Control-Impact study), that will evaluate the differences between biological communities at a reference site and at the discharge location before and after the discharge commences. The regional water board will use the data and results from the surveys and any other applicable data for evaluating and renewing the requirements set forth in a facility's NPDES permit.

* See Appendix I for definition of terms.

APPENDIX I
DEFINITION OF TERMS

ACUTE TOXICITY

a. Acute Toxicity (TUa)

Expressed in Toxic Units Acute (TUa)

$$TUa = \frac{100}{96\text{-hr LC } 50\%}$$

b. Lethal Concentration 50% (LC 50)

LC 50 (percent waste giving 50% survival of test organisms) shall be determined by static or continuous flow bioassay techniques using standard marine test species as specified in Appendix III. If specific identifiable substances in wastewater can be demonstrated by the discharger as being rapidly rendered harmless upon discharge to the marine environment, but not as a result of dilution, the LC 50 may be determined after the test samples are adjusted to remove the influence of those substances.

When it is not possible to measure the 96-hour LC 50 due to greater than 50 percent survival of the test species in 100 percent waste, the toxicity concentration shall be calculated by the expression:

$$TUa = \frac{\log (100 - S)}{1.7}$$

where:

S = percentage survival in 100% waste. If S > 99, TUa shall be reported as zero.

ALL FORMS OF MARINE LIFE includes all life stages of all marine species.

AREA PRODUCTION FOREGONE (APF), also known as habitat production foregone, is an estimate of the area that is required to produce (replace) the same amount of larvae or propagules* that are removed via entrainment at a desalination facilities* intakes. APF is calculated by multiplying the proportional mortality* by the source water body,* which are both determined using an empirical transport model.*

AREAS OF SPECIAL BIOLOGICAL SIGNIFICANCE (ASBS) are those areas designated by the State Water Board as ocean areas requiring protection of species or biological communities to the extent that maintenance of natural water quality is assured. All Areas of Special Biological Significance are also classified as a subset of STATE WATER QUALITY PROTECTION AREAS.* ASBS are also referred to as State Water Quality Protection Areas* – Areas of Special Biological Significance (SWQPA-ASBS).

BRINE is the byproduct of desalinated* water having a salinity* concentration greater than a desalination facility's* intake source water.

* See Appendix I for definition of terms.

BRINE MIXING ZONE is the area where salinity* may exceed 2.0 parts per thousand above natural background salinity,* or the concentration of salinity* approved as part of an alternative receiving water limitation. The standard brine mixing zone shall not exceed 100 meters (328 feet) laterally from the points of discharge and throughout the water column. An alternative brine mixing zone, if approved as described in chapter III.M.3.d, shall not exceed 200 meters (656 feet) laterally from the points of discharge and throughout the water column. The brine mixing zone is an allocated impact zone where there may be toxic effects on marine life due to elevated salinity.

CHLORDANE shall mean the sum of chlordane-alpha, chlordane-gamma, chlordene-alpha, chlordene-gamma, nonachlor-alpha, nonachlor-gamma, and oxychlordane.

CHRONIC TOXICITY: This parameter shall be used to measure the acceptability of waters for supporting a healthy marine biota until improved methods are developed to evaluate biological response.

a. Chronic Toxicity (TUc)

Expressed as Toxic Units Chronic (TUc)

$$TUc = \frac{100}{NOEL}$$

b. No Observed Effect Level (NOEL)

The NOEL is expressed as the maximum percent effluent or receiving water* that causes no observable effect on a test organism, as determined by the result of a critical life stage toxicity test listed in Appendix III, Table III-1.

DDT shall mean the sum of 4,4'DDT, 2,4'DDT, 4,4'DDE, 2,4'DDE, 4,4'DDD, and 2,4'DDD.

DEGRADE: Degradation shall be determined by comparison of the waste field and reference site(s) for characteristic species diversity, population density, contamination, growth anomalies, debility, or supplanting of normal species by undesirable plant and animal species. Degradation occurs if there are significant* differences in any of three major biotic groups, namely, demersal fish, benthic invertebrates, or attached algae. Other groups may be evaluated where benthic species are not affected, or are not the only ones affected.

DESALINATION FACILITY is an industrial facility that processes water to remove salts and other components from the source water to produce water that is less saline than the source water.

DICHLOROBENZENES shall mean the sum of 1,2- and 1,3-dichlorobenzene.

DOWNSTREAM OCEAN WATERS shall mean waters downstream with respect to ocean currents.

DREDGED MATERIAL: Any material* excavated or dredged from the navigable waters of the United States, including material* otherwise referred to as "spoil".

EELGRASS BEDS are aggregations of the aquatic plant species of the genus *Zostera*.

* See Appendix I for definition of terms.

EMPIRICAL TRANSPORT MODEL (ETM) is a methodology for determining the spatial area known as the source water body* that contains the source water population, which are the organisms that are at risk of entrainment as determined by factors that may include but are not limited to biological, hydrodynamic, and oceanographic data. ETM can also be used to estimate proportional mortality,* P_m.

ENCLOSED BAYS are indentations along the coast which enclose an area of oceanic water within distinct headlands or harbor works. Enclosed bays include all bays where the narrowest distance between headlands or outermost harbor works is less than 75 percent of the greatest dimension of the enclosed portion of the bay. This definition includes but is not limited to: Humboldt Bay, Bodega Harbor, Tomales Bay, Drakes Estero, San Francisco Bay, Morro Bay, Los Angeles Harbor, Upper and Lower Newport Bay, Mission Bay, and San Diego Bay.

ENDOSULFAN shall mean the sum of endosulfan-alpha and -beta and endosulfan sulfate.

ESTUARIES AND COASTAL LAGOONS are waters at the mouths of streams that serve as mixing zones for fresh and ocean* waters during a major portion of the year. Mouths of streams that are temporarily separated from the ocean by sandbars shall be considered as estuaries. Estuarine waters will generally be considered to extend from a bay or the open ocean to the upstream limit of tidal action but may be considered to extend seaward if significant* mixing of fresh and salt water occurs in the open coastal waters. The waters described by this definition include but are not limited to the Sacramento-San Joaquin Delta as defined by section 12220 of the California Water Code, Suisun Bay, Carquinez Strait downstream to Carquinez Bridge, and appropriate areas of the Smith, Klamath, Mad, Eel, Noyo, and Russian Rivers.

ETM/APF APPROACH or ANALYSIS. For guidance on how to perform an ETM/APF analysis please see Appendix E of the Staff Report for Amendment to the Water Quality Control Plan For Ocean Waters of California Addressing Desalination Facility Intakes, Brine Discharges, And The Incorporation Of Other Non-substantive Changes.

FEASIBLE for the purposes of chapter III.M, shall mean capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors.

FLOW AUGMENTATION is a type of in-plant dilution and occurs when a desalination facility* withdraws additional source water for the specific purpose of diluting brine* prior to discharge.

FULL CAPTURE SYSTEM is a treatment control*, or series of treatment controls*, including but not limited to, a multi-benefit project* or a low-impact development control* that traps all particles that are 5 mm or greater, and has a design treatment capacity that is either: a) of not less than the peak flow rate, Q, resulting from a one-year, one-hour, storm in the subdrainage area, or b) appropriately sized to, and designed to carry at least the same flows as, the corresponding storm drain.

[Rational equation is used to compute the peak flow rate: $Q = C \bullet I \bullet A$, where Q = design flow rate (cubic feet per second, cfs); C = runoff coefficient (dimensionless); I = design rainfall

* See Appendix I for definition of terms.

intensity (inches per hour, as determined per the rainfall isohyetal map specific to each region, and A = subdrainage area (acres).]

Prior to installation, full capture systems* must be certified by the Executive Director, or designee, of the State Water Board. Uncertified full capture systems* will not satisfy the requirements of these Trash Provisions*. To request certification, a permittee shall submit a certification request letter that includes all relevant supporting documentation to the State Water Board's Executive Director. The Executive Director, or designee, shall issue a written determination approving or denying the certification of the proposed full capture system* or conditions of approval, including a schedule to review and reconsider the certification. Full capture systems* certified by the Los Angeles Regional Water Board prior to the effective date of these Trash Provisions* and full capture systems* listed in Appendix I of the Bay Area-wide Trash Capture Demonstration Project, Final Project Report (May 8, 2014) will satisfy the requirements of these Trash Provisions*, unless the Executive Director, or designee, of the State Water Board determines otherwise.

FULL CAPTURE SYSTEM EQUIVALENCY is the Trash* load that would be reduced if full capture systems* were installed, operated, and maintained for all storm drains that capture runoff from the relevant areas of land (priority land uses*, significant trash generating areas*, facilities or sites regulated by NPDES permits for discharges of storm water* associated with industrial activity, or specific land uses or areas that generate substantial amounts of Trash*, as applicable). The full capture system equivalency* is a Trash* load reduction target that the permittee quantifies by using an approach, and technically acceptable and defensible assumptions and methods for applying the approach, subject to the approval of permitting authority*. Examples of such approaches include, but are not limited to, the following:

(1) Trash Capture Rate Approach. Directly measure or otherwise determine the amount of Trash* captured by full capture systems* for representative samples of all similar types of land uses, facilities, or areas within the relevant areas of land over time to identify specific trash capture rates. Apply each specific Trash* capture rate across all similar types of land uses, facilities, or areas to determine full capture system equivalency*. Trash* capture rates may be determined either through a pilot study or literature review. Full capture systems* selected to evaluate Trash* capture rates may cover entire types of land uses, facilities, or areas, or a representative subset of types of land uses, facilities, or areas. With this approach, full capture system equivalency* is the sum of the products of each type of land use, facility, or area multiplied by Trash* capture rates for that type of land use, facility, or area.

(2) Reference Approach. Determine the amount of Trash* in a reference receiving water in a reference watershed where full capture systems* have been installed for all storm drains that capture runoff from all relevant areas of land. The reference watershed must be comprised of similar types and extent of sources of trash* and land uses (including priority land uses* and all other land uses), facilities, or areas as the permittee's watershed. With this approach, full capture system equivalency* would be demonstrated when the amount of Trash* in the receiving water is equivalent to the amount of Trash* in the reference receiving water.

* See Appendix I for definition of terms.

<u>GRAYWATER</u> is drainage from galley, dishwasher, shower, laundry, bath, and lavatory wash basin sinks, and water fountains, but does not include drainage from toilets, urinals, hospitals, or cargo spaces.

<u>HALOMETHANES</u> shall mean the sum of bromoform, bromomethane (methyl bromide) and chloromethane (methyl chloride).

<u>HCH</u> shall mean the sum of the alpha, beta, gamma (lindane) and delta isomers of hexachlorocyclohexane.

<u>INDICATOR BACTERIA</u> includes total coliform bacteria, fecal coliform bacteria (or *E. coli*), and/or Enterococcus bacteria.

<u>IN-KIND MITIGATION</u> is when the habitat or species lost is the same as what is replaced through mitigation.

<u>INSTITUTIONAL CONTROLS</u> are non-structural best management practices (i.e., no structures are involved) that may include, but not be limited to, street sweeping, sidewalk Trash* bins, collection of the Trash*, anti-litter educational and outreach programs, producer take-back for packaging, and ordinances.

<u>INITIAL DILUTION</u> is the process which results in the rapid and irreversible turbulent mixing of wastewater with ocean water around the point of discharge.

For a submerged buoyant discharge, characteristic of most municipal and industrial wastes that are released from the submarine outfalls, the momentum of the discharge and its initial buoyancy act together to produce turbulent mixing. Initial dilution in this case is completed when the diluting wastewater ceases to rise in the water column and first begins to spread horizontally.

For shallow water submerged discharges, surface discharges, and nonbuoyant discharges, characteristic of cooling water wastes and some individual discharges, turbulent mixing results primarily from the momentum of discharge. Initial dilution, in these cases, is considered to be completed when the momentum induced velocity of the discharge ceases to produce significant* mixing of the waste, or the diluting plume reaches a fixed distance from the discharge to be specified by the Regional Board, whichever results in the lower estimate for initial dilution.

<u>KELP BEDS</u>, are aggregations of marine algae of the order Laminariales, including species in the genera *Macrocystis, Nereocystis, and Pelagophycus*. Kelp beds include the total foliage canopy throughout the water column.

<u>LARGE PASSENGER VESSELS</u> are vessels of 300 gross registered tons or greater engaged in carrying passengers for hire. The following vessels are not large passenger vessels:
(1) Vessels without berths or overnight accommodations for passengers;
(2) Noncommercial vessels, warships, vessels operated by nonprofit entities as determined by the Internal Revenue Service, and vessels operated by the state, the United States, or a foreign government;
(3) Oceangoing vessels,* as defined below (e.g. those used to transport cargo).

* See Appendix I for definition of terms.

<u>LOW-IMPACT DEVELOPMENT CONTROLS</u> are treatment controls* that employ natural and constructed features that reduce the rate of storm water* runoff, filter out pollutants, facilitate storm water* storage onsite, infiltrate storm water* into the ground to replenish groundwater supplies, or improve the quality of receiving groundwater and surface water. (See Water Code § 10564.)

<u>LOEC</u> is the lowest observed effect concentration or the lowest concentration of effluent that causes observable adverse effects in exposed test organisms.

<u>MARICULTURE</u> is the culture of algae, plants, and animals in marine waters independent of any pollution source.

<u>MARINE MANAGED AREAS</u> are named, discrete geographic marine or estuarine areas along the California coast designated by law or administrative action, and intended to protect, conserve, or otherwise manage a variety of resources and their uses. According to the California Public Resources Code (§§ 36600 et seq.) there are six classifications of marine managed areas, including State Marine Reserves, State Marine Parks and State Marine Conservation Areas, State Marine Cultural Preservation Areas, State Marine Recreational Management Areas, and State Water Quality Protection Areas.*

<u>MARKET SQUID NURSURIES</u> are comprised of numerous egg capsules, each containing approximately 200 developing embryos, attached in clusters or mops to sandy substrate with moderate water flow. Market squid (*Doryteuthis opalescens*) nurseries occur at a wide range of depths; however, mop densities are greatest in shallow, nearshore waters between ten and 100 meters (328 feet) deep.

<u>MATERIAL</u>: (a) In common usage: (1) the substance or substances of which a thing is made or composed (2) substantial; (b) For purposes of this Ocean Plan relating to waste disposal, dredging and the disposal of dredged material* and fill, MATERIAL means matter of any kind or description which is subject to regulation as waste, or any material dredged from the navigable waters of the United States. See also, DREDGED MATERIAL.* For the purposes of chapter III.M.2.d, materials relates to the common usage in (a).

<u>METHOD DETECTION LIMIT</u> (MDL) is the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero, as defined in 40 CFR PART 136 Appendix B.

<u>MINIMUM LEVEL (ML)</u> is the concentrations at which the entire analytical system must give a recognizable signal and acceptable calibration point. The ML is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all the method-specified sample weights, volumes and processing steps have been followed.

<u>MULTI-BENEFIT PROJECT</u> is a treatment control* project designed to achieve any of the benefits set forth in section 10562, subdivision (d) of the Water Code. Examples include projects designed to: infiltrate, recharge or store storm water* for beneficial reuse; develop or enhance habitat and open space through storm water* and non-storm water management; and/or reduce storm water* and non-storm water runoff volume.

* See Appendix I for definition of terms.

MULTIPORT DIFFUSERS are linear structures consisting of spaced ports or nozzles that are installed on submerged marine outfalls. For the purposes of chapter III.M, multiport diffusers discharge brine* waste into an ambient receiving water body and enable rapid mixing, dispersal, and dilution of brine* within a relatively small area.

MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) has the same meaning set forth in 40 Code of Federal Regulations section 122.26(b)(8).

NATURAL BACKGROUND SALINITY is the salinity* at a location that results from naturally occurring processes and is without apparent human influence. For purposes of determining natural background salinity, the regional water board may approve the use of:

(1) the mean monthly natural background salinity. Mean monthly natural background salinity shall be determined by averaging 20 years of historical salinity* data in the proximity of the proposed discharge location and at the depth of the proposed discharge, when feasible.* For historical data not recorded in parts per thousand, the regional water boards may accept converted data at their discretion. When historical data are not available, natural background salinity shall be determined by measuring salinity* at depth of proposed discharge for three years, on a weekly basis prior to a desalination facility* discharging brine,* and the mean monthly natural salinity* shall be used to determine natural background salinity; or

(2) the actual salinity at a reference location, or reference locations, that is representative of natural background salinity at the discharge location. The reference locations shall be without apparent human influence, including wastewater outfalls and brine discharges.

Either method to establish natural background salinity may be used for the purpose of determining compliance with the receiving water limitation or an effluent limitation for salinity. If a reference location(s) is used for compliance monitoring, the permit should specify that historical data shall be used if reference location data becomes unavailable. An owner or operator shall submit to the regional water board all necessary information to establish natural background salinity.

NATURAL LIGHT: Reduction of natural light may be determined by the Regional Board by measurement of light transmissivity or total irradiance, or both, according to the monitoring needs of the Regional Board.

NO DISCHARGE ZONE (NDZ) is an area in which both treated and untreated sewage discharges from vessels are prohibited. Within NDZ boundaries, vessel operators are required to retain their sewage discharges onboard for disposal at sea (beyond three miles from shore) or onshore at a pump-out facility.

NON-STORM WATER DISCHARGE is any runoff that is not the result of a precipitation event. This is often referred to as “dry weather flow.”

OCEAN WATERS are the territorial marine waters of the State as defined by California law to the extent these waters are outside of enclosed bays,* estuaries, and coastal lagoons.* If a discharge outside the territorial waters of the State could affect the quality of the waters of the State, the discharge may be regulated to assure no violation of the Ocean Plan will occur in ocean waters.

* See Appendix I for definition of terms.

OCEANGOING VESSELS (i.e., oceangoing ships) means commercial vessels of 300 gross registered tons or more calling on California ports or places, excluding active military vessels.

OILY BILGE WATER includes bilge water that contains used lubrication oils, oil sludge and slops, fuel and oil sludge, used oil, used fuel and fuel filters, and oily waste.

OUT-OF-KIND MITIGATION is when the habitat or species lost is different than what is replaced through mitigation.

PAHs (polynuclear aromatic hydrocarbons) shall mean the sum of acenaphthylene, anthracene, 1,2-benzanthracene, 3,4-benzofluoranthene, benzo[k]fluoranthene, 1,12-benzoperylene, benzo[a]pyrene, chrysene, dibenzo[ah]anthracene, fluorene, indeno[1,2,3-cd]pyrene, phenanthrene and pyrene.

PCBs (polychlorinated biphenyls) shall mean the sum of chlorinated biphenyls whose analytical characteristics resemble those of Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254 and Aroclor-1260.

PERMITTING AUTHORITY means the State Water Board or Regional Water Board, whichever issues the permit.

PREPRODUCTION PLASTIC has the same meaning set forth in section 13367(a) of the Water Code.

PRIORITY LAND USES are those developed sites, facilities, or land uses (i.e., not simply zoned land uses) within the MS4* permittee's jurisdiction from which discharges of Trash* are regulated by this Ocean Plan as follows:

(1) **High-density residential:** all land uses with at least ten (10) developed dwelling units/acre.
(2) **Industrial**: land uses where the primary activities on the developed parcels involve product manufacture, storage, or distribution (e.g., manufacturing businesses, warehouses, equipment storage lots, junkyards, wholesale businesses, distribution centers, or building material sales yards).
(3) **Commercial**: land uses where the primary activities on the developed parcels involve the sale or transfer of goods or services to consumers (e.g., business or professional buildings, shops, restaurants, theaters, vehicle repair shops, etc.)
(4) **Mixed urban**: land uses where high-density residential, industrial, and/or commercial land uses predominate collectively (i.e., are intermixed).
(5) **Public transportation stations**: facilities or sites where public transit agencies' vehicles load or unload passengers or goods (e.g., bus stations and stops).

Equivalent alternate land uses: An MS4* permittee with regulatory authority over priority land uses* may issue a request to the applicable permitting authority* that the MS4* permittee be allowed to substitute one or more land uses identified above with alternates land use within the MS4* permittee's jurisdiction that generates rates of Trash* that are equivalent to or greater than the priority land use(s)* being substituted. The land use area

* See Appendix I for definition of terms.

requested to substitute for a priority land use* need not be an acre-for-acre substitution but may involve one or more priority land uses*, or a fraction of a priority land use*, or both, provided the total trash* generated in the equivalent alternative land use is equivalent to or greater than the total Trash* generated from the priority land use(s)* for which substitution is requested. Comparative Trash* generation rates shall be established through the reporting of quantification measures such as street sweeping and catch basin cleanup records; mapping; visual trash presence surveys, such as the "Keep America Beautiful Visible Litter Survey"; or other information as required by the permitting authority*.

PROPAGULES are structures that are capable of propagating an organism to the next stage in its life cycle via dispersal. Dispersal is the movement of individuals from their birth site to their reproductive grounds.

PROPORTIONAL MORTALITY, P_m, is percentage of larval organisms or propagules* in the source water body* that is expected to be entrained at a desalination facility's* intake. It is assumed that all entrained larvae or propagules* die as a result of entrainment.

RECEIVING WATER, for permitted storm water discharges and nonpoint sources, should be measured at the point of discharge(s), in the surf zone immediately where runoff from an outfall meets the ocean water (a.k.a., at point zero).

SALINITY is a measure of the dissolved salts in a volume of water. For the purposes of this Plan, salinity shall be measured using a standard method approved by the regional water board (e.g. Standard Method 2520 B, EPA Method 120.1, EPA Method 160.1) and reported in parts per thousand (ppt). For historical salinity data not recorded in parts per thousand, the regional water boards may accept converted data at their discretion.

SEAWATER is salt water that is in or from the ocean. For the purposes chapter III.M, seawater includes tidally influenced waters in coastal estuaries and coastal lagoons* and underground salt water beneath the seafloor, beach, or other contiguous land with hydrologic connectivity to the ocean.

SENSITIVE HABITATS, for the purposes of this Plan, are kelp beds,* rocky substrate, surfgrass beds,* eelgrass beds,* oyster beds, spawning grounds for state or federally managed species, market squid nurseries,* or other habitats in need of special protection as determined by the Water Boards.

SHELLFISH are organisms identified by the California Department of Public Health as shellfish for public health purposes (i.e., mussels, clams and oysters).

SIGNIFICANT difference is defined as a statistically significant difference in the means of two distributions of sampling results at the 95 percent confidence level.

SIGNIFICANT TRASH GENERATING AREAS means all locations or facilities within the Department's jurisdiction where Trash* accumulates in substantial amounts, such as:

(1) Highway on- and off-ramps in high density residential, commercial, and industrial land uses (as such land uses are defined under priority land uses* herein).
(2) Rest areas and park-and-rides.

* See Appendix I for definition of terms.

(3) State highways in commercial and industrial land uses (as such land uses are defined under priority land uses* herein).
(4) Mainline highway segments to be identified by the Department through pilot studies and/or surveys.

SOURCE WATER BODY is the spatial area that contains the organisms that are at risk of entrainment at a desalination facility* as determined by factors that may include, but are not limited to, biological, hydrodynamic, and oceanographic data.

STATE WATER QUALITY PROTECTION AREAS (SWQPAs) are nonterrestrial marine or estuarine areas designated to protect marine species or biological communities from an undesirable alteration in natural water quality. All Areas of Special Biological Significance (ASBS)* that were previously designated by the State Water Board in Resolutions 74-28, 74-32, and 75-61 are now also classified as a subset of State Water Quality Protection Areas and require special protections afforded by this Plan.

STATE WATER QUALITY PROTECTION AREAS – GENERAL PROTECTION (SWQPA-GP) designated by the State Water Board to protect marine species and biological communities from an undesirable alteration in natural water quality within State Marine Parks and State Marine Conservation Areas.

STORM WATER has the same meaning set forth in 40 Code of Federal Regulations section 122.26(b)(13) (Nov. 16, 1990).

SUBSURFACE INTAKE, for the purposes of chapter III.M, is an intake withdrawing seawater* from the area beneath the ocean floor or beneath the surface of the earth inland from the ocean.

SURFGRASS BEDS are aggregations of marine flowering plants of the genus *Phyllospadix*.

TCDD EQUIVALENTS shall mean the sum of the concentrations of chlorinated dibenzodioxins (2,3,7,8-CDDs) and chlorinated dibenzofurans (2,3,7,8-CDFs) multiplied by their respective toxicity factors, as shown in the table below.

* See Appendix I for definition of terms.

Isomer Group	Toxicity Equivalence Factor
2,3,7,8-tetra CDD	1.0
2,3,7,8-penta CDD	0.5
2,3,7,8-hexa CDDs	0.1
2,3,7,8-hepta CDD	0.01
octa CDD	0.001
2,3,7,8 tetra CDF	0.1
1,2,3,7,8 penta CDF	0.05
2,3,4,7,8 penta CDF	0.5
2,3,7,8 hexa CDFs	0.1
2,3,7,8 hepta CDFs	0.01
octa CDF	0.001

<u>TRASH</u> means all improperly discarded solid material from any production, manufacturing, or processing operation including, but not limited to, products, product packaging, or containers constructed of plastic, steel, aluminum, glass, paper, or other synthetic or natural materials.

<u>TRASH PROVISIONS</u> are the water quality objective for Trash*, as well as the prohibition of discharge set forth in Chapter III.I and implementation requirements set forth in Chapter III.L herein.

<u>TREATMENT CONTROLS</u> are structural best management practices to either (a) remove pollutants and/or solids from storm water* runoff, wastewater, or effluent, or (b) capture, infiltrate or reuse storm water* runoff, wastewater, or effluent. Treatment controls include full capture systems* and low-impact development controls*.

<u>WASTE</u>: As used in this Plan, waste includes a discharger's total discharge, of whatever origin, <u>i.e</u>., gross, not net, discharge.

<u>WATER RECLAMATION</u>: The treatment of wastewater to render it suitable for reuse, the transportation of treated wastewater to the place of use, and the actual use of treated wastewater for a direct beneficial use or controlled use that would not otherwise occur.

* See Appendix I for definition of terms.

APPENDIX II
MINIMUM* LEVELS

The Minimum* Levels identified in this appendix represent the lowest concentration of a pollutant that can be quantitatively measured in a sample given the current state of performance in analytical chemistry methods in California. These Minimum* Levels were derived from data provided by state-certified analytical laboratories in 1997 and 1998 for pollutants regulated by the California Ocean Plan and shall be used until new values are adopted by the State Water Board. There are four major chemical groupings: volatile chemicals, semi-volatile chemicals, inorganics, pesticides & PCBs.* "No Data" is indicated by "--".

TABLE II-1
MINIMUM* LEVELS – VOLATILE CHEMICALS

		Minimum* Level (μg/L)	
Volatile Chemicals	**CAS Number**	**GC Method [a]**	**GCMS Method [b]**
Acrolein	107028	2.	5
Acrylonitrile	107131	2.	2
Benzene	71432	0.5	2
Bromoform	75252	0.5	2
Carbon Tetrachloride	56235	0.5	2
Chlorobenzene	108907	0.5	2
Chlorodibromomethane	124481	0.5	2
Chloroform	67663	0.5	2
1,2-Dichlorobenzene (volatile)	95501	0.5	2
1,3-Dichlorobenzene (volatile)	541731	0.5	2
1,4-Dichlorobenzene (volatile)	106467	0.5	2
Dichlorobromomethane	75274	0.5	2
1,1-Dichloroethane	75343	0.5	1
1,2-Dichloroethane	107062	0.5	2
1,1-Dichloroethylene	75354	0.5	2
Dichloromethane	75092	0.5	2
1,3-Dichloropropene (volatile)	542756	0.5	2
Ethyl benzene	100414	0.5	2
Methyl Bromide	74839	1.	2
Methyl Chloride	74873	0.5	2
1,1,2,2-Tetrachloroethane	79345	0.5	2
Tetrachloroethylene	127184	0.5	2
Toluene	108883	0.5	2
1,1,1-Trichloroethane	71556	0.5	2
1,1,2-Trichloroethane	79005	0.5	2
Trichloroethylene	79016	0.5	2
Vinyl Chloride	75014	0.5	2

Table II-1 Notes

a) GC Method = Gas Chromatography
b) GCMS Method = Gas Chromatography / Mass Spectrometry
* To determine the lowest standard concentration in an instrument calibration curve for these techniques, use the given ML (see chapter III, "Use of Minimum* Levels").

* See Appendix I for definition of terms.

TABLE II-2
MINIMUM* LEVELS – SEMI VOLATILE CHEMICALS

Semi-Volatile Chemicals	CAS Number	Minimum* Level (µg/L) GC Method [a,*]	GCMS Method [b,*]	HPLC Method [c,*]	COLOR Method [d]
Acenapthylene	208968	--	10	0.2	--
Anthracene	120127	--	10	2	--
Benzidine	92875	--	5	--	--
Benzo(a)anthracene	56553	--	10	2	--
Benzo(a)pyrene	50328	--	10	2	--
Benzo(b)fluoranthene	205992	--	10	10	--
Benzo(g,h,i)perylene	191242	--	5	0.1	--
Benzo(k)floranthene	207089	--	10	2	--
Bis 2-(1-Chloroethoxy) methane	111911	--	5	--	--
Bis(2-Chloroethyl)ether	111444	10	1	--	--
Bis(2-Chloroisopropyl)ether	39638329	10	2	--	--
Bis(2-Ethylhexyl) phthalate	117817	10	5	--	--
2-Chlorophenol	95578	2	5	--	--
Chrysene	218019	--	10	5	--
Di-n-butyl phthalate	84742	--	10	--	--
Dibenzo(a,h)anthracene	53703	--	10	0.1	--
1,2-Dichlorobenzene (semivolatile)	95504	2	2	--	--
1,3-Dichlorobenzene (semivolatile)	541731	2	1	--	--
1,4-Dichlorobenzene (semivolatile)	106467	2	1	--	--
3,3-Dichlorobenzidine	91941	--	5	--	--
2,4-Dichlorophenol	120832	1	5	--	--
1,3-Dichloropropene	542756	--	5	--	
Diethyl phthalate	84662	10	2	--	--
Dimethyl phthalate	131113	10	2	--	--
2,4-Dimethylphenol	105679	1	2	--	--
2,4-Dinitrophenol	51285	5	5	--	--
2,4-Dinitrotoluene	121142	10	5	--	--
1,2-Diphenylhydrazine	122667	--	1	--	--
Fluoranthene	206440	10	1	0.05	--
Fluorene	86737	--	10	0.1	--
Hexachlorobenzene	118741	5	1	--	--
Hexachlorobutadiene	87683	5	1	--	--
Hexachlorocyclopentadiene	77474	5	5	--	--

Table II-2 continued on next page…

* See Appendix I for definition of terms.

Table II-2 (Continued)
Minimum* Levels – Semi Volatile Chemicals

Semi-Volatile Chemicals	CAS Number	Minimum* Level (µg/L) GC Method [a, *]	GCMS Method [b, *]	HPLC Method [c,*]	COLOR Method [d]
Hexachloroethane	67721	5	1	--	--
Indeno(1,2,3-cd)pyrene	193395	--	10	0.05	--
Isophorone	78591	10	1	--	--
2-methyl-4,6-dinitrophenol	534521	10	5	--	--
3-methyl-4-chlorophenol	59507	5	1	--	--
N-nitrosodi-n-propylamine	621647	10	5	--	--
N-nitrosodimethylamine	62759	10	5	--	--
N-nitrosodiphenylamine	86306	10	1	--	--
Nitrobenzene	98953	10	1	--	--
2-Nitrophenol	88755	--	10	--	--
4-Nitrophenol	100027	5	10	--	--
Pentachlorophenol	87865	1	5	--	--
Phenanthrene	85018	--	5	0.05	--
Phenol	108952	1	1	--	50
Pyrene	129000	--	10	0.05	--
2,4,6-Trichlorophenol	88062	10	10	--	--

Table II-2 Notes:

a) GC Method = Gas Chromatography
b) GCMS Method = Gas Chromatography / Mass Spectrometry
c) HPLC Method = High Pressure Liquid Chromatography
d) COLOR Method= Colorimetric

* To determine the lowest standard concentration in an instrument calibration curve for this technique, multiply the given ML* by 1000 (see chapter III, “Use of Minimum* Levels”).

* See Appendix I for definition of terms.

TABLE II-3
MINIMUM* LEVELS - INORGANICS

Inorganic Substances	CAS Number	Minimum* Level (µg/L) COLOR Method[a]	DCP Method[b]	FAA Method[c]	GFAA Method[d]	HYDRIDE Method[e]	ICP Method[f]	ICPMS Method[g]	SPGFAA Method[h]	CVAA Method[i]
Antimony	7440360	--	1000.	10.	5.	0.5	50.	0.5	5.	--
Arsenic	7440382	20.	1000.	--	2.	1.	10.	2.	2.	--
Beryllium	7440417	--	1000.	20.	0.5	--	2.	0.5	1.	--
Cadmium	7440439	--	1000.	10.	0.5	--	10.	0.2	0.5	--
Chromium (total)	--	--	1000.	50.	2.	--	10.	0.5	1.	--
Chromium (VI)	18540299	10.	--	5.	--	--	--	--	--	--
Copper	7440508	--	1000.	20.	5.	--	10.	0.5	2.	--
Cyanide	57125	5.	--	--	--	--	--	--	--	--
Lead	7439921	--	10000.	20.	5.	--	5.	0.5	2.	--
Mercury	7439976	--	--	--	--	--	--	0.5	--	0.2
Nickel	7440020	--	1000.	50.	5.	--	20.	1.	5.	--
Selenium	7782492	--	1000.	--	5.	1.	10.	2.	5.	--
Silver	7440224	--	1000.	10.	1.	--	10.	0.2	2.	--
Thallium	7440280	--	1000.	10.	2.	--	10.	1.	5.	--
Zinc	7440666	--	1000.	20.	--	--	20.	1.	10.	--

Table II-3 Notes

a) COLOR Method = Colorimetric
b) DCP Method = Direct Current Plasma
c) FAA Method = Flame Atomic Absorption
d) GFAA Method = Graphite Furnace Atomic Absorption
e) HYDRIDE Method = Gaseous Hydride Atomic Absorption
f) ICP Method = Inductively Coupled Plasma
g) ICPMS Method = Inductively Coupled Plasma / Mass Spectrometry
h) SPGFAA Method = Stabilized Platform Graphite Furnace Atomic Absorption (i.e., US EPA 200.9)
i) CVAA Method = Cold Vapor Atomic Absorption

* To determine the lowest standard concentration in an instrument calibration curve for these techniques, use the given ML* (see chapter III, “Use of Minimum* Levels”).

* See Appendix I for definition of terms.

TABLE II-4
MINIMUM* LEVELS – PESTICIDES AND PCBs*

Pesticides – PCBs	CAS Number	Minimum* Level (µg/L) GC Method[a]*
Aldrin	309002	0.005
Chlordane*	57749	0.1
4,4'-DDD	72548	0.05
4,4'-DDE	72559	0.05
4,4'-DDT	50293	0.01
Dieldrin	60571	0.01
a-Endosulfan	959988	0.02
b-Endosulfan	33213659	0.01
Endosulfan Sulfate	1031078	0.05
Endrin	72208	0.01
Heptachlor	76448	0.01
Heptachlor Epoxide	1024573	0.01
a-Hexachlorocyclohexane	319846	0.01
b-Hexachlorocyclohexane	319857	0.005
d-Hexachlorocyclohexane	319868	0.005
g-Hexachlorocyclohexane (Lindane)	58899	0.02
PCB 1016	--	0.5
PCB 1221	--	0.5
PCB 1232	--	0.5
PCB 1242	--	0.5
PCB 1248	--	0.5
PCB 1254	--	0.5
PCB 1260	--	0.5
Toxaphene	8001352	0.5

Table II-4 Notes

a) GC Method = Gas Chromatography

* To determine the lowest standard concentration in an instrument calibration curve for this technique, multiply the given ML* by 100 (see chapter III, “Use of Minimum* Levels”).

* See Appendix I for definition of terms.

APPENDIX III
STANDARD MONITORING PROCEDURES

1. INTRODUCTION

The purpose of this appendix is to provide guidance to the Regional Water Boards on implementing the Ocean Plan and to ensure the reporting of useful information. Monitoring should be question driven rather than just gathering data and should be focused on assuring compliance with narrative and numeric water quality standards, the status and attainment of beneficial uses, and identifying sources of pollution.

It is not feasible to prescribe requirements in the Ocean Plan that encompass all circumstances and conditions that could be encountered by all dischargers, nor is it desirable to limit the flexibility of the Regional Water Boards in the monitoring of ocean* waters. This appendix should therefore be considered the basic framework for the design of an ocean discharger monitoring program. The Regional Water Boards are responsible for issuing monitoring and reporting programs (MRPs) that will implement this monitoring guidance. Regional Water Boards can deviate from the procedures required in the appendix only with the approval of the State Water Resources Control Board.

This monitoring guidance utilizes a model monitoring framework. The model monitoring framework has three components that comprise a range of spatial and temporal scales: (1) core monitoring, (2) regional monitoring, and (3) special studies.

1) Core monitoring consists of the basic site-specific monitoring necessary to measure compliance with individual effluent limits and/or impacts to receiving water* quality. Core monitoring is typically conducted in the immediate vicinity of the discharge by examining local scale spatial effects.

2) Regional monitoring provides information necessary to make assessments over large areas and serves to evaluate cumulative effects of all anthropogenic inputs. Regional monitoring data also assists in the interpretation of core monitoring studies. It is recommended that the Regional Water Boards require participation by the discharger in an approved regional monitoring program, if available, for the receiving water.* In the event that a regional monitoring effort takes place during a permit cycle in which the MRP does not specifically address regional monitoring, a Regional Water Board may allow relief from aspects of core monitoring components in order to encourage participation.

3) Special studies are directed monitoring efforts designed in response to specific management or research questions identified through either core or regional monitoring programs. Often they are used to help understand core or regional monitoring results, where a specific environmental process is not well understood, or to address unique issues of local importance. Regional Water Boards may require special studies as appropriate. Special studies are not addressed further in this guidance because they are beyond its scope.

The Ocean Plan does not address all site-specific monitoring issues and allows the Regional Water Boards to select alternative protocols with the approval of the State Water Board. If no direction is given in this appendix for a specific provision of the Ocean Plan, it is within the

* See Appendix I for definition of terms.

discretion of the Regional Water Boards to establish the monitoring requirements for that provision.

2. QUALITY ASSURANCE

All receiving* and ambient water monitoring conducted in compliance with MRPs must be comparable with the Quality Assurance requirements of the Surface Water Ambient Monitoring Program (SWAMP).

SWAMP comparable means all sample collection and analyses shall meet or exceed the measurement quality objectives (MQOs) – including all sample types, frequencies, control limits and holding time requirements – as specified in the SWAMP Quality Assurance Project Plan (QAPrP)

The SWAMP QAPrP is located at: http://www.waterboards.ca.gov/water_issues/programs/swamp/tools.shtml#qa.

For those measurements that do not have SWAMP MQOs available, then MQOs shall be at the discretion of the Regional Water Board. Refer to the USEPA guidance document (EPA QA/G-4) for selecting data quality objectives, located at http://www.epa.gov/quality/qs-docs/g4-final.pdf.

Water Quality data must be reported according to the California Environmental Data Exchange Network (CEDEN) "Data Template" format for all constituents that are monitored in receiving and ambient water. CEDEN Data Template are available at: http://ceden.org.

3. TYPE OF WASTE DISCHARGE SOURCES

Discharges to ocean waters* are highly diverse and variable, exhibiting a wide range of constituents, effluent quality and quantity, location and frequency of discharge. Different types of discharges will require different approaches. This Appendix provides specific direction for three broad types of discharges: (1) Point Sources, (2) Storm Water Point Sources and (3) Non-point Sources.

3.1. Point Sources

Industrial, municipal, marine laboratory and other traditional point sources of pollution that discharge wastewater directly to surface waters and are required to obtain NPDES permits.

3.2. Storm Water Point Sources

Storm Water Point Sources, hereafter referred to as Storm Water Sources, are those NPDES permitted discharges regulated by Construction or Industrial Storm Water General Permits or municipal separate storm sewer system (MS4s) Permits. MS4 Permits are further divided into Phase I and II Permits. A Phase I MS4 Permit is issued by a Regional Water Board for medium (serving between 100,000 and 250,000 people) and large (serving 250,000 or more people) municipalities. A Phase II MS4 General Permit is issued by the State Water Resources Control Board for the discharge of storm water for smaller municipalities, and includes nontraditional Small MS4s, which are governmental facilities such as military bases, public campuses, prison and hospital complexes.

* See Appendix I for definition of terms.

3.3. Non-point Sources

A Non-point Source is any source of pollutants that is not a Point Source described in section 3.1 or a Storm Water Source as described in section 3.2. Land use categories contributing to non-point sources include but are not limited to:

a. Agriculture
b. Grazing
c. Forestry/timber harvest
d. Urban not covered under an NPDES permit
e. Marinas and mooring fields
f. Golf Courses not covered under an NPDES Permit

Only agricultural and golf course related non-point source discharge monitoring is addressed in this Appendix, but Regional Water Boards may issue MRPs for other non-point sources at their discretion. Agriculture includes irrigated lands. Irrigated lands are where water is applied for the purpose of producing crops, including, but not limited to, row and field crop, orchards, vineyard, rice production, nurseries, irrigated pastures, and managed wetlands.

4. INDICATOR BACTERIA*

4.1. Point Sources

Primary questions to be addressed:

1. Does the effluent comply with the water quality standards in the receiving water*?
2. Does the sewage effluent reach water contact zones or commercial shellfish* beds?

To answer these questions, core monitoring shall be conducted in receiving water* on the shoreline for the indicator bacteria* at a minimum weekly for any point sources discharging treated sewage effluent:

a. within one nautical mile of shore, or
b. within one nautical mile of a commercial shellfish* bed, or
c. if the discharge is in excess of 10 million gallons per day (MGD).

Alternatively, these requirements may be met through participation in a regional monitoring program to assess the status of marine contact recreation water quality. If the permittee participates in a regional monitoring program, in conjunction with local health organization(s), core monitoring may be suspended for that period at the discretion of the Regional Water Board. Regional monitoring should be used to answer the above questions, and may be used to answer additional questions. These additional questions may include, but are not limited to, questions regarding the extent and magnitude of current or potential receiving water* indicator bacteria* problems, or the sources of indicator bacteria.*

4.2. Storm Water

Primary questions to be addressed:

1. Does the receiving water* comply with water quality standards?

* See Appendix I for definition of terms.

2. Is the condition of the receiving water* protective of contact recreation and shellfish* harvesting beneficial uses?
3. Are the indicator bacteria* levels in receiving water* getting better or worse?
4. What is the relative contribution of indicator bacteria* to the receiving water* from storm water runoff?

To answer these questions, core monitoring for indicator bacteria* shall be required periodically for storm water discharges representative of the area of concern. At a minimum, for municipal storm water discharges, all receiving water* at outfalls greater than 36 inches in diameter or width must be monitored (ankle depth, point zero) at the following frequencies:

a. During wet weather with a minimum of three storms per year, and
b. When non-storm water discharges* occur (flowing during dry weather), and if located at an AB 411 beach, at least weekly. (An AB 411 Beach is defined as a beach visited by more than 50,000 people annually and located on an area adjacent to a storm drain that flows in the summer. (Health & Saf. Code § 115880.)).

Regional Water Boards may waive monitoring once structural best management practices have been installed, evaluated and determined to have successfully controlled indicator bacteria.*

Alternatively, these requirements may be met through participation in a regional monitoring program to assess the status of marine contact recreation water quality. If the permittee participates in a regional monitoring program, in conjunction with local health organization(s), core monitoring may be suspended for that period at the discretion of the Regional Water Board. Regional monitoring should be used to answer the above questions, and may be used to answer additional questions. These additional questions may include, but are not limited to, questions regarding the extent and magnitude of current or potential receiving water* indicator bacteria* problems, or the sources of indicator bacteria.*

4.3. Non-point Sources

Primary questions to be addressed:

1. Does the receiving water* comply with water quality standards?
2. Do agricultural and golf course non-point source discharges reach water contact or shellfish* harvesting zones?
3. Are the indicator bacteria* levels in receiving water* getting better or worse?
4. What is the relative contribution of indicator bacteria* to the receiving water* from agricultural and golf course non-point sources?

To answer these questions, core monitoring of representative agricultural irrigation tail water and storm water runoff, at a minimum, will be conducted in receiving water* (ankle depth, point zero) for indicator bacteria*:

a. During wet weather, at a minimum of two storm events per year, and
b. When non-storm water discharges* occur (flowing during dry weather), and if located at an AB 411 beach or within one nautical mile of shellfish* bed, at least weekly.

Alternatively, these requirements may be met through participation in a regional monitoring program to assess the status of marine contact recreation water quality. If the discharger

* See Appendix I for definition of terms.

participates in a regional monitoring program, in conjunction with local health organization(s), core monitoring may be suspended for that period at the discretion of the Regional Water Board. Regional monitoring should be used to answer the above questions, and may be used to answer additional questions. These additional questions may include, but are not limited to, questions regarding the extent and magnitude of current or potential receiving water* indicator bacteria* problems, or the sources of indicator bacteria.*

5. CHEMICAL CONSTITUENTS

5.1. Point Sources

Primary questions addressed:

1. Does the effluent meet permit effluent limits thereby ensuring that water quality standards are achieved in the receiving water*?
2. What is the mass of the constituents that are discharged annually?
3. Is the effluent concentration or mass changing over time?

Consistent with Appendix VI, the core monitoring for the substances in Table 1 and Table 2 shall be required periodically. For discharges less than 10 MGD, the monitoring frequency shall be at least one complete scan of the Table 1 substances annually. Discharges greater than 10 MGD shall be required to monitor at least semiannually.

5.2. Storm Water

Primary questions addressed:

1. Does the receiving water* meet the water quality standards?
2. Are the conditions in receiving water* getting better or worse?
3. What is the relative runoff contribution to pollution in the receiving water*?

For Phase I and Phase II MS4 dischargers, core receiving water* monitoring will be required at a minimum for 10 percent of all outfalls greater than 36 inches in diameter or width once per year. If a discharger has less than five outfalls exceeding 36 inches in diameter or width, they shall conduct monitoring at a minimum of only once per outfall during a five year period. Monitoring shall be for total suspended solids, oil & grease, total organic carbon, pH, temperature, biochemical oxygen demand, turbidity, Table 1 metals, PAHs,* and pesticides determined by the Regional Water Boards. Regional Water Boards may waive monitoring once structural best management practices have been installed, evaluated and determined to have successfully controlled pollutants.

For industrial storm water discharges, runoff monitoring must be conducted at all outfalls at least two storm events per year. In addition, at least one representative receiving water* sample must be collected per industrial storm water permittee during two storm events per year. Monitoring shall be conducted for total suspended solids, oil & grease, total organic carbon, pH, temperature, biochemical oxygen demand, turbidity, and Table 1 metals and PAHs.*

The requirements for individual core monitoring for Table 1 metals, PAHs* and pesticides may be waived at the discretion of the Regional Water Board, if the permittee participates in a regional program for monitoring runoff and/or receiving water* to answer the above questions as

* See Appendix I for definition of terms.

well as additional questions. Additional questions may include, but are not limited to, questions regarding the extent and magnitude of current or potential receiving water* problems from storm water runoff, or sources of any runoff pollutants.

5.3. Non-point Sources

The primary questions are:

1. Does the agricultural or golf course runoff meet water quality standards in the receiving water*?
2. Are nutrients present that would contribute to objectionable aquatic algal blooms or degrade* indigenous biota?
3. Are the conditions in receiving water* getting better or worse?
4. What is the relative agricultural runoff or golf course contribution to pollution in the receiving water*?

To answer these questions, a statistically representative sample (determined by the Regional Water Board) of receiving water* at the sites of agricultural irrigation tail water and storm water runoff, and golf course runoff in each watershed will be monitored for Ocean Plan Table 1 metals, ammonia as N, nitrate as N, phosphate as P, and pesticides determined by the Regional Board:

a. During wet weather, at a minimum of two storm events per year, and
b. During dry weather, when flowing, at a frequency determined by the Regional Boards.

This requirement may be satisfied by core monitoring individually, or through participation in a regional program for monitoring runoff and receiving water* at the discretion of the Regional Water Board to answer the above questions as well as additional questions. Additional questions may include, but are not limited to, questions regarding the sources of agricultural pollutants.

6. SEDIMENT MONITORING

All Sources:

1. Is the dissolved sulfide concentration of waters in sediments significantly* increased above that present under natural conditions?
2. Is the concentration of substances set forth in Table 1, for protection of marine aquatic life, in marine sediments at levels which would degrade* the benthic community?
3. Is the concentration of organic pollutants in marine sediments at levels that would degrade* the benthic community?

6.1. Point Sources

For discharges greater than 10 MGD, acid volatile sulfides, OP Pesticides, Table 1 metals, ammonia N, PAHs,* and chlorinated hydrocarbons will be measured in sediments annually in a core monitoring program approved by the Regional Water Board. Sediment sample locations will be determined by the Regional Water Board. If sufficient data exists from previous water column monitoring for these parameters, the Regional Water Board at its discretion may reduce the frequency of monitoring, or may allow this requirement to be satisfied through participation in a regional monitoring program.

* See Appendix I for definition of terms.

6.2. Storm Water

For Phase I MS4 permittees, discharges greater than 72 inches in diameter or width discharging to low energy coastal environments with the likelihood of sediment deposition, acid volatile sulfides, OP Pesticides, Ocean Plan Table 1 metals, ammonia N, PAHs,* and chlorinated hydrocarbons will be measured in sediments once per permit cycle.

Regional Water Boards may waive monitoring once structural best management practices have been installed, evaluated and determined to have successfully controlled pollutants.

This requirement may be satisfied by core monitoring individually or through participation in a regional monitoring program at the discretion of the Regional Water Board. Sediment sample locations will be determined by the Regional Water Board.

7. AQUATIC LIFE TOXICITY

Toxicity tests are another method used to assess risk to aquatic life. These tests assess the overall toxicity of the effluent, including the toxicity of unmeasured constituents and/or synergistic effects of multiple constituents.

7.1. Point Sources

1. Does the effluent meet permit effluent limits for toxicity thereby ensuring that water quality standards are achieved in the receiving water*?
2. If not:
   a. Are unmeasured pollutants causing risk to aquatic life?
   b. Are pollutants in combinations causing risk to aquatic life?

Core monitoring for Table 1 effluent toxicity shall be required periodically. For discharges less than 0.1 MGD the monitoring frequency for acute and/or chronic toxicity* shall be twice per permit cycle. For discharges between 0.1 and 10 MGD, the monitoring frequency for acute and/or chronic toxicity* of the effluent should be at least annually. For discharges greater than 10 MGD, the monitoring frequency for acute and/or chronic toxicity* of the effluent should be at least semiannually.

For discharges greater than 10 MGD in a low energy coastal environment with the likelihood of sediment deposition, Core monitoring for acute sediment toxicity is required and will utilize alternative amphipod species (*Eohaustorius estuarius, Leptocheirus plumulosus, Rhepoxynius abronius*).

If an exceedance is detected, six additional toxicity tests are required within a 12-week period. If an additional exceedance is detected within the 12-week period, a toxicity reduction evaluation (TRE) is required, consistent with chapter III.C.10 that requires a TRE if a discharge consistently exceeds an effluent limitation based on a toxicity objective in Table 1.

7.2. Storm Water

1. Does the runoff meet objectives for toxicity in the receiving water*?
2. Are the conditions in receiving water* getting better or worse with regard to toxicity

* See Appendix I for definition of terms.

3. What is the relative runoff contribution to the receiving water* toxicity?
4. What are the causes of the toxicity* and the sources of the constituents responsible?

For Phase I MS4, Phase II MS4, and industrial storm water discharges, core toxicity monitoring will be required at a minimum for 10 percent of all outfalls greater than 36 inches in diameter or width at a minimum of once per year. Receiving water* monitoring shall be for Table 1 critical life stage chronic toxicity* for a minimum of one invertebrate species.

For storm water discharges greater than 72 inches in diameter or width in a low energy coastal environment with the likelihood of sediment deposition, core sediment monitoring for acute sediment toxicity is required and will utilize alternative amphipod species (*Eohaustorius estuarius, Leptocheirus plumulosus, Rhepoxynius abronius*).

Regional Water Boards may waive monitoring once structural best management practices have been installed, evaluated and determined to have successfully controlled toxicity.

If an exceedence is detected, an additional toxicity test is required during the subsequent storm event. If an additional exceedance is detected at that time, a TRE is required, consistent with chapter III.C.10 that requires a TRE if a discharge consistently exceeds an effluent limitation based on a toxicity objective in Table 1. A sufficient volume must be collected to conduct a TIE, if necessary, as a part of a TRE.

The requirement for core toxicity monitoring may be waived at the discretion of the Regional Water Board, if the permittee participates in a regional monitoring program to answer the above questions, as well as any other additional questions that may be developed by the regional monitoring program.

7.3. Non-point Sources

1. Does the agricultural and golf course runoff meet water quality standards for toxicity in the receiving water*?
2. Are the conditions in receiving water* getting better or worse with regard to toxicity?
3. What is the relative agricultural and golf course runoff contribution to receiving water* toxicity?
4. What are the causes of the toxicity, and the sources of the constituents responsible?

To answer these questions, a statistically representative sample (determined by the Regional Water Board) of receiving water* at the sites of agricultural irrigation tail water and storm water runoff, and golf course runoff, in each watershed will be monitored:

a. During wet weather, at a minimum of two storm events per year, and
b. During dry weather, when flowing, at a frequency determined by the Regional Boards.

Core receiving water* monitoring shall include Table 1 critical life stage chronic toxicity* for a minimum of one invertebrate species.

For runoff in a low energy coastal environment with the likelihood of sediment deposition, core sediment monitoring shall include acute sediment toxicity utilizing alternative amphipod species (*Eohaustorius estuarius, Leptocheirus plumulosus, Rhepoxynius abronius*) at a minimum once per year.

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* See Appendix I for definition of terms.

If an exceedence is detected, an additional toxicity test is required during the subsequent storm event. If an additional exceedance is detected, a TRE is required, consistent with chapter III.C.10 that requires a TRE if a discharge consistently exceeds an effluent limitation based on a toxicity objective in Table 1. A sufficient volume must be collected to conduct a TIE, if necessary, as a part of a TRE.

The requirement for core monitoring may be waived at the discretion of the Regional Water Board, if the permittee participates in a regional monitoring program to answer the above questions, as well as any other additional questions that may be developed by the regional monitoring program.

8. BENTHIC COMMUNITY HEALTH

8.1. Point Sources

1. Are benthic communities degraded* as a result of the discharge?

To answer this question, benthic community monitoring shall be conducted
   a. for all discharges greater than 10 MGD, or
   b. those discharges greater than 0.1 MGD and one nautical mile or less from shore, or
   c. discharges greater than 0.1 MGD and one nautical mile or less from a State Water Quality Protection Area* or a State Marine Reserve.

The minimum frequency shall be once per permit cycle, except for discharges greater than 100 MGD the minimum frequency shall be at least twice per permit cycle.

This requirement may be satisfied by core monitoring individually or through participation in a regional monitoring program at the discretion of the Regional Board.

9. BIOACCUMULATION

9.1. Point Sources

1. Does the concentration of pollutants in fish, shellfish,* or other marine resources used for human consumption bioaccumulate to levels that are harmful to human health?
2. Does the concentration of pollutants in marine life bioaccumulate to levels that degrade* marine communities?

To answer these questions, bioaccumulation monitoring shall be conducted, at a minimum, once per permit cycle for:

   a. discharges greater than 10 MGD, or
   b. those discharges greater than 0.1 MGD and one nautical mile or less from shore, or
   c. discharges greater than 0.1 MGD and one nautical mile or less from a State Water Quality Protection Area* or a State Marine Reserve, Park or Conservation Area.

Constituents to be monitored must include pesticides (at the discretion of the Regional Board), Table 1 metals, and PAHs.* Bioaccumulation may be monitored by a mussel watch program or a fish tissue program. Resident mussels are preferred over transplanted mussels. Sand crabs

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* See Appendix I for definition of terms.

and/or fish may be added or substituted for mussels at the discretion of the Regional Water Board.

This requirement may be satisfied individually as core monitoring or through participation in a regional monitoring program at the discretion of the Regional Water Board.

9.2. Storm Water

1. Does the concentration of pollutants in fish, shellfish,* or other marine resources used for human consumption bioaccumulate to levels that are harmful to human health?
2. Does the concentration of pollutants in marine life bioaccumulate to levels that degrade* marine communities?

For Phase I MS4 dischargers, bioaccumulation monitoring shall be conducted, at a minimum, once per permit cycle. Constituents to be monitored must include OP Pesticides, Ocean Plan Table 1 metals, Table 1 PAHs,* Table 1 chlorinated hydrocarbons, and pyrethroids. Bioaccumulation may be monitored by a mussel watch program or a fish tissue program. Sand crabs, fish, and/or Solid Phase Microextraction may be added or substituted for mussels at the discretion of the Regional Water Board.

This requirement may be satisfied individually as core monitoring or through participation in a regional monitoring program at the discretion of the Regional Water Board.

10. RECEIVING WATER* CHARACTERISTICS

All Sources:

1. Is natural light* significantly* reduced at any point outside the zone of initial dilution* as the result of the discharge of waste*?
2. Does the discharge of waste* cause a discoloration of the ocean surface?
3. Does the discharge of oxygen demanding waste* cause the dissolved oxygen concentration to be depressed at any time more than 10 percent from that which occurs naturally, as the result of the discharge of oxygen demanding* waste* materials*?
4. Does the discharge of waste* cause the pH to change at any time more than 0.2 units from that which occurs naturally?
5. Does the discharge of waste* cause the salinity* to become elevated in the receiving water*?
6. Do nutrients cause objectionable aquatic growth or degrade* indigenous biota?

10.1. Point Sources

For discharges greater than 10 MGD, turbidity (alternatively light transmissivity or surface water transparency), color [Chlorophyll-A and/or color dissolved organic matter (CDOM)], dissolved oxygen and pH shall be measured in the receiving water* seasonally, at a minimum, in a core monitoring program approved by the Regional Water Board. If sufficient data exists from previous water column monitoring for these parameters, the Regional Water Board, at its discretion, may reduce the frequency of water column monitoring, or may allow this requirement to be satisfied through participation in a regional monitoring program. Use of regional ocean observing programs, such as the Southern California Coastal Ocean Observing System

* See Appendix I for definition of terms.

(SCCOOS) and the Central and Northern California Ocean Observing System (CeNCCOOS) is encouraged.

Salinity* must also be monitored by all point sources discharging brine* as part of their core monitoring program. Seawater desalination facilities* discharging brine* into ocean waters* and wastewater facilities that receive brine from seawater desalination facilities and discharge into ocean waters shall monitor salinity as described in chapter III.M.4.

10.2. Storm Water

At a minimum, 10 percent of Phase I MS4 discharges greater than 36 inches, receiving water* turbidity, color, dissolved oxygen, pH, nitrate, phosphate, and ammonia shall be measured annually in a core monitoring program approved by the Regional Water Board.

Regional Water Boards may waive monitoring once structural best management practices have been installed, evaluated and determined to have successfully controlled pollutants. The Regional Water Board, at its discretion, may also allow this requirement to be satisfied through participation in a regional monitoring program.

10.3. Non-point Sources

Representative agricultural and golf course discharges shall be measured, at a minimum twice annually (during two storm season and irrigation season) for receiving water* turbidity, color, dissolved oxygen, pH, nitrate, phosphate, ammonia in a core monitoring program approved by the Regional Water Board. The Regional Water Board, at its discretion, may allow this requirement to be satisfied through participation in a regional monitoring program.

<u>11. ANALYTICAL REQUIREMENTS</u>

Procedures, calibration techniques, and instrument/reagent specifications shall conform to the requirements of 40 CFR PART 136. Compliance monitoring shall be determined using an US EPA approved protocol as provided in 40 CFR PART 136. All methods shall be specified in the monitoring requirement section of waste* discharge requirements.

Where methods are not available in 40 CFR PART 136, the Regional Water Boards shall specify suitable analytical methods in waste* discharge requirements. Acceptance of data should be predicated on demonstrated laboratory performance.

Laboratories analyzing monitoring data shall be certified by the California Department of Public Health, in accordance with the provisions of Water Code section 13176, and must include quality assurance quality control data with their reports.

Sample dilutions for total and fecal coliform bacterial analyses shall range from 2 to 16,000. Sample dilutions for enterococcus bacterial analyses shall range from 1 to 10,000 per 100 mL. Each test method number or name (e.g., EPA 600/4-85/076, Test Methods for *Escherichia coli* and *Enterococci* in Water by Membrane Filter Procedure) used for each analysis shall be specified and reported with the results.

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* See Appendix I for definition of terms.

Test methods used for coliforms (total and fecal) shall be those presented in Table 1A of 40 CFR PART 136, unless alternate methods have been approved in advance by U.S. EPA pursuant to 40 CFR PART 136.

Test methods used for enterococcus shall be those presented in U.S. EPA publication EPA 600/4-85/076, Test Methods for *Escherichia coli* and *Enterococci* in Water by Membrane Filter Procedure or any improved method determined by the Regional Board to be appropriate. The Regional Water Board may allow analysis for *Escherichia coli* (*E. coli)* by approved test methods to be substituted for fecal coliforms if sufficient information exists to support comparability with approved methods and substitute the existing methods.

The State or Regional Water Board may, subject to U.S. EPA approval, specify test methods which are more sensitive than those specified in 40 CFR PART 136. Because storm water and non-point sources are not assigned a dilution factor, sufficient sampling and analysis shall be required to determine compliance with Table 1 Water Quality Objectives. Total chlorine residual is likely to be a method detection limit effluent limitation in many cases. The limit of detection of total chlorine residual in standard test methods is less than or equal to 20 µg/L.

Toxicity monitoring requirements in permits prepared by the Regional Water Boards shall use marine test species instead of freshwater species when measuring compliance. The Regional Water Board shall require the use of critical life stage toxicity tests specified in this Appendix to measure TUc. For Point Sources, a minimum of three test species with approved test protocols shall be used to measure compliance with the toxicity objective. If possible, the test species shall include a fish, an invertebrate, and an aquatic plant. After a screening period, monitoring can be reduced to the most sensitive species.

Dilution and control water should be obtained from an unaffected area of the receiving waters.* The sensitivity of the test organisms to a reference toxicant shall be determined concurrently with each bioassay test and reported with the test results.

Use of critical life stage bioassay testing shall be included in waste* discharge requirements as a monitoring requirement for all Point Source discharges greater than 100 MGD

Procedures and methods used to determine compliance with benthic monitoring should use the following federal guidelines when applicable: Macroinvertebrate Field and Laboratory Methods for Evaluating the Biological Integrity of Surface Waters (1990) -- EPA/600/4-90/030 (PB91-171363). This manual describes guidelines and standardized procedures for the use of macroinvertebrates in evaluating the biological integrity of surface waters.

Procedures used to determine compliance with bioaccumulation monitoring should use the U.S. EPA. Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories (November 2000, EPA 823-B-00-007), NOAA Technical Memorandum NOS ORCA 130, Sampling and Analytical Methods of the National Status and Trends Program Mussel Watch Project (1998 update), and/or State Mussel Watch Program, 1987-1993 Data Report, State Water Resources Control Board 94-1WQ.

* See Appendix I for definition of terms.

TABLE III-1
APPROVED TESTS – CHRONIC TOXICITY* (TUc)

Species	Effect	Tier	Reference
giant kelp, *Macrocystis pyrifera*	percent germination; germ tube length	1	1,3
red abalone, *Haliotis rufescens*	Abnormal shell development	1	1,3
oyster, *Crassostrea gigas*; mussels, *Mytilus spp.*	Abnormal shell development; percent survival	1	1,3
urchin, *Strongylocentrotus purpuratus*; sand dollar, *Dendraster excentricus*	Percent normal development	1	1,3
urchin, *Strongylocentrotus purpuratus*; sand dollar, *Dendraster excentricus*	Percent fertilization	1	1,3
shrimp, *Holmesimysis costata*	Percent survival; growth	1	1,3
shrimp, *Mysidopsis bahia*	Percent survival; growth; fecundity	2	2,4
topsmelt, *Atherinops affinis*	Larval growth rate; percent survival	1	1,3
Silversides, *Menidia beryllina*	Larval growth rate; percent survival	2	2,4

Table III-1 Notes

The first tier test methods are the preferred toxicity tests for compliance monitoring. A Regional Water Board can approve the use of a second tier test method for waste* discharges if first tier organisms are not available.

* See Appendix I for definition of terms.

Protocol References

1. Chapman, G.A., D.L. Denton, and J.M. Lazorchak. 1995. Short-term methods for estimating the chronic toxicity of effluents and receiving waters to west coast marine and estuarine organisms. U.S. EPA Report No. EPA/600/R-95/136.

2. Klemm, D.J., G.E. Morrison, T.J. Norberg-King, W.J. Peltier, and M.A. Heber. 1994. Short-term methods for estimating the chronic toxicity of effluents and receiving water to marine and estuarine organisms. U.S. EPA Report No. EPA-600-4-91-003.

3. SWRCB 1996. Procedures Manual for Conducting Toxicity Tests Developed by the Marine Bioassay Project. 96-1WQ.

4. Weber, C.I., W.B. Horning, I.I., D.J. Klemm, T.W. Nieheisel, P.A. Lewis, E.L. Robinson, J. Menkedick and F. Kessler (eds). 1988. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms. EPA/600/4-87/028. National Information Service, Springfield, VA.

* See Appendix I for definition of terms.

APPENDIX IV
PROCEDURES FOR THE NOMINATION AND DESIGNATION OF STATE WATER QUALITY PROTECTION AREAS.*

1. Any person may nominate areas of ocean* waters for designation as SWQPA-ASBS or SWQPA-GP by the State Water Board. Nominations shall be made to the appropriate Regional Water Board and shall include:

   (a) Information such as maps, reports, data, statements, and photographs to show that:

      (1) Candidate areas are located in ocean* waters as defined in the "Ocean Plan".

      (2) Candidate areas are intrinsically valuable or have recognized value to man for scientific study, commercial use, recreational use, or esthetic reasons.

      (3) Candidate areas need protection beyond that offered by waste* discharge restrictions or other administrative and statutory mechanisms.

   (b) Data and information to indicate whether the proposed designation may have a significant* effect on the environment.

      (1) If the data or information indicate that the proposed designation will have a significant* effect on the environment, the nominee must submit sufficient information and data to identify feasible changes in the designation that will mitigate or avoid the significant* environmental effects.

2. The State Water Board or a Regional Water Board may also nominate areas for designation as SWQPA-ASBS or SWQPA-GP on their own motion.

3. A Regional Water Board may decide to (a) consider individual SWQPA-ASBS or SWQPA-GP nominations upon receipt, (b) consider several nominations in a consolidated proceeding, or (c) consider nominations in the triennial review of its water quality control plan (basin plan). A nomination that meets the requirements of 1. above may be considered at any time but not later than the next scheduled triennial review of the appropriate basin plan or Ocean Plan.

4. After determining that a nomination meets the requirements of paragraph 1. above, the Executive Officer of the affected Regional Water Board shall prepare a Draft Nomination Report containing the following:

   (a) The area or areas nominated for designation as SWQPA-ASBS or SWQPA-GP.

   (b) A description of each area including a map delineating the boundaries of each proposed area.

   (c) A recommendation for action on the nomination(s) and the rationale for the recommendation. If the Draft Nomination Report recommends approval of the proposed designation, the Draft Nomination Report shall comply with the CEQA documentation requirements for a water quality control plan amendment in section 3777, title 23, California Code of Regulations.

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* See Appendix I for definition of terms.

5. The Executive Officer shall, at a minimum, seek informal comment on the Draft Nomination Report from the State Water Board, Department of Fish and Game, other interested state and federal agencies, conservation groups, affected waste dischargers, and other interested parties. Upon incorporation of responses from the consulted agencies, the Draft Nomination Report shall become the Final Nomination Report.

6. (a) If the Final Nomination Report recommends approval of the proposed designation, the Executive Officer shall ensure that processing of the nomination complies with the CEQA consultation requirements in section 3778, Title 23, California Code of Regulations and proceed to step 7 below.

   (b) If the Final Nomination Report recommends against approval of the proposed designation, the Executive Officer shall notify interested parties of the decision. No further action need be taken. The nominating party may seek reconsideration of the decision by the Regional Water Board itself.

7. The Regional Water Board shall conduct a public hearing to receive testimony on the proposed designation. Notice of the hearing shall be published three times in a newspaper of general circulation in the vicinity of the proposed area or areas and shall be distributed to all known interested parties 45 days in advance of the hearing. The notice shall describe the location, boundaries, and extent of the area or areas under consideration, as well as proposed restrictions on waste* discharges within the area.

8. The Regional Water Board shall respond to comments as required in section 3779, Title 23, California Code of Regulations, and 40 C.F.R. Part 25 (July 1, 1999).

9. The Regional Water Board shall consider the nomination after completing the required public review processes required by CEQA.

   (a) If the Regional Water Board supports the recommendation for designation, the board shall forward to the State Water Board its recommendation for approving designation of the proposed area or areas and the supporting rationale. The Regional Water Board submittal shall include a copy of the staff report, hearing transcript, comments, and responses to comments.

   (b) If the Regional Water Board does not support the recommendation for designation, the Executive Officer shall notify interested parties of the decision, and no further action need be taken.

10. After considering the Regional Water Board recommendation and hearing record, the State Water Board may approve or deny the recommendation, refer the matter to the Regional Water Board for appropriate action, or conduct further hearing itself. If the State Water Board acts to approve a recommended designation, the State Water Board shall amend Appendix V, Table V-1, of this Plan. The amendment will go into effect after approval by the Office of Administrative Law and US EPA. In addition, after the effective date of a designation, the affected Regional Water Board shall revise its water quality control plan in the next triennial review to include the designation.

* See Appendix I for definition of terms.

12. The State Water Board Executive Director shall advise other agencies to whom the list of designated areas is to be provided that the basis for an SWQPA-ASBS or SWQPA-GP designation is limited to protection of marine life from waste* discharges.

* See Appendix I for definition of terms.

APPENDIX V
STATE WATER QUALITY PROTECTION AREAS*
AREAS OF SPECIAL BIOLOGICAL SIGNIFICANCE*

TABLE V-1
STATE WATER QUALITY PROTECTION AREAS*
AREAS OF SPECIAL BIOLOGICAL SIGNIFICANCE*
(DESIGNATED OR APPROVED BY THE STATE WATER RESOURCES CONTROL BOARD)

No.	ASBS Name	Date Designated	State Water Board Resolution No.	Region No.
1.	Jughandle Cove	March 21, 1974,	74-28	1
2.	Del Mar Landing	March 21, 1974,	74-28	1
3.	Gerstle Cove	March 21, 1974,	74-28	1
4.	Bodega	March 21, 1974,	74-28	1
5.	Saunders Reef	March 21, 1974,	74-28	1
6.	Trinidad Head	March 21, 1974,	74-28	1
7.	King Range	March 21, 1974,	74-28	1
8.	Redwoods National Park	March 21, 1974,	74-28	1
9.	James V. Fitzgerald	March 21, 1974,	74-28	2
10.	Farallon Islands	March 21, 1974,	74-28	2
11.	Duxbury Reef	March 21, 1974,	74-28	2
12.	Point Reyes Headlands	March 21, 1974,	74-28	2
13.	Double Point	March 21, 1974,	74-28	2
14.	Bird Rock	March 21, 1974,	74-28	2
15.	Año Nuevo	March 21, 1974,	74-28	3
16.	Point Lobos	March 21, 1974,	74-28	3
17.	San Miguel, Santa Rosa, and Santa Cruz Islands	March 21, 1974,	74-28	3
18.	Julia Pfeiffer Burns	March 21, 1974,	74-28	3
19.	Pacific Grove	March 21, 1974,	74-28	3
20.	Salmon Creek Coast	March 21, 1974,	74-28	3
21.	San Nicolas Island and Begg Rock	March 21, 1974,	74-28	4
22.	Santa Barbara and Anacapa Islands	March 21, 1974,	74-28	4
23.	San Clemente Island	March 21, 1974,	74-28	4

Table V-1 Continued on next page…

* See Appendix I for definition of terms.

Table V-1 (Continued)

Areas of Special Biological Significance*
(Designated or Approved by the State Water Resources Control Board)

No.	ASBS Name	Date Designated	State Water Board Resolution No.	Regio n No.
24.	Laguna Point to Latigo Point	March 21, 1974,	74-28	4
25.	Northwest Santa Catalina Island	March 21, 1974,	74-28	4
26.	Western Santa Catalina Island	March 21, 1974,	74-28	4
27.	Farnsworth Bank	March 21, 1974,	74-28	4
28.	Southeast Santa Catalina	March 21, 1974,	74-28	4
29.	La Jolla	March 21, 1974,	74-28	9
30.	Heisler Park	March 21, 1974,	74-28	9
31.	San Diego-Scripps	March 21, 1974,	74-28	9
32.	Robert E. Badham	April 18, 1974	74-32	8
33.	Irvine Coast	April 18, 1974	74-32	8,9
34.	Carmel Bay	June 19, 1975	75-61	3

* See Appendix I for definition of terms.

APPENDIX VI

REASONABLE POTENTIAL ANALYSIS PROCEDURE FOR DETERMINING WHICH TABLE 1 OBJECTIVES REQUIRE EFFLUENT LIMITATIONS

In determining the need for an effluent limitation, the Regional Water Board shall use all representative information to characterize the pollutant discharge using a scientifically defensible statistical method that accounts for the averaging period of the water quality objective, accounts for and captures the long-term variability of the pollutant in the effluent, accounts for limitations associated with sparse data sets, accounts for uncertainty associated with censored data sets, and (unless otherwise demonstrated) assumes a lognormal distribution of the facility-specific effluent data.

The purpose of the following procedure (see also Figure VI-1) is to provide direction to the Regional Water Boards for determining if a pollutant discharge causes, has the reasonable potential to cause, or contributes to an excursion above Table 1 water quality objectives in accordance with 40 CFR 122.44 (d)(1)(iii). The Regional Water Board may use an alternative approach for assessing reasonable potential such as an appropriate stochastic dilution model that incorporates both ambient and effluent variability. The permit fact sheet or statement of basis will document the justification or basis for the conclusions of the reasonable potential assessment. This appendix does not apply to permits or any portion of a permit where the discharge is regulated through best management practices (BMP) unless such discharge is also subject to numeric effluent limitations.

Step 1: Identify C_o, the applicable water quality objective from Table 1 for the pollutant.

Step 2: Does information about the receiving water* body or the discharge support a reasonable potential assessment (RPA) without characterizing facility-specific effluent monitoring data? If yes, go to *Step 13* to conduct an RPA based on best professional judgment (BPJ). Otherwise, proceed to *Step 3*.

Step 3: Is facility-specific effluent monitoring data available? If yes, proceed to *Step 4.* Otherwise, go to *Step 13.*

Step 4: Adjust all effluent monitoring data C_e, including censored (ND or DNQ) values to the concentration X expected after complete mixing. For Table 1 pollutants use $X = (C_e + D_m C_s) / (D_m + 1)$; for acute toxicity* use $X = C_e / (0.1 D_m + 1)$; where D_m is the minimum probable initial dilution* expressed as parts seawater* per part wastewater and C_s is the background seawater* concentration from Table 3. For ND values, C_e is replaced with "<MDL*;" for DNQ values C_e is replaced with "<ML.*" Go to *Step 5*.

Step 5: Count the total number of samples n, the number of censored (ND or DNQ) values, c and the number of detected values, d, *such that* $n = c + d$.

Is any *detected* pollutant concentration after complete mixing greater than C_o? If yes, the discharge causes an excursion of C_o; go to *Endpoint 1*. Otherwise, proceed to *Step 6*.

Step 6: Does the effluent monitoring data contain three or more detected observations ($d \geq 3$)? If yes, proceed to *Step 7* to conduct a parametric RPA. Otherwise, go to *Step11* to conduct a nonparametric RPA.

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* See Appendix I for definition of terms.

Step 7: Conduct a parametric RPA. Assume data are lognormally distributed, unless otherwise demonstrated. Does the data consist entirely of detected values ($c/n = 0$)? If yes,

- calculate summary statistics M_L and S_L, the mean and standard deviation of the natural logarithm transformed effluent data expected after complete mixing, $\ln(X)$,
- go to *Step 9*.

Otherwise, proceed to *Step 8*.

Step 8: Is the data censored by 80% or less ($c/n \leq 0.8$)? If yes,

- calculate summary statistics M_L and S_L using the censored data analysis method of Helsel and Cohn (1988),
- go to *Step 9*.

Otherwise, go to Step 11.

Step 9: Calculate the UCB i.e., the one-sided, upper 95 percent confidence bound for the 95th percentile of the effluent distribution after complete mixing. For lognormal distributions, use $UCBL_{(.95,.95)} = \exp(M_L + S_L\, g'_{(.95,.95,n)})$, where g' is a normal tolerance factor obtained from the table below (Table VI-1). Proceed to *Step 10*.

Step 10: Is the UCB greater than C_o? If yes, the discharge has a reasonable potential to cause an excursion of C_o; go to *Endpoint 1*. Otherwise, the discharge has no reasonable potential to cause an excursion of C_o; go to *Endpoint 2*.

Step 11: Conduct a non-parametric RPA. Compare each data value *X* to C_o. Reduce the sample size *n* by 1 for each tie (i.e., inconclusive censored value result) present. An adjusted ND value having C_o < MDL* is a tie. An adjusted DNQ value having C_o < ML* is also a tie.

Step 12: Is the adjusted *n* > 15? If yes, the discharge has no reasonable potential to cause an excursion of C_o; go to *Endpoint 2*. Otherwise, go to *Endpoint 3*.

Step 13: Conduct an RPA based on BPJ. Review all available information to determine if a water quality-based effluent limitation is required, notwithstanding the above analysis in *Steps 1* through *12*, to protect beneficial uses. Information that may be used includes: the facility type, the discharge type, solids loading analysis, lack of dilution, history of compliance problems, potential toxic impact of discharge, fish tissue residue data, water quality and beneficial uses of the receiving water,* CWA 303(d) listing for the pollutant, the presence of endangered or threatened species or critical habitat, and other information.

Is data or other information unavailable or insufficient to determine if a water quality-based effluent limitation is required? If yes, go to *Endpoint 3.* Otherwise, go to either *Endpoint 1* or *Endpoint 2* based on BPJ.

Endpoint 1: An effluent limitation must be developed for the pollutant. Effluent monitoring for the pollutant, consistent with the monitoring frequency in Appendix III, is required.

Endpoint 2: An effluent limitation is not required for the pollutant. Appendix III effluent monitoring is not required for the pollutant; the Regional Board, however, may require occasional monitoring for the pollutant or for whole effluent toxicity as appropriate.

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* See Appendix I for definition of terms.

Endpoint 3: The RPA is inconclusive. Monitoring for the pollutant or whole effluent toxicity testing, consistent with the monitoring frequency in Appendix III, is required. An existing effluent limitation for the pollutant shall remain in the permit, otherwise the permit shall include a reopener clause to allow for subsequent modification of the permit to include an effluent limitation if the monitoring establishes that the discharge causes, has the reasonable potential to cause, or contributes to an excursion above a Table 1 water quality objective.

Appendix VI References:

Helsel D. R. and T. A. Cohn. 1988. Estimation of descriptive statistics for multiply censored water quality data. Water Resources Research, Vol 24(12):1977-2004.

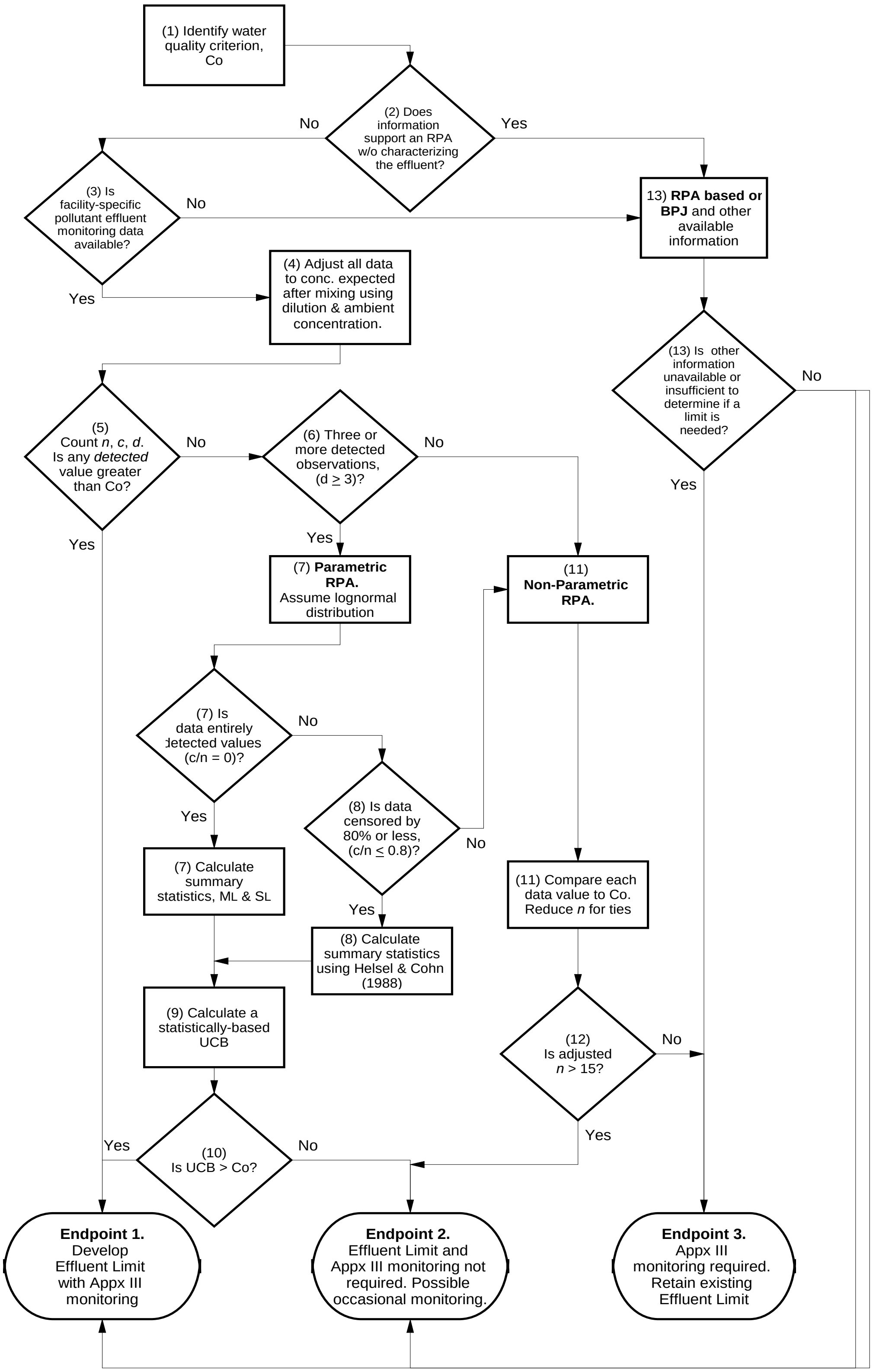
Hahn J. H. and W. Q. Meeker. 1991. Statistical Intervals, A guide for practitioners. J. Wiley & Sons, NY.

TABLE VI-1: Tolerance factors $g'_{(.95,.95,n)}$ for calculating normal distribution one-sided upper 95 percent tolerance bounds for the 95th percentile (Hahn & Meeker 1991)

n	$g'_{(.95,.95,n)}$	***n***	$g'_{(.95,.95,n)}$
2	26.260	21	2.371
3	7.656	22	2.349
4	5.144	23	2.328
5	4.203	24	2.309
6	3.708	25	2.292
7	3.399	26	2.275
8	3.187	27	2.260
9	3.031	28	2.246
10	2.911	29	2.232
11	2.815	30	2.220
12	2.736	35	2.167
13	2.671	40	2.125
14	2.614	50	2.065
15	2.566	60	2.022
16	2.524	120	1.899
17	2.486	240	1.819
18	2.453	480	1.766
19	2.423	∞	1.645
20	2.396		

* See Appendix I for definition of terms.

Figure VI-1. Reasonable potential analysis flow chart



* See Appendix I for definition of terms.

APPENDIX VII

EXCEPTIONS TO THE CALIFORNIA OCEAN PLAN

TABLE VII-1
EXCEPTIONS TO THE OCEAN PLAN

(GRANTED BY THE STATE WATER RESOURCES CONTROL BOARD)

Year	Resolution	Applicable Provision	Discharger
1977	77-11	Discharge Prohibition, ASBS #23	US Navy San Clemente Island
1979	79-16	Discharge Prohibition for wet weather discharges from combined storm and wastewater collection system.	The City and County of San Francisco
1983	83-78	Discharge Prohibition, ASBS #7	Humboldt County Resort Improvement District No.1
1984	84-78	Discharge Prohibition, ASBS #34	Carmel Sanitary District
1988	88-80	Total Chlorine Residual Limitation	Haynes Power Plant Harbor Power Plant Scattergood Power Plant Alamitos Power Plant El Segundo Power Plant Long Beach Power Plant Mandalay Power Plant Ormond Beach Power Plant Redondo Power Plant
1990	90-105	Discharge Prohibition, ASBS #21	US Navy San Nicolas Island
2004	2004-0052	Discharge Prohibition, ASBS #31	UC Scripps Institution of Oceanography
2006	2006-0013	Discharge Prohibition, ASBS #25	USC Wrigley Marine Science Center
2007	2007-0058	Discharge Prohibition, ASBS #4	UC Davis Bodega Marine Laboratory
2011	2011-0049	Discharge Prohibition, ASBS #6	HSU Telonicher Marine lab
2011	2011-0050	Discharge Prohibition, ASBS #19	Monterey Bay Aquarium
2011	2011-0051	Discharge Prohibition, ASBS #19	Stanford Hopkins Marine Station
2012	2012-0012, as amended on June 19 2012; in 2012-0031	ASBS Discharge Prohibition, General Exception for Storm Water and Nonpoint Sources	27 applicants for the General Exception

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* See Appendix I for definition of terms.

APPENDIX VIII
MAPS OF THE OCEAN, COAST, AND ISLANDS

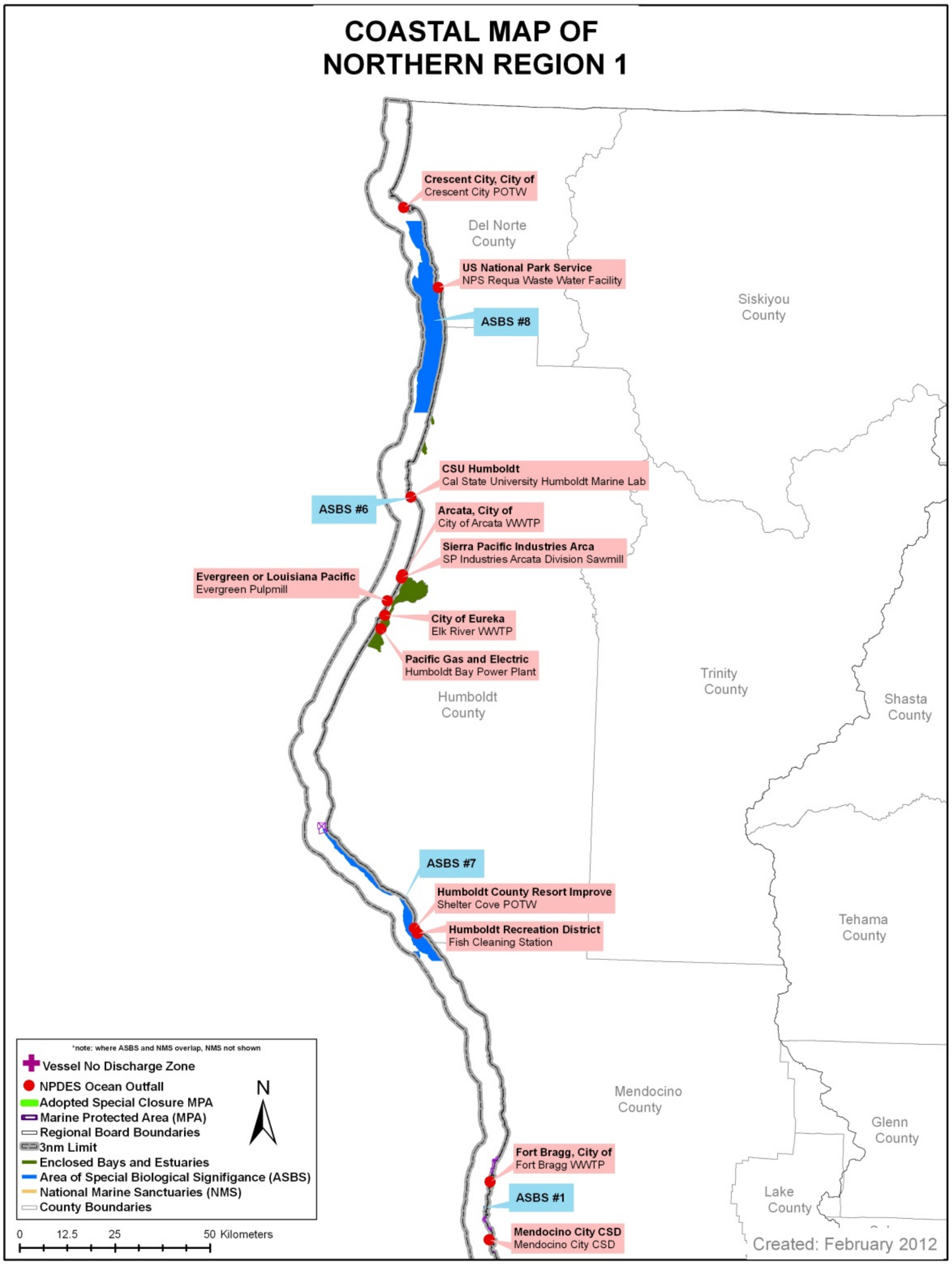

Figure VIII-1. ASBS Boundaries, MPA Boundaries, Wastewater Outfall Points, Marine Sanctuary Boundaries, and Enclosed Bays in northern Region 1.

* See Appendix I for definition of terms.

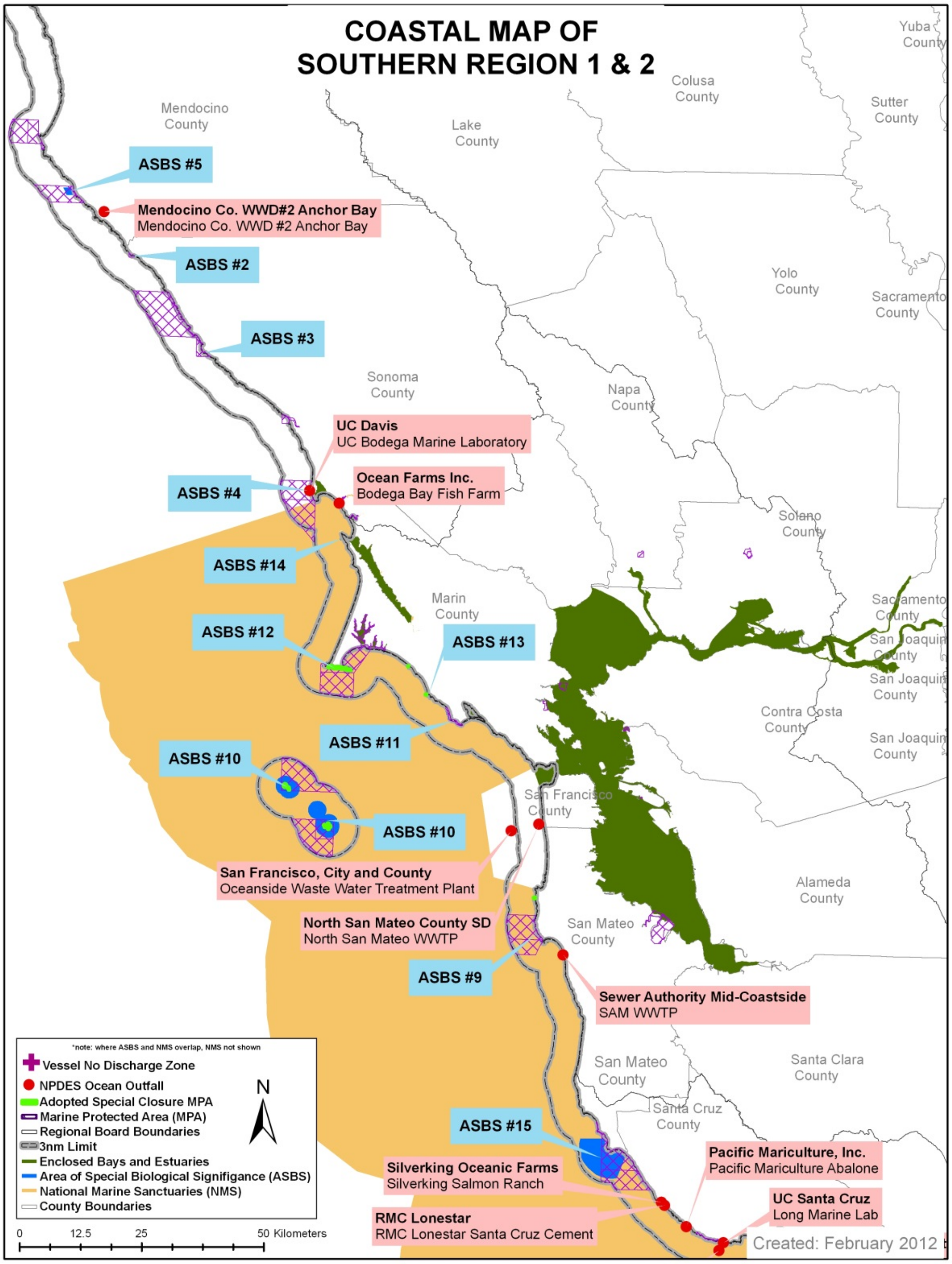

Figure VIII-2. ASBS Boundaries, MPA Boundaries, Wastewater Outfall Points, Marine Sanctuary Boundaries, and Enclosed Bays in southern Region 1 and Region 2.

* See Appendix I for definition of terms.

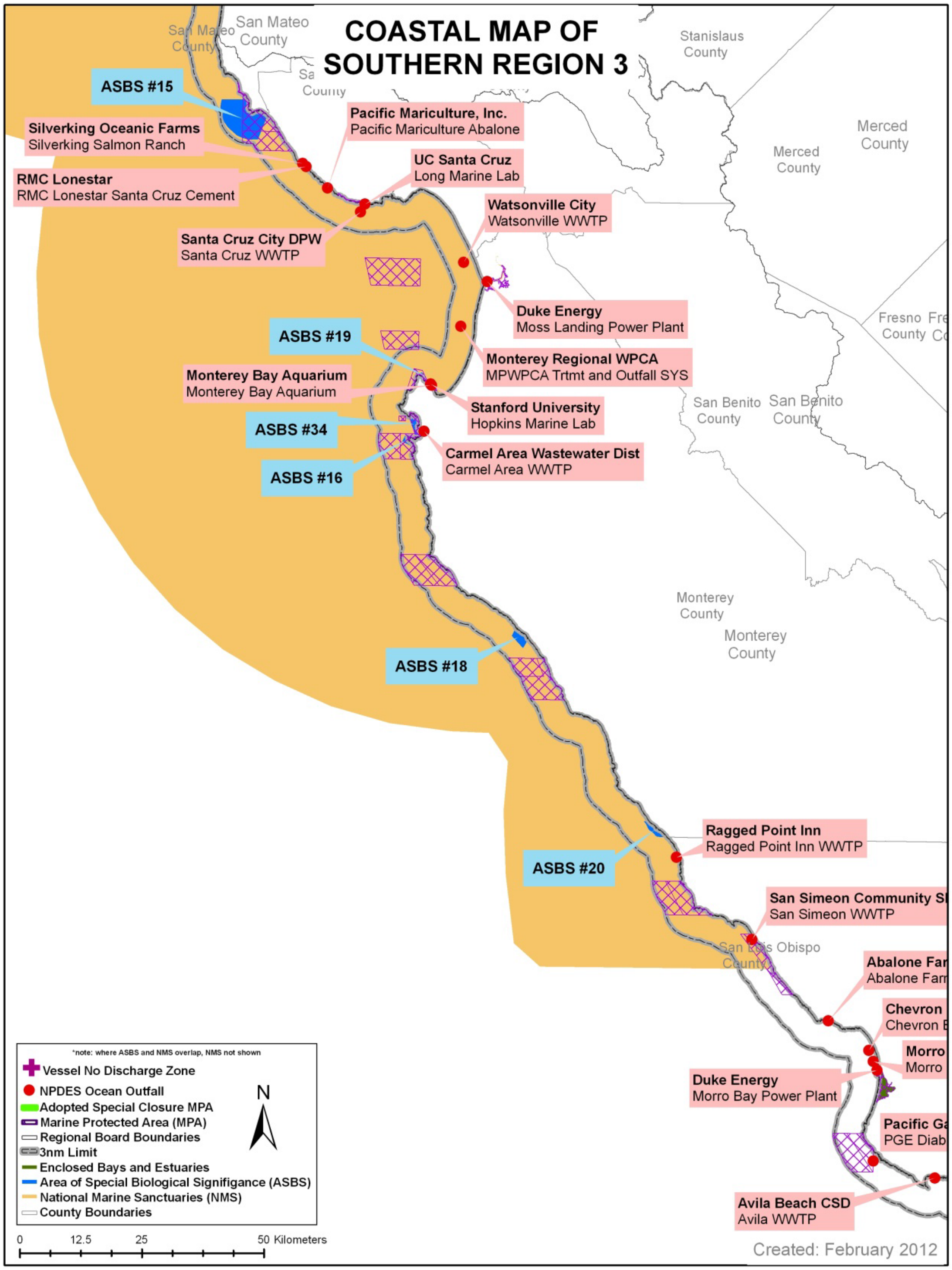

Figure VIII-3. ASBS Boundaries, MPA Boundaries, Wastewater Outfall Points, Marine Sanctuary Boundaries, and Enclosed Bays in northern Region 3.

* See Appendix I for definition of terms.

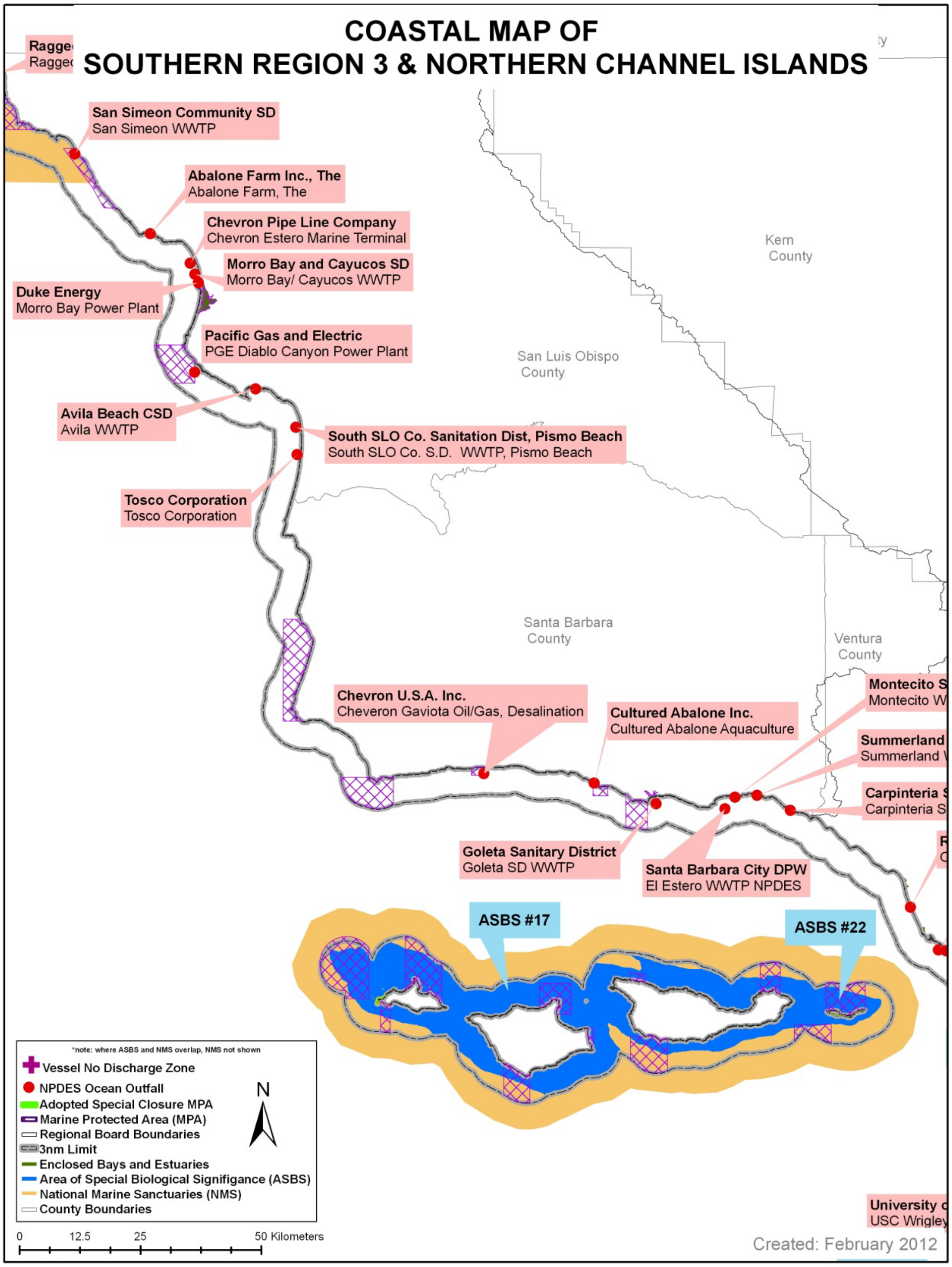

Figure VIII-4. ASBS Boundaries, MPA Boundaries, Wastewater Outfall Points, Marine Sanctuary Boundaries, and Enclosed Bays in southern Region 3 and northern Channel Islands.

* See Appendix I for definition of terms.

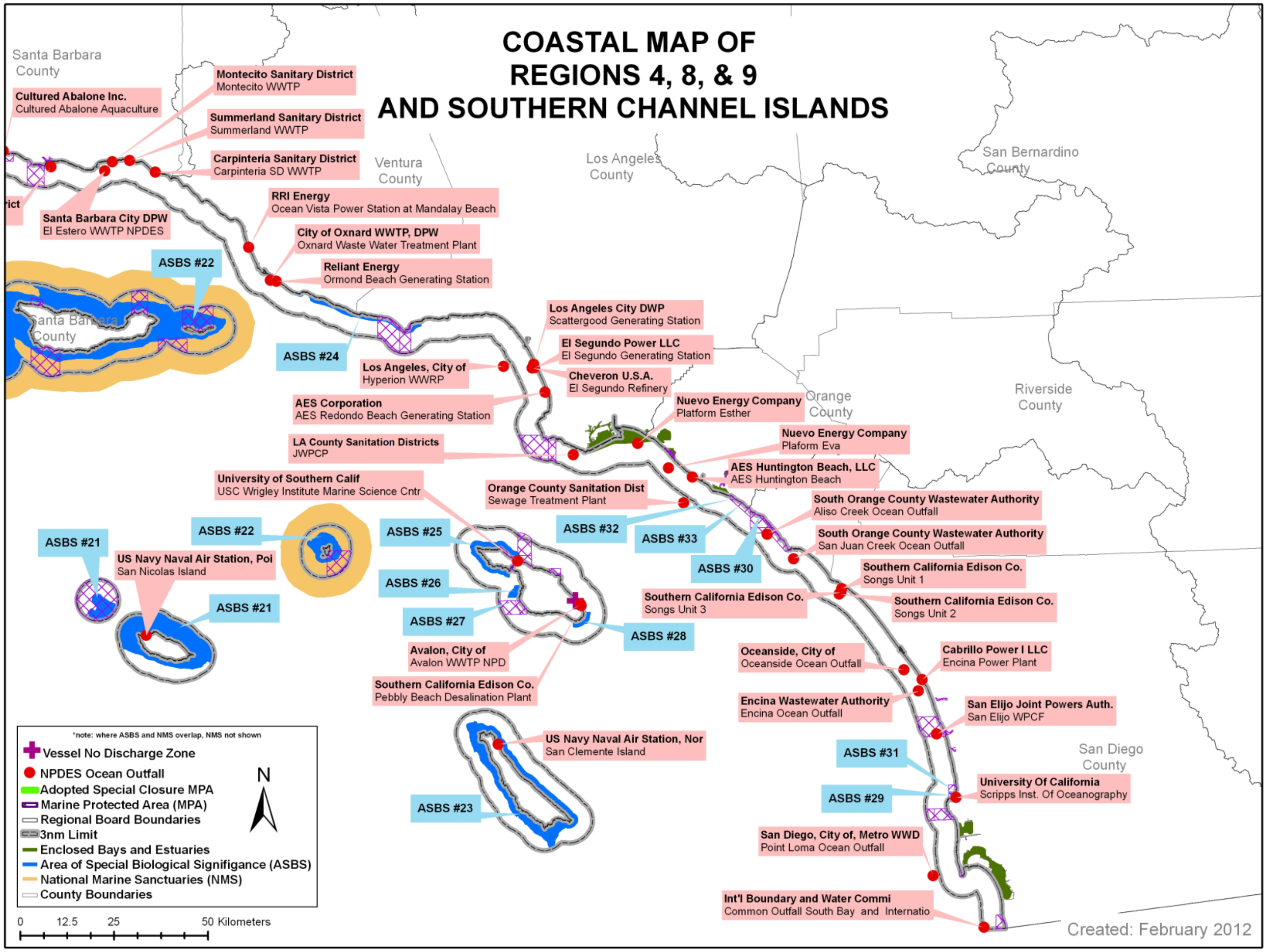

Figure VIII-5. ASBS Boundaries, MPA Boundaries, Wastewater Outfall Points, Marine Sanctuary Boundaries, and Enclosed Bays in southern Channel Islands and Regions 4, 8 and 9.

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* See Appendix I for definition of terms.

COUNTY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS

"To Enrich Lives Through Effective and Caring Service"

900 SOUTH FREMONT AVENUE
ALHAMBRA, CALIFORNIA 91803-1331
Telephone: (626) 458-5100
http://dpw.lacounty.gov

GAIL FARBER, Director

ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 1460
ALHAMBRA, CALIFORNIA 91802-1460

IN REPLY PLEASE
REFER TO FILE: WM-7

September 17, 2015

Dr. Maria de la Paz Carpio-Obeso
Chief, Ocean Standards Unit
California State Water Resources Control Board
Division of Water Quality
Watersheds, Ocean, and Wetlands Section
P.O. Box 100
Sacramento, CA 95812-0100

Dear Dr. Carpio-Obeso:

AREA OF SPECIAL BIOLOGICAL SIGNIFICANCE 24
FINAL COMPLIANCE PLAN

The County of Los Angeles, the Los Angeles County Flood Control District, and the City of Malibu, collectively referred to as the Agencies, are submitting the enclosed Final Compliance Plan. The document is submitted in response to the March 17, 2015, comment letter from the State Water Resources Control Board. A response to comments and the field data sheet for the February 2014 event at site 24-BB-01Z are enclosed as Attachment A.

The enclosed Final Compliance Plan fulfills the requirements provided under Sections I.A.3.b and I.B.2.a of the State Water Board's Resolution No. 2012-0012.

If you have any questions, please contact me at (626) 458-4300 or ageorge@dpw.lacounty.gov or your staff may contact Mr. Paul Alva at (626) 458-4325 or palva@dpw.lacounty.gov.

Very truly yours,

GAIL FARBER
Director of Public Works

Angela R. George

ANGELA R. GEORGE
Assistant Deputy Director
Watershed Management Division

AD:ba
P:\wmpub\Secretarial\2015 Documents\Letter\ASBS 24 State Re-Submittal Cover Ltr.doc\C15180

Enc.

cc: City of Malibu

Attachment A: Response to Comments

Comment 1 - Map of storm water runoff:

Section I.A.2.a. of the Special Protections requires a map of storm water runoff that highlights the prioritized discharges and a description of any structural Best Management Practices (BMPs) already employed or to be employed. Priority discharges are those that pose the greatest water quality threat and which are identified to require installation of structural BMPs. Section I.A.2.f. states that the ASBS Compliance Plan shall describe structural BMPs, including any low impact development (LID) measures, currently employed and planned for higher threat discharges and shall include an implementation schedule. Higher threat discharges include permitted storm drains equal to or greater than 18 inches in diameter or width.

Appendix A in the draft Compliance Plan includes a map of storm water runoff and the planned structural BMP at Broad Beach Road. However, the draft Compliance Plan does not identify priority discharges, stating that none of the evaluated outfalls fall into this category, since receiving water monitoring results met the Table B Instantaneous Maximum Water Quality Objectives in Chapter II of the Ocean Plan, and consequently that additional structural BMPs are not necessary. To clarify, in determining exceedances of the natural water quality and identifying priority discharge locations, receiving water monitoring data is compared to the 85th percentile of the threshold of reference water quality data, not to Ocean Plan Table B Instantaneous Maximum Water Quality Objectives. In the draft Compliance Plan, the receiving water monitoring results show levels of constituents higher than the 85th percentile threshold of reference water quality data, indicating that additional structural BMPs are required. Staff noted similarities in elevated levels of constituents at core discharge ASBS-028 and its associated receiving water site ASBS-502. Therefore, core discharge ASBS-028 should be identified as a priority discharge location. In the final Compliance Plan, please identify priority discharges on the map, describe additional structural BMPs and explain how they will reduce pollutants in storm water runoff, and update the implementation schedule accordingly.

Response:

The Compliance Plan Map has been modified to indicate ASBS-028 is a priority outfall. As discussed with State Water Board Staff, and in compliance with the Special Protections, since discharges from ASBS-028 are already within the Ocean Plan Instantaneous Maximum, structural BMPs will not be installed. Instead, the Agencies will continue to implement non-structural BMPs as discussed in the Plan.

Comment 2 - Non-authorized non-storm water runoff:

Section I.A.2.b. of the Special Protections requires a description of the measures by which all non-authorized non-storm water runoff has been eliminated, how the measures will be maintained over time, and how these measures are monitored and documented.

The draft Compliance Plan describes actions being taken to eliminate flows that reach the surf. Although dry weather flows that did not reach the surf were observed during dry weather inspections of outfalls, there is no explanation of how these flows will be eliminated. In the final Compliance Plan, please address how dry weather flows will be *eliminated as well as how these measures will be maintained over time and how they will be monitored and documented.*

Response:

Section 3.0 of the Compliance Plan has been modified to enhance the discussion of monitoring, documenting, and reporting of dry weather elimination activities by the City of Malibu in cooperation with the County of Los Angeles (County) and Flood Control District (FCD).

Comment 3 - Implementation schedule:

Section I.A.3.d. of the Special Protections stipulates that any structural controls identified in the final Compliance Plan be operational within six years of the effective date. Section I.A.3.e. specifies that all dischargers must comply with the requirement that their discharges into the affected ASBS maintain natural ocean water quality within six years of the effective date.

The draft Compliance Plan lists March 20, 2019 as the date by which necessary structural controls shall be operational and by which all discharges must be in compliance with the General Exception requirements. The 12-month extension that was granted by the State Water Board applies to the deadlines for the draft and final Compliance Plans. This extension does not apply to the March 20, 2018 deadline for necessary structural controls or compliance with the General Exception requirements. Please be aware that the correct date is March 20, 2018 and that this is the date that should be listed in the implementation schedule.

Response:

The dates in the Compliance Plan have been corrected to reflect the March 2018 compliance schedule.

Comment 4 - Exceedances in natural water quality:

Section I.A.3.e. of the Special Protections requires that, if initial results of post-storm receiving water quality testing indicate levels higher than the 85th percentile threshold of reference water quality data and the pre-storm receiving water levels, then the discharger must re-sample the receiving water pre- and post-storm.

The results for receiving water site ASBS-502 indicate that exceedances in water quality were detected for multiple constituents during receiving water monitoring. Therefore, ASBS-S02 must be re-sampled pre- and post-storm for an additional storm event. If after re-sampling the post-storm levels are still higher than the 85th percentile threshold of reference water quality data and pre-storm receiving water levels for any constituent, then natural ocean water quality is exceeded, and consequently an exceedance report must be submitted as stipulated in Section I.A.2.h of the Special Protections.

Response:

The FCD will resample ASBS-S02 and ASBS-028 for one additional event and will report the results in accordance with Special Protections Section I.A.2.h.

Comment 5 - Ocean receiving water monitoring:

Section IV.B.2.b. of the Special Protections requires that a minimum of three ocean receiving water samples must be collected during each storm season from each station, each from a separate storm. It further specifies that a minimum of one receiving water *location shall be sampled in each ASBS per responsible party in that ASBS.*

Due to participation in the Southern California Bight 2008 regional monitoring effort, monitoring requirements for the County of Los Angeles, the Los Angeles County Flood Control District, and the City of Malibu were limited to only one storm season. The data from the remaining storm season were included in the draft Compliance Plan and indicate that only one receiving water site (ASBS-S02) was sampled successfully for three storm events. The remaining two sites (ASBS-S01 and 24-BB-03R) were only successfully sampled pre- and post-storm during one storm event. Staff understands that the City of Malibu will continue wet weather monitoring into the 2014-2015 wet season and that this sampling may be performed before submittal of the final Compliance Plan. Additionally, receiving water site ASBS-S01 and its associated core discharge ASBS-016 must be sampled for two additional storm events, to account for the incomplete previous monitoring events.

Also, staff noticed that outfall 24-BB-01Z is included on the map and the outfall descriptions, yet there were no results presented for this outfall, even though the draft Compliance Plan states that it was successfully sampled during the February 28, 2014 storm event. Please include results from that sampling event in the final Compliance Plan.

Response:

The City of Malibu sampled a December 1, 2014 storm event at sites 24-BB-03R, 24-BB-03Z, and 24-BB-02Z. Data and discussions resulting from these events have been included in the Compliance Plan (Section 4.1.4, Table 4.4, and various discussion locations).

The City of Malibu will continue its monitoring at site 24-BB-3-03R and its associated outfall 24-BB-03Z until it has completed three sampling events. The City will report the results of this monitoring in accordance with Special Protections Section I.A.2.h.

The County was not able to sample these two additional events prior to submitting the Final Compliance Plan and will sample two additional storm events at ASBS-S01 and its associated outfall ASBS-016. The County will report the results of this monitoring in accordance with Special Protections Section I.A.2.h.

The Compliance Plan inaccurately states that 24-BB-01Z was sampled during the Feb, 2014 event. The site was visited, but not sampled during this event, due to a lack of discharge, and a copy of the field report documenting the lack of discharge has been included with this response to comments.

2012-13 Regional ASBS Monitoring

SITE DESCRIPTION

Station ID: 24-BB-01Z Station Name: ______ Date/Time: 2/28/2014 13:59

Latitude: 34.03117 Longitude: -118.84616

Sample Collector: Noel DeJesus Data Recorder: Jim Mann

WEATHER & OCEAN CONDITIONS

Weather	☐ Clear	☐ Ptly Cloudy	■ Overcast	☐ Fog	■ Hvy Rain	☐ Lt Rain	■ Windy
Last Rain	■ Still raining	☐ <6 Hours	☐ <12 Hours	☐ <24 Hours	☐ >24 Hours	Rainfall Amt:	______
Tide	☐ Flood	☐ High	☐ Ebb	■ Low	Tide Height: ______ ft MLLW	Wave Height:	2.5 ft

BEACH CHARACTERISTICS

Composition	■ Sand	☐ Rock	☐ Cobble		
Conditions	☐ Clean	☐ Trash	☐ Debris	■ Kelp	☐ Other: ______

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Egg	☐ Chemical	☐ Sewage	☐ Other: ______
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other: ______
Clarity	☐ Clear	☐ Cloudy	☐ Opaque			☐ Other: ______
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Algae	☐ Other: ______
Deposits	☐ None	☐ Sediment	☐ Particulates	☐ Stains	☐ Oily Deposit	☐ Other: ______

Does Flow Reach The Receiving Water?	☐ Yes	■ No	☐ Ponded
All Samples Collected?	☐ Yes	■ No	If no, please explain in comments section.
QC Samples Collected?	☐ Field Duplicate	☐ Field Blank	■ None Collected

FLOW ESTIMATION

Area-Velocity method (for flow across the beach)

Width: ______ m Depth: ______ m Length of run: ______ m Average Time: ______ s

Timed Fill method (for storm drain discharge)

Volume: ______ L Time: ______ s

Calculated Flow: ______ L/s

FIELD MEASUREMENTS

Required:	Optional:
Water Temperature: ______ C Salinity: ______ ppt	pH: ______ Turbidity: ______ NTU
Conductivity: ______ uS/cm	DO: ______ mg/L

PHOTO IDs & NOTES

Receiving Water: ______ Discharge: ______

Other: ______

COMMENTS: No flow; no evidence of recent entrenchment flow to receiving water.

RB-AR 7366

Attachment A: Response to Comments

Comment 1 - Map of storm water runoff:

Section I.A.2.a. of the Special Protections requires a map of storm water runoff that highlights the prioritized discharges and a description of any structural Best Management Practices (BMPs) already employed or to be employed. Priority discharges are those that pose the greatest water quality threat and which are identified to require installation of structural BMPs. Section I.A.2.f. states that the ASBS Compliance Plan shall describe structural BMPs, including any low impact development (LID) measures, currently employed and planned for higher threat discharges and shall include an implementation schedule. Higher threat discharges include permitted storm drains equal to or greater than 18 inches in diameter or width.

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2012-13 Regional ASBS Monitoring

SITE DESCRIPTION

Station ID: 24-BB-01Z **Station Name:** ______ **Date/Time:** 2/28/2014 13:59

Latitude: 34.03117 **Longitude:** -118.84616

Sample Collector: Noel DeJesus **Data Recorder:** Jim Mann

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Last Rain	■ Still raining	☐ <6 Hours	☐ <12 Hours	☐ <24 Hours	☐ >24 Hours	**Rainfall Amt:**	______
Tide	☐ Flood	☐ High	☐ Ebb	■ Low	**Tide Height:** ______ft MLLW	**Wave Height:**	2.5 ft

BEACH CHARACTERISTICS

Composition	■ Sand	☐ Rock	☐ Cobble		
Conditions	☐ Clean	☐ Trash	☐ Debris	■ Kelp	☐ Other: ______

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Egg	☐ Chemical	☐ Sewage	☐ Other: ______
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other: ______
Clarity	☐ Clear	☐ Cloudy	☐ Opaque			☐ Other: ______
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Algae	☐ Other: ______
Deposits	☐ None	☐ Sediment	☐ Particulates	☐ Stains	☐ Oily Deposit	☐ Other: ______

Does Flow Reach The Receiving Water?	☐ Yes	■ No	☐ Ponded
All Samples Collected?	☐ Yes	■ No	If no, please explain in comments section.
QC Samples Collected?	☐ Field Duplicate	☐ Field Blank	■ None Collected

FLOW ESTIMATION

Area-Velocity method (for flow across the beach)

Width: ______ m Depth: ______ m Length of run: ______ m Average Time: ______ s

Timed Fill method (for storm drain discharge)

Volume: ______ L Time: ______ s

Calculated Flow: ______ L/s

FIELD MEASUREMENTS

Required:

Water Temperature: ______ C Salinity: ______ ppt

Conductivity: ______ uS/cm

Optional:

pH: ______ Turbidity: ______ NTU

DO: ______ mg/L

PHOTO IDs & NOTES

Receiving Water: ______ Discharge: ______

Other: ______

COMMENTS: No flow; no evidence of recent entrenchment flow to receiving water.

RB-AR 7370

Area of Special Biological Significance 24 Compliance Plan For The County of Los Angeles and City of Malibu

Submitted to:

State Water Resources Control Board
Division of Water Quality
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September 20, 2015

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EXECUTIVE SUMMARY

Background

The Laguna Point to Latigo Point Area of Special Biological Significance (ASBS), also referred to as ASBS 24, was established in 1974 by the State Board to preserve sensitive marine habitat (SWRCB, 1979). It stretches 24 miles, contains 11,842 marine acres, and is the largest ASBS along the mainland of Southern California. A wide range of sandy substrate, rocky reef, and coastal pelagic species can be found within ASBS 24. Figure ES-1-1 shows a small portion of ASBS 24 east of Point Dume.

Figure ES-1-1. ASBS 24 Looking East Across Dume Cove

Since 1983, the California Ocean Plan (Ocean Plan) has prohibited the discharge of waste into ASBS along the California Coast, unless the State Water Resources Control Board (State Board) grants an exception to dischargers. The southern and central portions of ASBS 24 that are located in Los Angeles County (County) are subject to direct discharges from roads, urban landscape runoff, homes, and small businesses. In general, the near-coast storm water runoff along ASBS 24 within the County is conveyed through storm drain systems and / or natural drainage courses before it is discharged at multiple locations along the beach. In 2004, the City of Malibu (City), County of Los Angeles, and the Los Angeles County Flood Control District (District) requested exceptions for storm water discharges to ASBS 24 from the State Board. The State Board received requests from numerous other applicants for an exception to the Ocean Plan. In 2012, the State Board adopted a General Exception.

The General Exception includes Special Protections which specify prohibited discharges and other requirements that dischargers covered under the General Exception must comply with. The County, the District, and the City were included in the list of responsible entities required to prepare a Draft and Final ASBS Compliance Plan for point source discharges of storm water in ASBS 24. This Compliance Plan has been prepared by the County, District, and City (collectively the Parties) in accordance with the General Exception

Point Source Discharge Locations (Outfalls Equal to and Greater Than 18 Inches)

Los Angeles County Department of Public Works (LACDPW) has identified 12 storm drain outfalls having a diameter equal to or greater than 18 inches that drain to ASBS 24 and are owned and maintained by the County. Nine storm drain outfalls that have a diameter greater than or equal to 18 inches and drain to ASBS 24 are owned and maintained by the District. These nine outfalls occur along Broad Beach and Escondido Beach and convey runoff from upstream neighborhoods. The City identified eight storm drain outfalls that are privately owned and maintained and have diameters equal to or greater than 18 inches. These storm drains convey runoff from City owned and maintained inlets on Broad Beach Road and Wildlife Road to the storm drain outfalls located along Broad Beach and the seaside cliffs of Point Dume. An additional 10 storm drain outfalls are currently of undetermined ownership. These storm drains with undetermined ownership convey flow from the Pacific Coast Highway, and upstream neighborhoods. These 39 storm drain outfalls are considered point source discharges of storm water to ASBS 24. Figure ES-1-2 shows the locations of point source discharges along the County shoreline of ASBS-24. The Compliance Plan Map is included in the Appendix A.

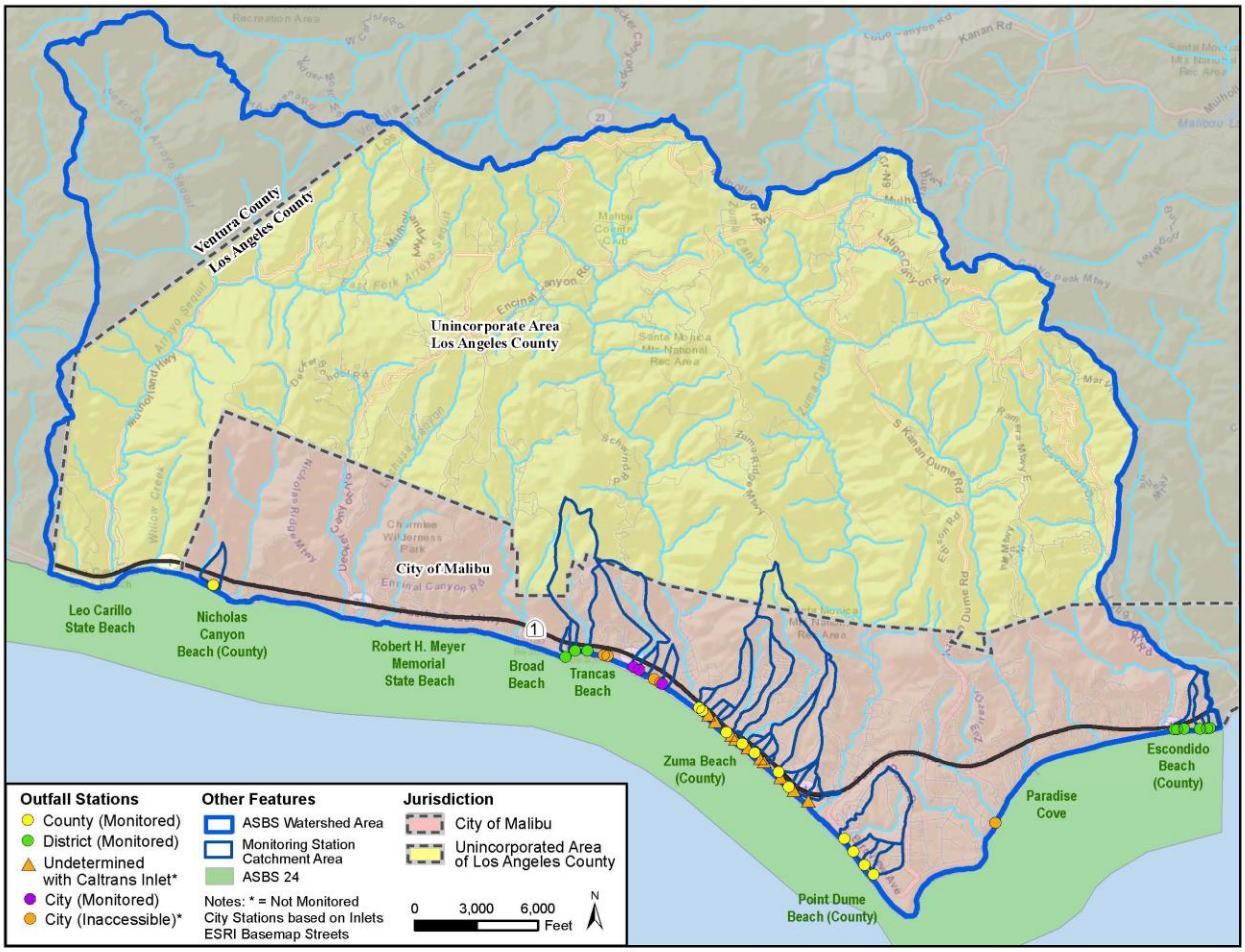

Figure ES-1-2. ASBS-24 Point Source Discharge Locations

Compliance Plan Map

A Compliance Plan Map for the ASBS 24 watershed area has been created and can be updated using Environmental Systems Research Institute (ESRI) ArcMap 10 and is provided in Appendix A. This map shows storm water conveyances and other storm drain features associated with surface drainage of storm water runoff, including catch basins, inlets/outlets, outfalls, storm drain lines, channels, and creeks. The map identifies core monitoring stations and shows the location of other outfalls equal to or greater than 18 inches that are private, state, or federal and not monitored by the Parties. Drainage areas for the core monitoring stations, watershed sub-basins and flow directions within these sub-basins are depicted, as well as the overall ASBS 24 watershed area. The map includes the locations of waste and hazardous material storage areas, sewage conveyances and treatment facilities, landslide zones, and roads. Jurisdictional boundaries for the unincorporated area of the County, the City, and state and federal lands within these areas are shown. This Plan provides information regarding the Compliance Plan Map datasets and the procedures for updating applicable GIS files and the map.

Dry Weather Requirement

The General Exception prohibits all non-authorized non-storm water (dry weather) discharges into the ASBS. Dry weather runoff is any runoff that is not the result of a precipitation event. This is also referred to as "non-storm water discharges" (SWRCB, 2012a). The Parties have implemented nonstructural measures that are designed to eliminate non-authorized, non-storm water runoff. These measures include public information and participation programs (PIPPs), operations and maintenance (O&M) programs, and enforcement programs. A discussion of these activities is provided in Section 3, and a list of existing programs with brief descriptions is provided in Appendix B.

Dry weather monitoring of outfalls has been performed to ensure compliance with the requirements of the General Exception. A summary of these outfall inspections for 2012 and 2013 is provided within the main body of the Plan on Table 3-3 and Table 3-4, respectively. Of the inspected outfalls, only ASBS-002 had flow reaching the surf, and this occurred only once out of the 13 times in 2012 and once out of the three times in 2013. Subsequent inspections performed in March and May, 2013, at ASBS-002 indicated that flow was not present. Some other outfalls were observed with flows or ponded water; however, due to the distances between the outfalls and the surf zones, these flows did not reach the surf zones. Inspections will continue to ensure that discharges of non-storm, non-authorized runoff do not occur.

Receiving Water Assessment

In 2008, a study was conducted as part of Bight 2008 to assess water quality in southern California ASBS (Schiff et al., 2011). The study was designed to evaluate the range of natural water quality near reference drainage locations and to compare water quality near ASBS discharges to these natural water quality conditions. The 2008 study provided initial estimates of reference thresholds, set at 85th percentile, based on data collected at reference sites. As part of the Bight 2013 Regional Monitoring Program, additional reference monitoring was performed under the Regional Monitoring Program, and the 85th percentile reference thresholds were revised.

Wet weather monitoring was performed by LACDPW at two receiving water locations: 1) S01, located off Zuma Beach directly out from ASBS-016, a 60-inch storm drain; and 2) S02, located off Escondido Beach directly out from ASBS-028, a 36-inch storm drain. The City performed monitoring at receiving water Site 24-BB-03R The assessment of compliance with natural water quality was primarily performed for receiving water station S02, which was the only site that had samples collected during three wet weather events. Receiving water station S02 is associated with ASBS-028, which is a 36-inch outfall that drains a mixture of developed and vacant land. Receiving water station S02 is considered to be representative of the typical to worst case scenario of the potential impact that storm water runoff may have on the water quality within the ASBS. The receiving water quality assessment is presented in Section 4.0, and a summary of the assessment is presented below.

In samples collected in the receiving water (Site S02), selenium, mercury, and total polynuclear aromatic hydrocarbons (PAHs) concentrations were above the 85th percentile reference threshold and had post-storm concentrations that exceeded those of the pre-storm samples collected during two consecutive monitored storm events. Based on the guidance found in Attachment 1 of the General Exception, this indicates an exceedance of natural water quality in the ASBS for these constituents.

Receiving water samples collected (Site S02) during one event, but not in subsequent events, that had concentrations above both the 85th percentile threshold and pre-storm concentrations include pyrethroids, nitrate as N, copper, lead, and zinc. These constituents do not meet the guidance criteria and are not considered an exceedance of the natural water quality in the ASBS.

During the three monitored events flow from ASBS-016 only reach the receiving water once at Site S01 and thus, receiving water chemistry data was only obtained once at S01 as part of the General Exception monitoring. Mercury, silver, zinc, and total PAHs concentrations in the receiving water were greater than both the 85th percentile threshold and pre-storm concentrations for Site S01. Receiving water concentrations above both the 85th percentile thresholds and pre-storm concentrations occurring during only one event is not considered to be an exceedance of natural water quality.

Pre-storm and post-storm samples were collected and analyzed at Site 24-BB-03R for two events. The post-storm selenium concentration in the receiving water was greater than both the 85th percentile threshold and pre-storm concentrations for only the first event (see Table 4-3). The post-storm ammonia as N, silver, and total PAHs concentrations in the receiving water were greater than both the 85th percentile threshold and pre-storm concentrations for only the second event. The concentration of selenium, ammonia, silver, and PAHs being above the 85th percentile threshold and pre-storm concentrations in one event is not considered an exceedance of natural water quality at Site 24-BB-03R. However, the selenium result at Site 24-BB-03R is consistent with the results at Site S02 where selenium is considered to be an exceedance of natural water quality based on first and second event results.

Pollution Loading Reduction Assessment

The General Exception states that the ASBS Compliance Plan shall describe how the necessary pollutant reductions in storm water runoff will be achieved through prioritization of outfalls and implementation of BMPs to achieve end-of-pipe pollutant concentrations targets during a design storm to below either the Table 1 Instantaneous Maximum Water Quality Objectives (WQOs) in Chapter II of the Ocean Plan or a 90% reduction in pollutant loading during storm events for the applicant's total discharge. Constituents that are currently in exceedance of the natural water quality threshold of the ASBS, and that also have an associated Ocean Plan Table 1 Instantaneous Maximum WQO value (mercury and selenium), were compared with the Table 1 Instantaneous Maximum WQOs in order to determine the appropriate pollutant load reduction in accordance with the General Exception.

Monitoring Results

Chemistry results obtained from monitoring outfall discharges to ASBS 24 are presented in the main body of the Plan in Table 5-1 through Table 5-4 respectively. The Ocean Plan Table 1 Instantaneous Maximum WQOs for mercury and selenium are 0.4 µg/L and 150 µg/L, respectively. The Ocean Plan Table 1 does not list Instantaneous Maximum WQOs for PAHs. During the three monitored events the sampling results were all below these Ocean Plan Table 1 Instantaneous Maximum values. A summary of the highest measured values in comparison with the Ocean Plan Table 1 Instantaneous Maximum values as well as other Ocean Plan Table 1 WQOs is provided on Table ES-1-1.

Table ES-1-1. Summary of Ocean Plan WQOs Comparison to Maximum Outfall Results

Parameter	Ocean Plan Table 1 Values (Receiving Water Mixing Zone)			Maximum Measured Value (in Outfall Prior to Mixing Zone)		
	6-Month Median	Daily Maximum	Instantaneous Maximum	February 2013, Event 1	March 2013, Event 2	February 2014, Event 3
Mercury	0.04	0.16	0.4	0.16	0.06	<0.0012
Selenium	15	60	150	0.79	1.0	5.1

Outfall Assessment Conclusions

Following the guidance found in the Special Protections an assessment of outfalls was performed to determine where structural controls may be required to achieve the specified pollutant loading limitations on point source discharges into ASBS 24. The outfall assessment included comparing the mercury and selenium monitoring data results obtained to Ocean Plan Table 1 Instantaneous Maximum WQOs. The Ocean Plan Table 1 does list Instantaneous Maximum values for the protection of marine aquatic life for total PAHs. (The Ocean Plan Table 1 only lists a 30-day Average PAHs WQO for the protection of human health.) As shown in Table ES-1 the results of the comparison indicated the discharges to the ASBS from point sources (outfalls) are currently achieving, and significantly below, the target levels. Therefore, based on available data, and in accordance with the Special Protections of the General Exception, the outfalls being evaluated in this Plan do not require additional controls (e.g., BMPs) to achieve pollutant load reductions in the drainage areas tributary to the Parties' outfalls. However, due to the identified exceedanace of natural water quality, outfall ASBS-28 is currently considered a priority outfall.

Anthropogenic Sedimentation Assessment

In accordance with the requirements of the General Exception, the natural habitat conditions in the ASBS shall not be altered as a result of anthropogenic sedimentation (SWRCB, 2012a). An assessment of the potential areas prone to anthropogenic sedimentation was performed as part of this Compliance Plan for the purpose of identifying areas where sediment control BMPs may be required. The general assessment process included first performing a desktop analysis of geological conditions, topography, land use, and aerial imagery for the applicable area. Next, a reconnaissance of the area was performed to verify desktop findings and further analyze the drainage areas. Finally, the desktop and reconnaissance data collected were then complied into this Plan.

Geologic processes, beginning as far back as 80 million years, created the sedimentary formations predominantly found along the coast shoreline and Point Dume upland mesa area, which include siltstone and sandstone. Approximately 16 million years ago, seismic activity began and continued for 3 million years to form the Santa Monica Mountains, which are composed of a combination of sedimentary and igneous rock formations (City, 1995). Land use zoning and development have occurred predominantly along the coast within the flatter areas at lower elevations. Some development has occurred inland within the Santa Monica Mountains, but for the most part, development in the mountainous areas of the ASBS 24 watershed has been restricted due to the conservation of the area at the federal, state, and local levels.

The desktop analysis included determining the general sediment risk for the area based on the procedures outlined in the Construction General Permit. These procedures included determining the rainfall erosivity (R factor), which is based on data collected over several years to determine the annual storm kinetic energy, on average, for the area. That factor, combined with properties of common soils and various slopes (up to 50%) and heights (up to 50 ft.), were used to determine the potential annual disturbed loose soil areas within the watershed. Calculation results indicated that the potential for soil loss within disturbed areas increases rapidly for areas having slopes greater than 10% and heights greater than a few feet. These results were used during the field reconnaissance to aid in determining if areas have the potential to contribute anthropogenic sedimentation to ASBS 24.

Field reconnaissance was performed with a focus on the areas that drain to the identified outfalls that discharge to ASBS 24. In general, the drainage areas primarily consisted of larger lots (0.25 to approximately 1 acre) with existing residential structures, hardscape improvements, and landscaping. Landscape vegetation of sloped areas within developed areas, including residential properties and roadway rights-of-way, were observed to have fairly good cover. No signs of erosion as a result of manmade improvements (e.g., rills, gullies caused by runoff from impervious surfaces) were observed in sloped areas, alongside secondary roads, or the PCH.

The sedimentation assessment indicates that currently there are no areas prone to anthropogenic sedimentation within the drainage areas to the identified outfalls that discharge to ASBS 24. Land use in the drainage areas consists predominantly of residential and vacant (open space) designations with associated roadway connections. The sloped areas associated with residential properties were observed to have good vegetation cover and appeared to be regularly maintained by landscaping professionals (see Figure 7-9). Areas where cuts (excavation) were made during the construction of roadways were observed to have either good vegetation cover that has been maintained by responsible property owners or consist of hard coastal bluff materials resistant to erosive forces (e.g., large bluff along the southeast portion of Zuma County Beach, as shown on Figure 7-11). Therefore, at this time, no additional sediment BMPs are required by this plan.

Conclusions

The assessments performed in the preparation of this Compliance Plan indicate that no additional structural controls (BMPs) are required based on the guidance presented within the Special Protections. However, the Parties recognize that the ABSB 24 is one of most valued resources in the region and that wherever possible and feasible additional reductions in pollutant loading should be achieved. Accordingly, various existing nonstructural programs will continue to be implemented in order to maintain compliance with the requirements of the Special Protections and possibly achieve further reductions in pollutant loading. The Parties are considering implementing additional nonstructural controls and enhancements to existing controls for the purpose of further reducing pollutant loading to the ASBS. Additionally, in July 2015, the City deemed construction complete for structural BMPs for the areas of Broad Beach Road and Wildlife Road where City inlets drain to private outlets in the ASBS area.

Cost Estimate

The Parties have implemented numerous nonstructural controls and related programs in order to eliminate non-storm water, non-authorized discharges to ASBS 24. The Parties continue to maintain these measures, and the annual estimated costs associated with the key programs, which are detailed in Section 3.0, are provided on Table ES-1-2. Appendix B contains a list along with brief descriptions of various existing nonstructural measures implemented by the Parties.

Structural controls are being proposed and currently in the planning and permitting phase for the areas of Broad Beach Road and Wildlife Road. These structural controls will provide additional reduction of pollutant loading into the ASBS but are not directly connected to the Compliance Plan (i.e., not a result of the assessments performed for this document and not a requirement of this document). The costs for these structural controls are not included on Table ES-1-2. More information on these structural controls, included estimated costs, is included in Appendix C.

Table ES-1-2. Annual Nonstructural Programs Costs

Program Type	Approximate Cost ($/year)
PIPP Subtotal	$228,407
O&M Subtotal	$1,182,500
Enforcement Subtotal	$111,752
Total	$1,522,659

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LIST OF ABBREVIATIONS AND ACRONYMS

Ag	Silver
AMSL	above mean sea level
As	arsenic
ASBS	Areas of Special Biological Significance
Bight	Southern California Bight Regional Monitoring Program
Bight 2008	Southern California Bight 2008 Regional Monitoring Program
Bight 2013	Southern California Bight 2013 Regional Monitoring Program
BMP	best management practice
CA	California
Caltrans	California Department of Transportation
Cd	cadmium
City	City of Malibu
Committee	Bight 2013 ASBS Planning Committee
County	County of Los Angeles
CPS	Coastal Preservation Specialist
Cr	chromium
Cu	copper
District	Los Angeles County Flood Control District
EI	Erosivity Index
EMAP	Monitoring & Assessment Program
EPPP	Environmentally Preferable Purchases and Practices Policy
ESRI	Environmental Systems Research Institute
ft.	feet
GIS	Geographic Information System
Hg	mercury
HSPF	Hydrologic Simulation Program–FORTRAN
Hydrology Manual	Los Angeles County Hydrology Manual
IC/ID	Illicit Connection/Illicit Discharge
in.	inches
LACDPW	Los Angeles County Department of Public Works
LACoMAX	Los Angeles County Materials Exchange
LAWQCB	Los Angeles Regional Water Quality Control Board
LIEP	Landscape Irrigation Efficiency Program
LSPC	Loading Simulation Program C++
LSWPPP	Local Storm Water Pollution Prevention Plan
LUP	Land Use Plan
m	meter
MACC	Malibu Area Conservation Coalition
mg/L	milligram per liter
MS4	municipal separate storm sewer system
N	nitrogen
Ni	nickel
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
O&M	Operations and Maintenance

Ocean Plan	California Ocean Plan
OFG	Ocean Friendly Garden
P	phosphorus
PAH	polynuclear aromatic hydrocarbons
Parties	LACDPW, District, and City
Pb	lead
PCH	Pacific Coast Highway
PIPP	public information and participation program
Plan	Compliance Plan
POTFW	wash-off potency factor
RCPP	Recycled Products Purchasing Policy
RGO	retail gasoline outlets
RMD	Road Maintenance Division
ROW	Right-of-way
SCAG	Southern California Association of Governments
SCCWRP	Southern California Coastal Water Research Project
Se	selenium
State Board	State Water Resources Control Board
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	California State Water Resources Control Board
T.H.	townhouse
Tc	time of concentration
TMDL	total maximum daily load
TN	total nitrogen
TP	total phosphorus
TSS	total suspended solids
USEPA	United States Environmental Protection Agency
USLE	Universal Soil Loss Equation
WDID	Waste Discharge Identification Number
Weston	Weston Solutions, Inc.
WMMS	Watershed Management Modeling System
WQOs	water quality objectives
WWECP	Wet Weather Erosion Control Plan
Zn	zinc
µg/L	microgram per liter

1.0 INTRODUCTION

In 1974 and 1975, the California State Water Resources Control Board (SWRCB) designated 34 coastal areas in California as Areas of Biological Significance (ASBS). The ASBSs are ocean areas requiring protection of species or biological communities to the extent that alteration of natural water quality is undesirable. One of these ASBS, known as ASBS 24, is located along 24 miles of the Ventura and Los Angeles County coastline, from Laguna Point to Latigo Point (SWRCB, 1979).

The California Ocean Plan (Ocean Plan) prohibition on discharges of waste to ASBS has been in place since 1983. The SWRCB may grant exceptions to this prohibition if the exception will not compromise the protection of ocean waters for beneficial uses and the public interest will be served (SWRCB, 2012a). On March 20, 2012, the SWRCB adopted a General Exception to the Ocean Plan ASBS waste discharge prohibition. The General Exception was amended and adopted as Resolution 2012-0031 on June 19, 2012 (SWRCB, 2012b).

The General Exception includes Special Protections that dischargers covered under the General Exception must comply with. For ASBS 24, the County of Los Angeles (County), the Los Angeles County Flood Control District (District), and the City of Malibu (City) were included in the list of responsible entities required to prepare an ASBS Compliance Plan for point source discharges of storm water and a Pollution Prevention Plan for non-point source waste discharges by September 30, 2013. An extension of one year was granted due to the lack of rainfall and water quality monitoring opportunities. This Compliance Plan has been prepared by the County, District, and City (the Parties) as specified in the General Exception. The Pollution Prevention Plan has been prepared under a separate cover.

1.1 Compliance Plan Objective and Scope

This Compliance Plan (Plan) documents the existing ASBS and ASBS watershed conditions and policies within the Parties' jurisdiction for the purpose of demonstrating either compliance with the point source discharges of storm water requirements specified in the General Exception Attachment B – *Special Protection for Areas of Special Biological Significance, Governing Point Source Discharges of Storm Water and Nonpoint Source Waste Discharge* (Special Protections), or describing the steps necessary to achieve compliance within the time frame allotted. This Plan focuses on point source discharges, which by this document are defined as outfalls that have associated storm networks that drain significant areas and that are entirely or partially maintained by an agency. Using this definition, point sources identified in this document coincide with conveyances that are equal to or greater than 18 inches in size (diameter or width) that discharge directly to the ASBS shoreline and the Parties maintain the outfall and/or inlets. Potential discharges from smaller pipes and conveyances (not defined as point sources) are defined in the Special Protections as nonpoint sources, and discussed in the Pollution Prevention Plan.

The following tasks associated with point source discharge locations and drainage areas were performed as part of the process to prepare this Plan:

- Preparing a map of the ASBS watershed showing surface drainage of storm water runoff and outfall locations (18 inches or greater in size).
- Preparing procedures to allow for future updates to the Compliance Plan map.
- Evaluations of compliance with the permitted point source discharges of storm water, which includes the prohibition of non-storm water discharges (i.e., discharges not composed entirely of storm water and not specifically allowed in accordance with Special Protections Section I.A.1.e).
- Assessment of the Parties' inspection policies.
- Collection and analysis of water quality samples in accordance with Section IV of the Special Protections.
- Assessment, using water quality sample results, of whether the storm water discharges are altering the natural water quality of the ASBS.
- Assessment of pollutant load reduction targets and outfall prioritization.
- Assessment of potential sources of anthropogenic sedimentation.
- Compilation of assessment and data into this Compliance Plan.
- Description of the nonstructural controls currently employed and planned in the future and implementation schedule

1.2 ASBS 24 Watershed Responsible Agencies

The Laguna Point to Latigo Point ASBS, also referred to as ASBS 24, stretches 24 miles, contains 11,842 marine acres, and is the largest ASBS along the mainland of Southern California. The boundary of ASBS 24 extends out from the mean high tide line at Laguna Point in Ventura County to either 1,000 ft. from shore or to the 100-ft isobath (whichever is greater) in a southwesterly direction to Latigo Point in Malibu, Los Angeles County.

This Plan includes the applicable drainage areas and point discharges that are the Parties' purview (i.e., drainage area is within either the jurisdiction of the City or Unincorporated County and/or the outfall ownership is either the County's or District's). These include the areas of the unincorporated County and City of Malibu along the coast south the Los Angeles County boundary and west of Latigo Point. Figure 1-1 shows the overall ASBS watershed within Los Angeles County, along with jurisdictional boundaries. Properties within the ASBS watershed in which the Parties do not have jurisdictional authority and thus are excluded from this Plan include, but are not limited to, federal lands, state parks, and state rights-of-way (see Section 2.1.2 for more information on these excluded properties).

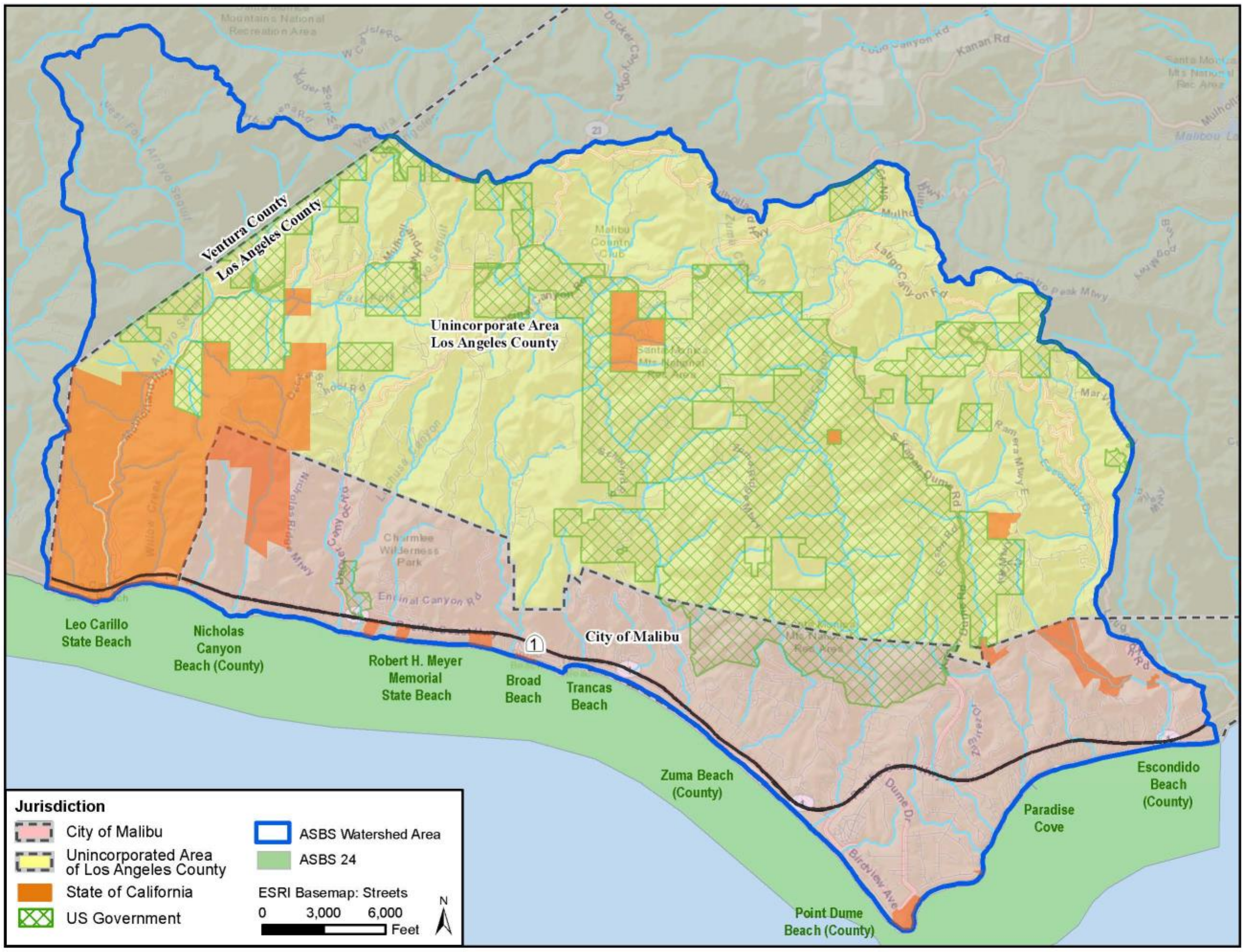

Figure 1-1. ASBS 24 Watershed and Jurisdictional Boundaries

2.0 ASBS 24 WATERSHED

2.1 General Site Conditions and Land Use

2.1.1 Topography

In general, the elevations within the ASBS 24 drainage area vary from sea level to 1,700 ft. above mean sea level (AMSL). Areas within the Santa Monica Mountains, typically north of the Pacific Coast Highway (PCH), contain steep hills, canyons, and valleys that drain to ASBS 24. These mountains consist of steep slopes with a 20% or greater gradient (SWRCB, 1979). Most of the developed areas along the coast lie below 100 ft., with the exception of the Point Dume and Malibu Park areas, which reach an elevation of approximately 500 ft. The hillsides and coastal mesas, such as Big Rock and Las Flores (both on the eastern end of town well outside of the ASBS), have elevations ranging from 300 to 400 ft. AMSL (City, 1995).

North of Broad Beach, extending to the County jurisdictional boundary, the coastal topography consists of narrow beaches adjacent to near-vertical natural bluffs that extend between 50 ft. to 200 ft. above mean sea level (alms). The mesas above the bluffs slope towards the coast at approximately 2% to 10%. The mesas extend inland and merge with the Santa Monica Mountains, which as previously stated are characterized by steep and rugged hillsides and valleys and canyons. The mesas have various valleys and canyons that coincide with the mountain valleys and canyons that provide the area with natural drainage to the ocean.

The area of Broad Beach south to Zuma County Beach is characterized, in general, by gentle seaward sloping natural topography (approximately 2 to 4%) with some near-vertical bluffs located further inland at varying distances from the ocean between approximately 1,000 ft. to 3,500 ft. and similar to those bluffs previously described.

The Point Dume area consists of narrow beaches followed by near vertical bluffs that extend from approximately 200 ft. northwest of the point to approximately 500 ft. northeast of the point. The mesa area above the beach is large and consists of sloping terrain which has formed high and low areas as well as valley and canyons that drain the area to the ocean. This topography continues northeast to approximately Escondido Beach, where the area has an approximately 10% gradient towards Escondido Creek.

South of Escondido Creek, the topography is similar to that of Broad Beach, with an area of gentle seaward sloping terrain along the ocean followed by relatively small inland bluffs and upland sloped areas.

2.1.2 Current Land Use

Land use data within the drainage area to the portion of ASBS 24 located south of the LA-Ventura County jurisdictional boundary were compiled and analyzed using GIS software and available land use data sources, including data provided by the City (2010 data for the City portion) and LACDPW (2008 data for the County portion). Both of these sources use Southern California Association of Governments (SCAG) land use codes. The SCAG classifications were generalized for inclusion into this document and for mapping purposes. Roads were not included in the land use; however, data were filled in with the mapping and analysis software.

Along the coast, the location of the County jurisdictional boundary coincides with a natural high point in the topography, and thus, the drainage area boundary follows the County jurisdiction boundary fairly well for a couple of miles inland. The land use analysis indicated that the overall drainage area to ASBS 24 includes approximately 31,400 acres, of which approximately 28,480 acres are located within the County jurisdictional boundary, and 2,900 acres are located in Ventura County.

The portion of the drainage area located within Ventura County is composed primarily of natural open space, mountainous terrain. The drainage area within the LA County portion is under the jurisdiction of multiple entities, including national parks, state parks, Unincorporated County, City of Malibu and Caltrans. The properties located south of the jurisdictional boundary are within the Unincorporated County and City's jurisdiction. However, several parcels have federal, state, or conservation authority ownership and are designated as National or State Parks. Table 2-1 summarizes land areas associated with the County and City and includes information on federal- and state-owned properties.

Table 2-1. Property Ownership Summary

Ownership	Unincorporated County Area (acres)	City of Malibu Area (acres)	Total (acres)
Federal	7,490	740	8,230
State	2,330	520	2,850
Conservation Authority/Conservancy	300	10	310
Remainder (Non-specified)	10,140	6,950	17,090
Total	**20,260**	**8,220**	**28,480**

The general land use within the drainage area is approximately 86.1% open space public lands; 4.9% low-density residential; 4.8% very-low-density residential; 2.6% medium-density residential; and about 1.6% either low-density commercial, industrial, high-density residential, planned development, high-density commercial, water, urban reserve, and mixed use (SWRCB, 2012c).

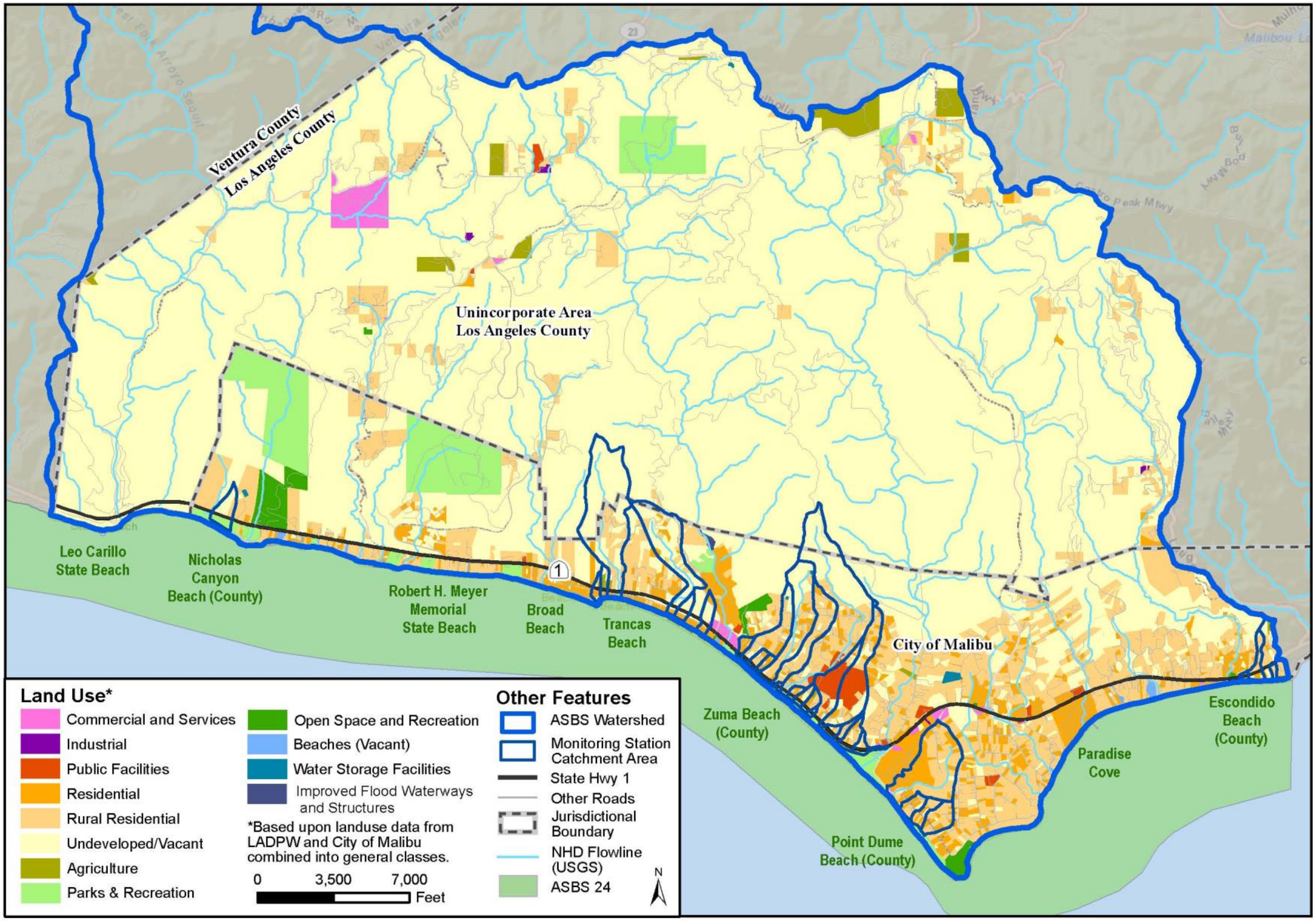

Figure 2-1. ASBS 24 Drainage Area Land Use Map

2.2 Geological Setting

2.2.1 Regional Geology

The ASBS 24 coastal drainage area is composed of an extremely complex geology that has resulted from the geologic uplift which formed the Santa Monica Mountains. The area is located within the northwestern corner of the Los Angeles basin, which lies at the boundary or juncture between two major geomorphic or structural provinces of southern California: 1) the Peninsular Ranges province, consisting primarily of a northwest-oriented structural grain; and 2) the Transverse Ranges structural province, which features a predominantly east-west-oriented structural grain. The Los Angeles structural basin originated roughly 16 million years ago in what is designated the Miocene geologic epoch. However, the Los Angeles basin area, in general, has been a site of continuous sedimentary deposition for at least the past 80 million years. The sedimentary rocks underlying the Santa Monica Mountains in the ASBS 24 drainage area are generally highly folded and complexly faulted (City, 1995).

2.2.2 ASBS 24 Geology

The Malibu Coast fault runs in an east-west alignment within the ASBS 24 drainage area. The fault is a boundary between two very different geologic terranes: to the south, Catalina Schist is overlain by Miocene and younger deposits; and to the north, Santa Monica Slate and plutonic granodiorite is overlain by Upper Cretaceous through upper Miocene deposits (i.e., Santa Monica Mountains) (Yerkes and Campbell, 1979). The fault is aligned in a near east-west direction following the coast line from the County’s north jurisdictional boundary east to Lechuza Point. East of Lechuza Point the fault continues in a near east-west alignment to Corral Beach (east of ASBS 24). The fault continues east along the coastline (NPS, 2007). North of the Malibu Coast fault, the local bedrock structure of the Santa Monica Mountains can be modeled as an asymmetric, south-vergent, westward-plunging anticline, including sandstone and siltstone bedrock (e.g., Tuna Canyon Formation, Sespe Formation, Vaqueros Formation, and Topanga Group). South of the Malibu Coast fault, the ductile bedrock units, Trancas and Monterey Formations, contain a high percentage of shales, mudstones, and diatomaceous rocks that exhibit complex folding and pervasive shearing (City, 1995).

The majority of the area along the Malibu coast comprises the Santa Monica Mountains. The portion of the ASBS 24 and uplands areas between Point Mugu, which is north of the County’s jurisdictional boundary and La Piedra State Beach, comprise the Santa Monica Mountains formations. North of Point Mugu, the coastal area consists of low-lying land that comprises the Ventura-Oxnard Alluvial Plain. The Malibu Coast fault separates the Santa Monica Mountains from the coastal formations between La Piedra State Beach and Corral Beach. The portion of ASBS 24 between La Piedra State Beach area and the south extents of Broad Beach, south of the Malibu Coast Fault, consists of Malibu Bluff Coast Trancas Formation. The Trancas Formation consists chiefly of sandstone, mudstone, silty shale, and claystone. This formation extends north (upland from the ocean), varying distances between a few hundred feet to a few thousand feet. Southeast of Broad Beach, the ASBS and entire upland coastal area, bound to the north by the Malibu Coast Fault, comprise the Malibu Bluff Coast Monterey/Modelo Formation (SWRCB, 1979). The Monterey Formation consists of marine clay shale and laminated to platy siltstone that are variably diatomaceous, bituminous, phosphatic, siliceous, or cherty, and interbedded altered vitric tuffs and fine- to medium-grained sandstone that locally is schist bearing.

The Malibu bluff coast is triangular with its widest point at Point Dume. This region is structurally the most complex within the ASBS. The rocks are highly folded and steeply dipping so that very different rock types lie next to each other. The western part of this bluff coast from little Sycamore Canyon to Trancas Beach is made up of older Tertiary (Miocene) erosion-resistant rocks of the Trancas Formation. The white cliffs of Paradise Cove are outcrops of the Miocene age Modelo Formation which forms steep inclined bids from Zuma Beach eastward to Corral Beach. This formation is predominantly siliceous shale and was probably formed in the deep sea. The headland at Point Dume is highly resistant igneous breccia which has protected the softer sedimentary shale behind it from erosion. In addition to the Miocene deposits, there is an irregular veneer of Pleistocene marine terrace deposits on the bluff between the ocean and the mountains adjacent to the eastern section of the ASBS. This is a reddish, poorly stratified, and sorted material, which is soft and easily dissected. It tends to form steep-sided stream gullies and sea cliffs (SWRCB, 2008).

The geologic features within the ASBS 24 drainage area are shown in Figure 2-2. Map symbols used along the coastal area were defined using the National Geologic Map Database. Pleistocene marine terrace deposits along the shoreline include the Trancas and Monterey Formations. The symbols used to depict general costal geologic features in Figure 2-2 include the following:

- Qa – Alluvial gravel, sand, and clay of flood plains.
- Qaf – Artificial cut and fill.
- Qao – Older dissected alluvial gravel, sand and clay; on coastal area deposited in part on a wave-cut platform, forms several terraces.
- Qg – Gravel and sand of major stream channels.
- Qls – Landslide debris.
- Qos – Old dune sand at Point Dume.
- Qs – Beach Sand.
- Tr – Trancas Formation composed of marine sandstone, mudstone, silty shale, and claystone.
- Tmt – Modelo/Monterey Formation composed of marine clay shale and laminated to platy siltstone with sandstone.

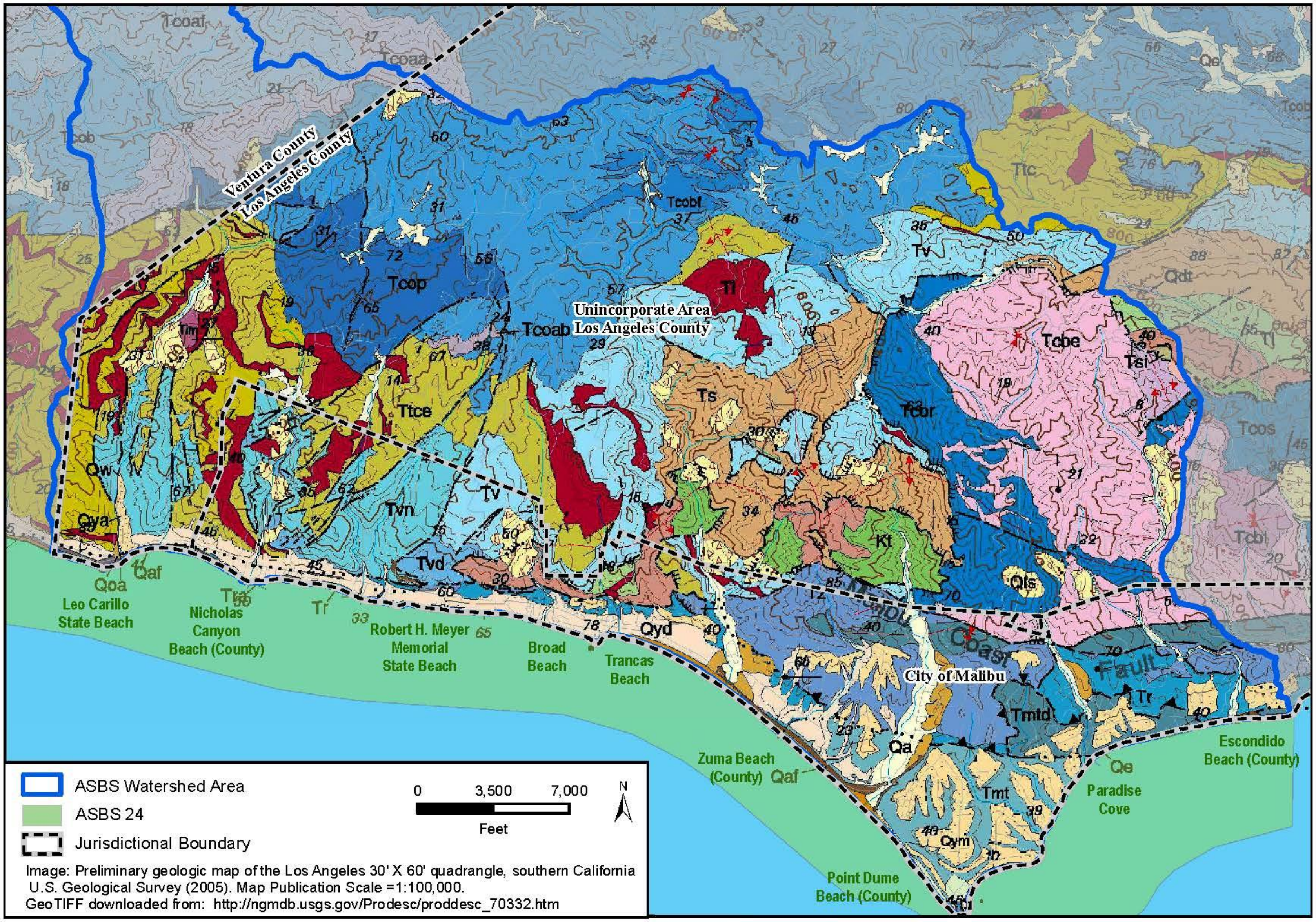

Figure 2-2. Geology Map of Overall ASBS 24 Drainage Area

2.3 Site Hydrology

The Santa Monica Mountains within the ASBS watershed generally slope towards the south to southwest. Except for the lower laying and relatively flat portion of the coast north of Point Dume extending to Broad Beach, the coast is lined with a steep bluff area that varies in height. Slopes along the coast above the bluff are gentle to moderate, with gradients typically between 2% and 20%. Inland, the watershed consists of much steeper terrain (typically 3:1 or steeper) covered with native coastal vegetation.

The Santa Monica Mountains have formed various peaks and valleys that collect runoff into 21 natural streams and gullies that drain to ASBS 24. Outside of this network of natural streams, 39 storm drain outfalls 18 inches in diameter or larger fall under the Parties' responsibility. Typically, the drainage areas to these outfalls consist of open space and/or development. The areas of development primarily include residential properties occupied by single-family dwellings surrounded by maintained landscaping along with associated roadways. The state-maintained PCH with various associated storm drain inlets extends across the length of the watershed near the coastline.

2.4 Monitoring Activities

2.4.1 2013 Regional Monitoring Program

As part of the exception process, LACDPW and the City participated in the Bight 2008 and Bight 2013 ASBS Planning Committee (Committee) with the State Board, the Southern California Coastal Water Research Project (SCCWRP), and other ASBS dischargers in Southern California. Together, the Committee developed a Regional ASBS Work Plan that is based on the Special Protections document. The Regional ASBS Work Plan is intended to provide compliance guidance to applicants of the General Exception in Southern California that wish to participate in the Southern California Bight 2013 Regional Monitoring Program (Bight 2013).

All outfalls that are equal to or greater than 18 inches in diameter are required to be monitored for oil and grease, total suspended solids (TSS), and toxicity, while outfalls that are equal to or greater than 36 inches in diameter are required to be monitored for metals, polynuclear aromatic hydrocarbons (PAHs), pyrethroids, organophosphorus pesticides, and nutrients (ammonia, nitrate, and phosphates) in addition to oil and grease, TSS, and toxicity. Furthermore, each discharger participating in the Regional Monitoring Program is required to monitor one ocean receiving water station which is representative of worst-case discharge conditions (i.e., co-located at a large drain greater than 36 inches, if possible).

As participants in the Bight 2013, LACDPW monitored 21 storm drains along ASBS 24, nine of which are operated by LACFCD, and 12 of which are operated by the County. Additionally, the City of Malibu, which owns storm drain inlets that drain to ASBS 24 via outfalls that are privately owned, monitor three outfalls located along Broad Beach; other private outfalls with City maintained inlets were not proposed to be monitored due to being inaccessible.

The ASBS Special Protections monitoring data used in this document were collected and analyzed during the 2012-2013 and 2013-2014 wet seasons. The monitoring performed complies with the monitoring requirements of the Regional Monitoring Program through the identification of water quality impacts to ASBS 24 during storm events. The Special Protections document describes the following two types of monitoring programs:

1. **Core Discharge Monitoring** – collecting and analyzing wet weather runoff from the discharge of outfalls during a storm event.
2. **Ocean Receiving Water Monitoring** – collecting and analyzing samples from the ocean before and after a storm event at two locations (i.e., directly in front of the discharge and at a reference site removed from the discharge). For the monitoring performed during the 2012-2014 wet weather season, ocean receiving water monitoring at the discharge site was the responsibility of the discharger, while reference station monitoring was performed by SCCWRP.

2.5 ASBS 24 OUTFALL DESCRIPTIONS

A description of the point source outfalls is provided that includes the location, size, ownership, and tributary general land use. LACDPW identified 11 storm drain outfalls having a diameter equal to or greater than 18 inches that drain to ASBS 24 and are owned and maintained by the County. Nine storm drain outfalls that have a diameter greater than or equal to 18 inches and drain to ASBS 24 are owned and maintained by the District. These nine outfalls occur along Broad Beach and Escondido Beach and convey runoff from upstream neighborhoods and PCH. The City identified eight privately owned storm drain outfalls with City maintained inlets that have diameters equal to or greater than 18 inches. These storm drains convey runoff from Broad Beach Road and Wildlife Road to the storm drain outfalls located along Broad Beach and the seaside cliffs of Little Dume Cove. An additional 10 storm drain outfalls are currently of undetermined ownership. These storm drains with undetermined ownership convey flow from PCH and upstream neighborhoods. These 39 storm drain outfalls are considered point source discharges of storm water to ASBS 24 and are described in the following section. Figure 2-3 shows the outfall locations.

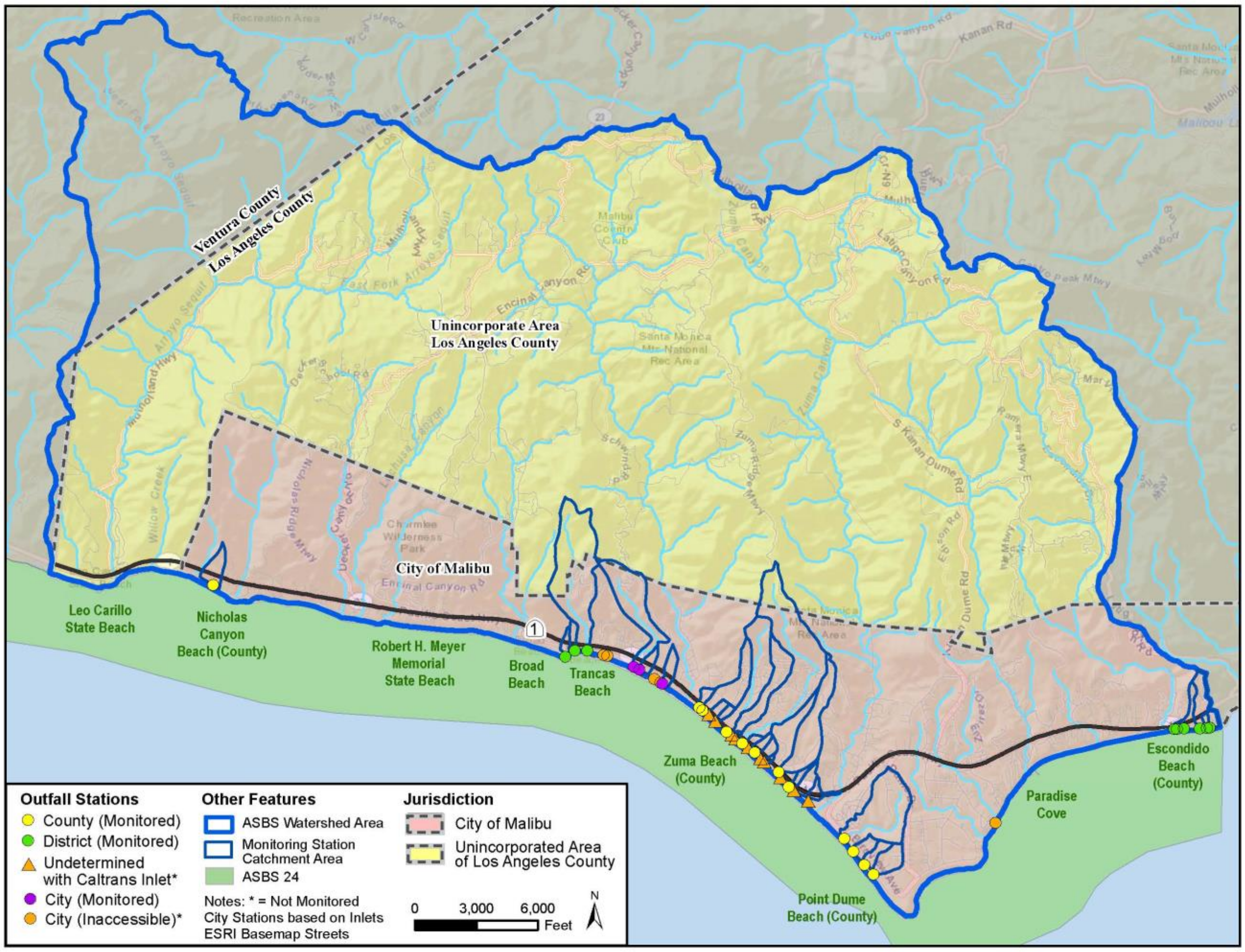

Figure 2-3. ASBS Outfall Location Map

2.5.1 County Outfalls

The 11 outfalls that fall under the jurisdiction of the County are located along Zuma Beach (six outfalls), Westward Beach (four outfalls) and Nicholas Beach (one outfall). The location of each County outfall is provided on Table 2-2 and show in Figure 2-4. A summary, including the diameter, monitoring data collected at each outfall pipe, and the observed flow connection (or absence), is provided on Table 2-3. A description of each outfall is provided in the text following Figure 2-4.

Table 2-2. County Outfall Locations and Diameters

Beach Location	Site Name	Latitude	Longitude	Pipe Diameter (inches)
Zuma Beach	ASBS-004	34.028038	-118.840179	24
	ASBS-005	34.027683	-118.839637	36
	ASBS-008	34.024833	-118.835784	24
	ASBS-011	34.023258	-118.833213	24
	ASBS-013	34.022087	-118.83123	18
	ASBS-016	34.019493	-118.827316	60
	ASBS-018	34.01749	-118.825668	24
Westward Beach	ASBS-021	34.010665	-118.816688	48
	ASBS-022	34.00893	-118.815261	36
	ASBS-023	34.007139	-118.81343	42
	ASBS-024	34.005847	-118.811958	24
Nicholas Beach	ASBS-031	34.043883	-118.918621	22

Table 2-3. County Outfall Diameters, Collected Monitoring Data, and Flow Summary

Beach Location	Site Name	Pipe Diameter (in)	Analyses Performed	Storm Events Analyzed			Did flow reach receiving water?		
				2/19/2013	3/8/2013	2/28/2014	2/19/2013	3/8/2013	2/28/2014
Zuma Beach	ASBS-004	24	TSS, O&G, Bivalve Toxicity	x	x	x	Yes	No	Yes
	ASBS-005	36	Full Chem. List*; Bivalve Toxicity	x	x	x	No	No	Yes
	ASBS-008	24	TSS, O&G, Bivalve Toxicity	Not Monitored	x	Not Monitored	Unknown	No	Unknown
	ASBS-011	24	TSS, O&G, Bivalve Toxicity	x	x	x	No	No	No
	ASBS-013	18	TSS, O&G, Bivalve Toxicity	No Flow	x	x	No	No	No
	ASBS-016**	60	Full Chem. List*; Bivalve Toxicity	No Flow	x	x	No	No	Yes
	ASBS-018	24	TSS, O&G, Bivalve Toxicity	**x**	**x**	**x**	No	No	No
Westward Beach	ASBS-021	48	Full Chem. List*; Bivalve Toxicity	**x**	**x**	**x**	No	Yes	Yes
	ASBS-022	36	Full Chem. List*; Bivalve Toxicity	**x**	**x**	**x**	No	No	Yes
	ASBS-023	42	Full Chem. List*; Bivalve Toxicity	**x**	**x**	**x**	No	No	No
	ASBS-024	24	TSS, O&G, Bivalve Toxicity	**x**	**x**	**x**	No	No	Yes
Nicholas Beach	ASBS-031	22	TSS, O&G, Bivalve Toxicity	**No Flow**	**No Flow**	**No Flow**	No	No	No
Ocean Receiving Water	S01	n/a	Full Chem. List*; Kelp, Bivalve, and Echinoderm Toxicity	No Flow to ocean from ASBS-016	No Flow to ocean from ASBS-016		Not Applicable		

*Full chemistry list= TSS, oil and grease, metals, PAHs, pyrethroids, OP pesticides, ammonia, nitrate and total phosphorus.

* *Flow monitoring equipment installed in this outfall pipe.

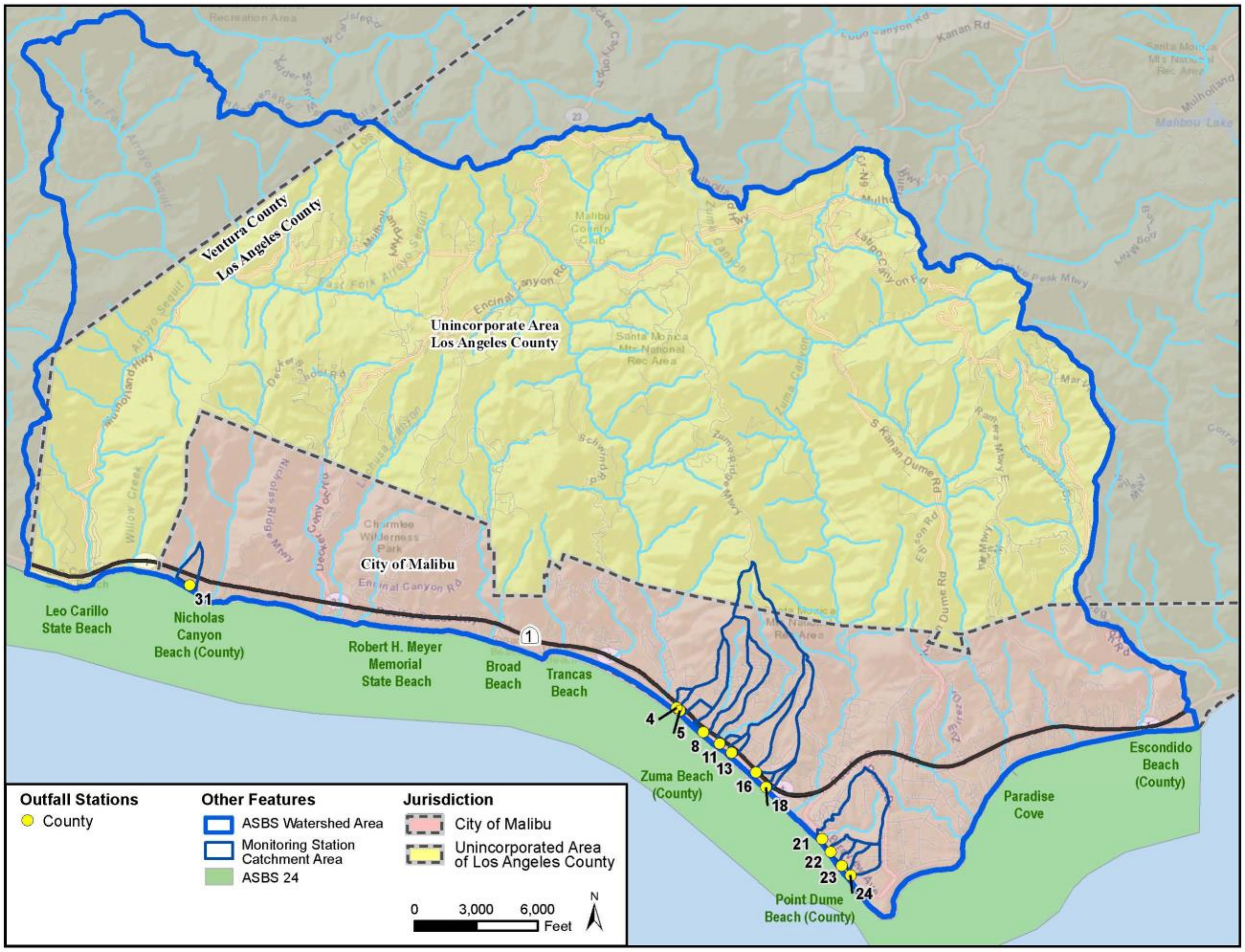

Figure 2-4. County ASBS Outfall Location Map

Zuma Beach Outfalls

ASBS-004 is a 24-inch outfall located at the northern end of Zuma Beach, adjacent to the northernmost parking lot along Zuma Beach Access Road (Figure 2-5). This outfall is accessible during all tides and was sampled during three monitored storm events (February 19 and March 8, 2013 and February 28, 2014). The watershed draining to ASBS-004 is 9.8 acres in size and the surrounding landscape at ASBS-004 consists of a gradually sloping, broad sandy beach.

Figure 2-5. ASBS-004 Outfall

ASBS-005 is a 36-inch outfall located at the northern end of Zuma Beach, adjacent to the northernmost parking lot along Zuma Beach Access Road, and directly across from the intersection of Guernsey Avenue with PCH (Figure 2-6). This outfall is accessible during all tides and was sampled during the February 19, March 8, 2013, and February 28, 2014, storm events. The watershed draining to ASBS-005 is 65.8 acres in size and the surrounding landscape at ASBS-005 consists of a gradually sloping, broad sandy beach.

Figure 2-6. ASBS-005 Outfall

ASBS-008 is a 24-inch outfall located at the northern end of Zuma Beach, near a parking lot along Zuma Beach Access Road (Figure 2-7). This outfall is accessible during all tides and was sampled during the March 8, 2013, storm event (it was added to the list of monitored sites following the February 19, 2013, storm event). The watershed draining to ASBS-008 is 114.8 acres in size and the surrounding landscape at ASBS-008 consists of a gradually sloping, broad sandy beach.

Figure 2-7. ASBS-008 Outfall

ASBS-011 is a 24-inch outfall located in middle portion of Zuma Beach, adjacent to a parking lot along Zuma Beach Access Road (Figure 2-8). This outfall is accessible during all tides and was sampled during three monitored storm events (February 19 and March 8, 2013, and February 28, 2014). The watershed draining to ASBS-011 is 7.0 acres in size and the surrounding landscape at ASBS-011 consists of a gradually sloping, broad sandy beach.

Figure 2-8. ASBS-011 Outfall

ASBS-013 is an 18-inch outfall located in middle portion of Zuma Beach, adjacent to a parking lot along Zuma Beach Access Road (Figure 2-9). This outfall is accessible during all tides and was sampled during only the March 8, 2013, and February 28, 2014, storm events, as it did not flow during the February 19, 2013, storm event. The watershed draining to ASBS-013 is 10.4 acres in size and the surrounding landscape at ASBS-013 consists of a gradually sloping, broad sandy beach.

Figure 2-9. ASBS-013 Outfall

ASBS-016 is a 60-inch outfall located in middle portion of Zuma Beach, adjacent to a parking lot along Zuma Beach Access Road (Figure 2-10). This box culvert outfall is accessible during all tides and was sampled during only the March 8, 2013, and February 28, 2014, storm events, as it did not flow during the February 19, 2013, storm event. Flow monitoring equipment was installed in this outfall. The watershed draining to ASBS-016 is 115.1 acres in size and the surrounding landscape at ASBS-016 consists of a gradually sloping, broad sandy beach.

Figure 2-10. ASBS-016 Outfall

ASBS-018 is a 24-inch outfall located at the southern end of Zuma Beach, adjacent to a lifeguard station in the middle of the beach off Zuma Beach Access Road (Figure 2-11). This outfall is accessible during all tides and was sampled during three monitored storm events (February 19 and March 8, 2013, and February 28, 2014). The watershed draining to ASBS-018 is 10.0 acres in size and the surrounding landscape consists of a gradually sloping, broad sandy beach.

Figure 2-11. ASBS-018 Outfall

Westward Beach Outfalls

ASBS-021 is a 48-inch outfall located at the northern end of Westward Beach, adjacent to an entrance gate near the intersection of Birdview Ave. and Westward Beach Road (Figure 2-12). This outfall is accessible during all tides and was sampled during three monitored storm events (February 19 and March 8, 2013, and February 28, 2014).The watershed draining to ASBS-021 is 170 acres in size and the surrounding landscape at ASBS-021 consists of a gradually sloping, broad sandy beach.

Figure 2-12. ASBS-021 Outfall

ASBS-022 is a 36-inch outfall located at the northern end of Westward Beach, midway between the entrance gate and the edge of the parking lot on Westward Beach Road (Figure 2-13). This outfall is accessible during all tides and was sampled during three monitored storm events (February 19 and March 8, 2013, and February 28, 2014).. The watershed draining to ASBS-022 is 18.4 acres in size and the surrounding landscape at ASBS-022 consists of a gradually sloping, broad sandy beach.

Figure 2-13. ASBS-022 Outfall

ASBS-023 is a 42-inch outfall located in the middle portion of Westward Beach, approximately 100 meters (m) north of the parking lot on Westward Beach Road (Figure 2-14). This outfall is difficult to find since it is hidden by ice plant. ASBS-023 is accessible during all tides and was sampled during three monitored storm events (February 19 and March 8, 2013, and February 28, 2014). The watershed draining to ASBS-023 is 18.4 acres in size and the surrounding landscape at ASBS-023 consists of a gradually sloping, broad sandy beach.

Figure 2-14. ASBS-023 Outfall

ASBS-024 is a 24-inch outfall located in the middle portion of Westward Beach, approximately 100 m south of the edge of the parking lot on Westward Beach Road (Figure 2-15). This outfall is accessible during all tides and was sampled during three monitored storm events (February 19 and March 8, 2013, and February 28, 2014). The watershed draining to ASBS-024 is 34.9 acres in size and the surrounding landscape at ASBS-024 consists of a gradually sloping, broad sandy beach.

Figure 2-15. ASBS-024 Outfall

Nicholas Beach Outfall

ASBS-031 is a 22-inch outfall located in the middle portion of Nicholas Beach, at the base of Nicholas Beach Road (Figure 2-16). This outfall is accessible during all tides; however, no flow was observed during either of the monitored storm events. The watershed draining to ASBS-031 is 30.1 acres in size and the surrounding landscape at ASBS-031 consists of a gradually sloping, broad sandy beach.

Figure 2-16. ASBS-031 Outfall

2.5.2 Outfalls Whose Ownership is Undetermined [With Inlets Owned by Caltrans]

Along Zuma Beach, 10 outfalls drain to ASBS 24 and are equal to or greater than 18 inches in diameter; however, ownership has not been determined. These outfalls have inlets maintained by Caltrans. A brief summary of the location and diameter of each of these outfalls with undetermined ownership is provided on Table 2-4, and Figure 2-17 shows the outfall locations. A description of each outfall is provided in the text that follows Figure 2-17.

Table 2-4. Locations and Diameters of Outfalls with Undetermined Ownership

Beach Location	Site Name	Latitude	Longitude	Pipe diameter (inches)
Zuma Beach	ASBS-006	34.027069	-118.838623	24
	ASBS-007	34.026184	-118.837539	24
	ASBS-009	34.024349	-118.834899	24
	ASBS-010	34.023872	-118.834304	18
	ASBS-012	34.022735	-118.832267	24
	ASBS-014	34.021247	-118.830307	24
	ASBS-015	34.02082	-118.829696	18
	ASBS-017	34.018711	-118.827049	30
	ASBS-019	34.016979	-118.824882	24
	ASBS-020	34.015602	-118.822525	36

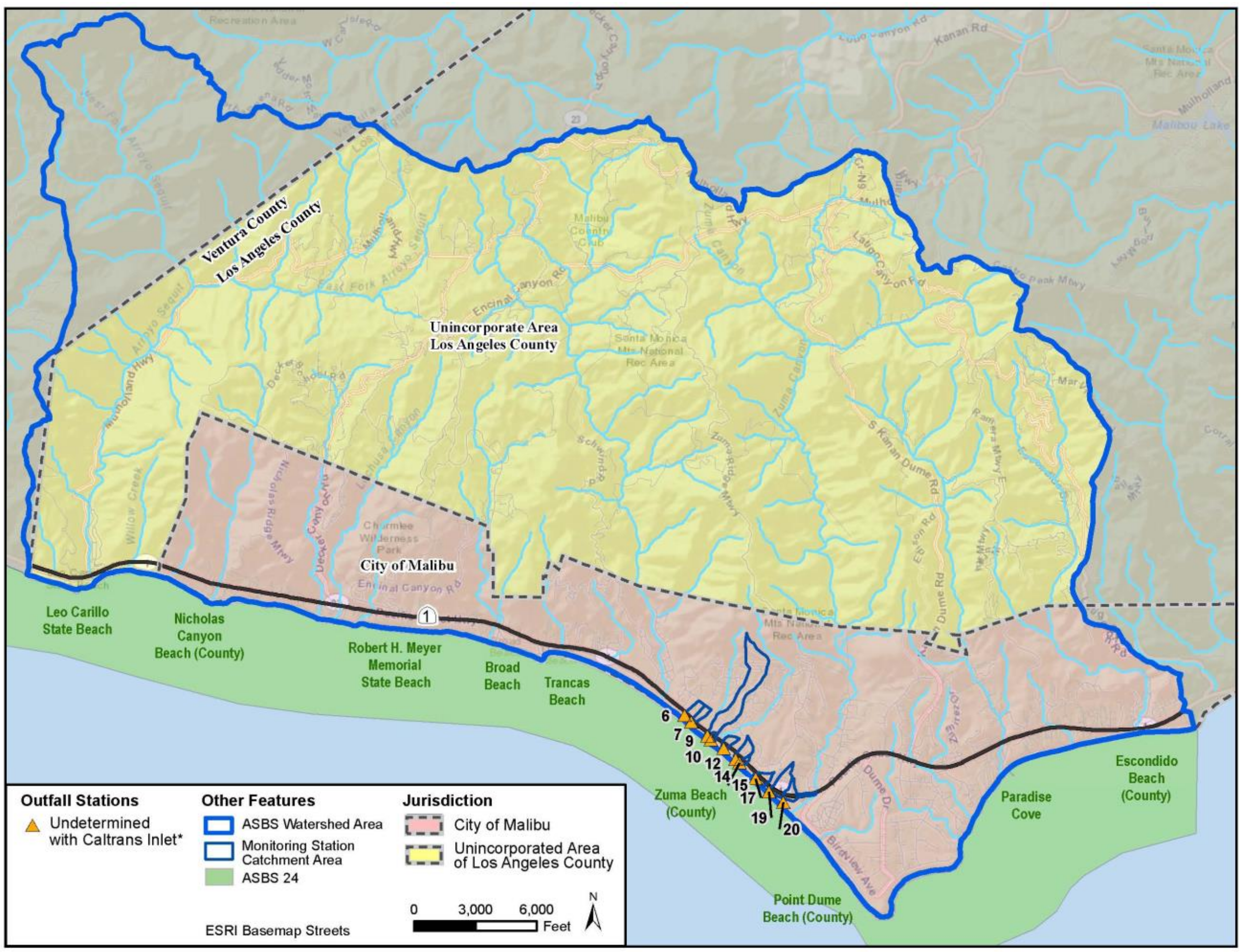

Figure 2-17. Undetermined Ownership (with Caltrans Inlets) ASBS Outfall Location Map

Zuma Beach Outfalls

ASBS-006 is a 24-inch outfall located in the northern portion of Zuma Beach, adjacent to a parking lot along Zuma Beach Access Road (Figure 2-18). The watershed draining to ASBS-006 is 10.2 acres in size and the surrounding landscape at ASBS-006 consists of a gradually sloping, broad sandy beach.

Figure 2-18. ASBS-006 Outfall

ASBS-007 is a 24-inch outfall located in the northern portion of Zuma Beach, adjacent to a parking lot along Zuma Beach Access Road (Figure 2-19). The watershed draining to ASBS-007 is 7.8 acres in size and the surrounding landscape at the outfall consists of a gradually sloping, broad sandy beach.

Figure 2-19. ASBS-007 Outfall

ASBS-009 is a 24-inch outfall located in the middle portion of Zuma Beach, adjacent to a parking lot along Zuma Beach Access Road, approximately 90 m south of Seadrift Cove (Figure 2-20). The watershed draining to ASBS-009 is 78.6 acres in size and the surrounding landscape at ASBS-009 consists of a gradually sloping, broad sandy beach.

Figure 2-20. ASBS-009 Outfall

ASBS-010 is an 18-inch outfall located in the middle portion of Zuma Beach, adjacent to a parking lot along Zuma Beach Access Road, approximately 170 m south of Seadrift Cove (Figure 2-21). The watershed draining to ASBS-010 is 2.4 acres in size and the surrounding landscape at ASBS-010 consists of a gradually sloping, broad sandy beach.

Figure 2-21. ASBS-010 Outfall

ASBS-012 is a 24-inch outfall located in the middle portion of Zuma Beach, adjacent to a parking lot along Zuma Beach Access Road, approximately 400 m south of Seadrift Cove (Figure 2-22). The watershed draining to ASBS-012 is 7.0 acres in size and the surrounding landscape at ASBS-012 consists of a gradually sloping, broad sandy beach.

Figure 2-22. ASBS-012 Outfall

ASBS-014 is a 24-inch outfall located in the middle portion of Zuma Beach, adjacent to a parking lot along Zuma Beach Access Road, directly in front of the Beaches and Harbors maintenance yard (Figure 2-23). The watershed draining to ASBS-014 is 12.1 acres in size and the surrounding landscape at ASBS-014 consists of a gradually sloping, broad sandy beach.

Figure 2-23. ASBS-014 Outfall

ASBS-015 is an 18-inch outfall located in the middle portion of Zuma Beach, adjacent to a parking lot along Zuma Beach Access Road, approximately 65 m south of the Beaches and Harbors maintenance yard (Figure 2-24). The watershed draining to ASBS-015 is 3.0 acres in size and the surrounding landscape at ASBS-015 consists of a gradually sloping, broad sandy beach.

Figure 2-24. ASBS-015 Outfall

ASBS-017 is an 18-inch outfall located in the southern portion of Zuma Beach, adjacent to a parking lot along Zuma Beach Access Road, directly in front of a helicopter landing pad (Figure 2-25). The watershed draining to ASBS-017 is 8.8 acres in size and the surrounding landscape at ASBS-017 consists of a gradually sloping, broad sandy beach.

Figure 2-25. ASBS-017 Outfall

ASBS-019 is a 24-inch outfall located in the southern portion of Zuma Beach, adjacent to a parking lot along Zuma Beach Access Road, approximately 420 m north of the Zuma Beach entrance gate (Figure 2-26). The watershed draining to ASBS-019 is 20.8 acres in size and the surrounding landscape at the outfall consists of a gradually sloping, broad sandy beach.

Figure 2-26. ASBS-019 Outfall

ASBS-020 is a 36-inch outfall located in the southern portion of Zuma Beach, adjacent to a parking lot along Zuma Beach Access Road, approximately 200 m north of the Zuma Beach entrance gate, in the center of the beach (Figure 2-27). The watershed draining to ASBS-020 is 12.3 acres in size and the surrounding landscape at ASBS-020 consists of a gradually sloping, broad sandy beach.

Figure 2-27. ASBS-020 Outfall

2.5.3 District Outfalls

The nine outfalls that fall under the jurisdiction of the District are located along Broad Beach (three outfalls) and Escondido Beach (six outfalls). The location of each County Outfall is provided on Table 2-5 and shown on Figure 2-28. A summary, including the diameter, monitoring data collected at each outfall pipe, and the observed flow connection (or absence), is provided on Table 2-6. A description of each outfall is provided in the text following Figure 2-28.

Table 2-5. District Outfall Locations and Diameters

Beach Location	Site Name	Latitude	Longitude	Pipe Diameter (inches)
Broad Beach	ASBS-001	34.034702	-118.861846	24
	ASBS-002	34.035556	-118.860328	18
	ASBS-003	34.035526	-118.858276	51
Escondido Beach	ASBS-025	34.025646	-118.763717	18
	ASBS-026	34.025653	-118.763336	24
	ASBS-027	34.025726	-118.762153	24
	ASBS-028	34.025772	-118.75962	36
	ASBS-029	34.025856	-118.758468	18
	ASBS-030	34.025897	-118.757987	18

Table 2-6. District Outfall Locations, Diameters, and Monitoring Information

Beach Location	Site Name	Pipe Diameter (in)	Analyses Performed	Storm Events Analyzed			Did flow reach receiving water?		
				2/19/2013	3/8/2013	2/28/2014	2/19/2013	3/8/2013	2/28/2014
Broad Beach	ASBS-001	24	TSS, O&G, Bivalve Toxicity	x	x	x	Yes	Yes	Yes
	ASBS-002	18	TSS, O&G, Bivalve Toxicity	x	x	x	Yes	Yes	Yes
	ASBS-003	51	Full Chem. List*; Bivalve Toxicity	x	x	x	Yes	Yes	Yes
Escondido Beach	ASBS-025	18	TSS, O&G, Bivalve Toxicity	x	x	x	Yes	Yes	Yes
	ASBS-026	24	TSS, O&G, Bivalve Toxicity	x	x	x	Yes	Yes	Yes
	ASBS-027	24	TSS, O&G, Bivalve Toxicity	x	x	x	Yes	No	Yes
	ASBS-028**	36	Full Chem. List*; Bivalve Toxicity	x	x	x	Yes	Yes	Yes
	ASBS-029	18	TSS, O&G, Bivalve Toxicity	x	x	x	Yes	No	Yes
	ASBS-030	18	TSS, O&G, Bivalve Toxicity	x	x	x	No	No	Yes
Ocean Receiving Water	S02	N/A	Full Chem. List*; Kelp, Bivalve, and Echinoderm Toxicity	x	x	x	Not applicable		

*Full chemistry list= TSS, oil and grease, metals, PAHs, pyrethroids, OP pesticides, ammonia, nitrate and total phosphorus.

* *Flow monitoring equipment installed in this outfall pipe.

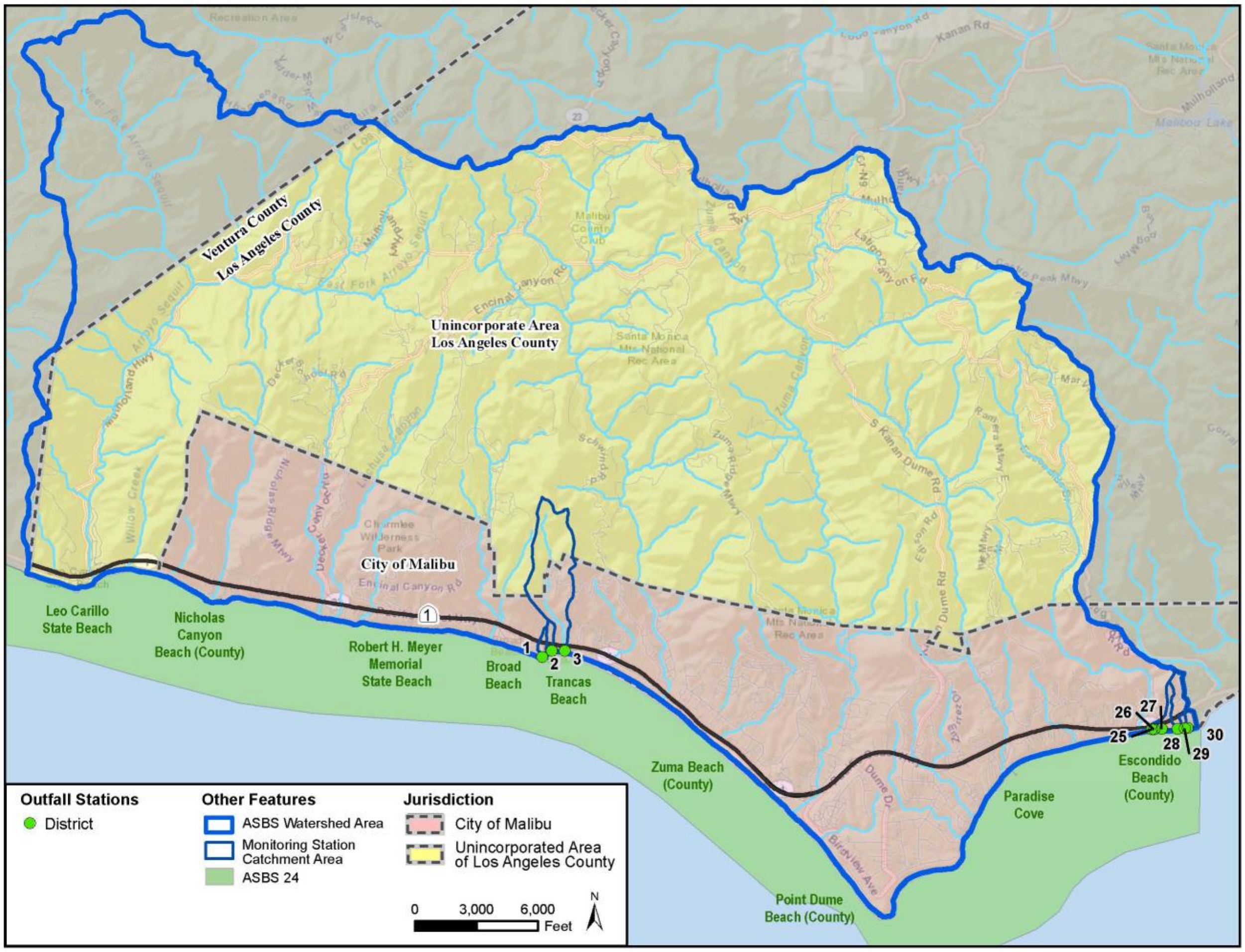

Figure 2-28. District ASBS Outfall Location Map

Broad Beach Outfalls

ASBS-001 is a 24-inch outfall located at the northern end of Broad Beach, along Point Lechuza, beneath a large residence (Figure 2-29). This outfall is inaccessible during high tide and was sampled during three monitored storm events (February 19 and March 8, 2013, and February 28, 2014) from a manhole located approximately 140 ft. from the beach on Point Lechuza Drive. The watershed draining to ASBS-001 is 9.4 acres in size and the area surrounding the outfall consists of a rocky intertidal area interspersed along a narrow, sandy beach.

Figure 2-29. ASBS-001 Outfall

ASBS-002 is an 18-inch outfall located at the northern end of Broad Beach, south of Point Lechuza, adjacent to a residence that was undergoing construction (Figure 2-30). This outfall is inaccessible during high tide but was successfully sampled during three monitored storm events (February 19 and March 8, 2013, and February 28, 2014).The watershed draining to ASBS-002 is 11.0 acres in size and the area surrounding the outfall consists of a narrow, sandy beach with intermittent rocky reef.

Figure 2-30. ASBS-002 Outfall

ASBS-003 is a 51-inch outfall located at the northern end of Broad Beach, south of Point Lechuza, between two residences (Figure 2-31). This outfall is inaccessible during high tide but was successfully sampled during three monitored storm events (February 19 and March 8, 2013 and February 28, 2014). The watershed draining to ASBS-003 is 253.5 acres in size and a rocky intertidal area is located directly west of the outfall.

Figure 2-31. ASBS-003 Outfall

Escondido Beach Outfalls

ASBS-025 is an 18-inch outfall located at the southern end of Escondido Beach, south of the Malibu Cove Colony Drive entrance off PCH (Figure 2-32). The outfall is integrated with the foundation of a residence and discharges directly onto the sand between two residences. This outfall is inaccessible during high tide but was successfully sampled during three monitored storm events (February 19 and March 8, 2013, and February 28, 2014). The watershed draining to ASBS-025 is 0.8 acres in size and the landscape surrounding the outfall is composed of a steep, sandy beach.

Figure 2-32. ASBS-025 Outfall

ASBS-026 is a 24-inch outfall located at the southern end of Escondido Beach, south of the Malibu Cove Colony Drive entrance off PCH (approximately 30 m southeast of ASBS-025). The outfall is integrated with the foundation of a residence and discharges directly onto the sand beneath the residence (Figure 2-33). This outfall is inaccessible during high tide but was successfully sampled during three monitored storm events (February 19 and March 8, 2013, and February 28, 2014). The watershed draining to ASBS-026 is 2.5 acres in size and the landscape surrounding the outfall is composed of a steep, sandy beach.

Figure 2-33. ASBS-026 Outfall

ASBS-027 is a 24-inch outfall located at the southern end of Escondido Beach, approximately 300 m east of the Malibu Cove Colony Drive entrance off PCH (Figure 2-34). The outfall is integrated with the foundation of a residence and discharges directly onto the sand beneath the residence. This outfall is inaccessible during high tide but was successfully sampled during three monitored storm events (February 19 and March 8, 2013, and February 28, 2014). The watershed draining to ASBS-027 is 18.9 acres in size and the landscape surrounding the outfall is composed of a steep, sandy beach.

Figure 2-34. ASBS-027 Outfall

ASBS-028 is a 36-inch outfall located at the southern end of Escondido Beach, approximately 500 m east of the Malibu Cove Colony Drive entrance off PCH (Figure 2-35). The outfall is integrated with the foundation of a residence and discharges directly onto the sand beneath the residence. Flow monitoring equipment was installed in this outfall near the inlet on Malibu Cove Colony Drive. This outfall is inaccessible during high tide but was successfully sampled during three monitored storm events (February 19 and March 8, 2013, and February 28, 2014). The watershed draining to ASBS-028 is 36.0 acres in size and the landscape surrounding the outfall is composed of a steep, sandy beach.

Figure 2-35. ASBS-028 Outfall

ASBS-029 is an 18-inch outfall located at the southern end of Escondido Beach, near the end of Malibu Cove Colony Drive (Figure 2-36). The outfall lies between two residences and discharges directly onto the sand. This outfall is inaccessible during high tide but was successfully sampled three monitored storm events (February 19 and March 8, 2013, and February 28, 2014). The watershed draining to ASBS-029 is 3.8 acres in size and the landscape surrounding the outfall is composed of a steep, sandy beach.

Figure 2-36. ASBS-029 Outfall

ASBS-030 is an 18-inch outfall located at the southern end of Escondido Beach, near the end of Malibu Cove Colony Drive (approximately 45 m east of ASBS-029). The outfall is integrated with the foundation of a residence and discharges directly onto the sand beneath the residence (Figure 2-37). This outfall is inaccessible during high tide but was successfully sampled during three monitored storm events (February 19 and March 8, 2013, and February 28, 2014). The watershed draining to ASBS-030 is 8.9 acres in size and the landscape surrounding the outfall is composed of a steep, sandy beach.

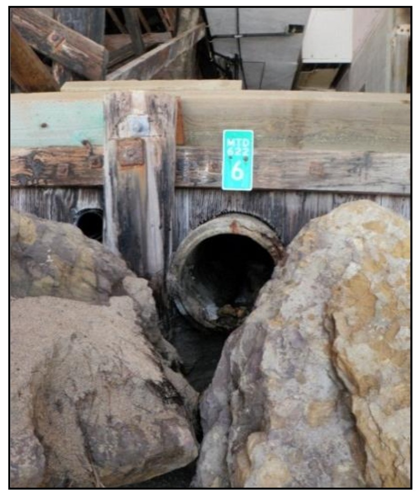

Figure 2-37. ASBS-030 Outfall

2.5.4 Private Outfalls with Inlets Owned by the City

Eight outfalls that are greater than, or equal to, 18 inches in diameter and located along Broad Beach and Little Dume Beach are privately owned with inlets maintained by the City. Currently, three of the outfalls along Broad Beach are being monitored as part of Bight 2013 and the compliance requirements of the General Exception. Although the City maintains ownership of the inlets for each of these storm drains, the ownership status of the outfalls is privately owned. The other five private outfalls with City maintained inlets along Broad Beach and Little Dume Cove that are greater than, or equal to, 18 inches in diameter are not being monitored due to inaccessibility during storm events or due to locations high on Bluffs. A brief summary of the location and diameter for each of these outfall pipes is provided on Table 2-7. Figure 2-38 shows the locations of these private outfalls with City maintained inlets, and a description of each outfall is provided in the text following Figure 2-38.

Table 2-7. City Outfall Locations, Diameters, and Monitoring Information

Beach Location	Site Name	City Outfall ID	City Inlet ID	Latitude	Longitude	Pipe diameter (inches)
Broad Beach	24-BB-01*	24-BB-01Z	24-BB-01A	34.03118	-118.84615	24
	24-BB-02*	24-BB-02Z	24-BB-02B	34.03302	-118.84988	18
	24-BB-03*	24-BB-03Z	24-BB-03A	34.0334	-118.85082	30
	ASBS-B	ASBS-B-Z**	ASBS-B-A	34.03499	-118.85567	18
	ASBS-C	ASBS-C-Z	ASBS-C-A	34.03485	-118.85502	30
	ASBS-F	ASBS-F-Z**	ASBS-F-A	34.03186	-118.84748	24
	ASBS-G	ASBS-G-Z	ASBS-G-A	34.03134	-118.84649	24
Little Dume Beach	ASBS-I	ASBS-I-Z	ASBS-I-A	34.01292	-118.79237	18

*Site currently undergoing monitoring in accordance with the General Exception.
**Site with no visible outfall.

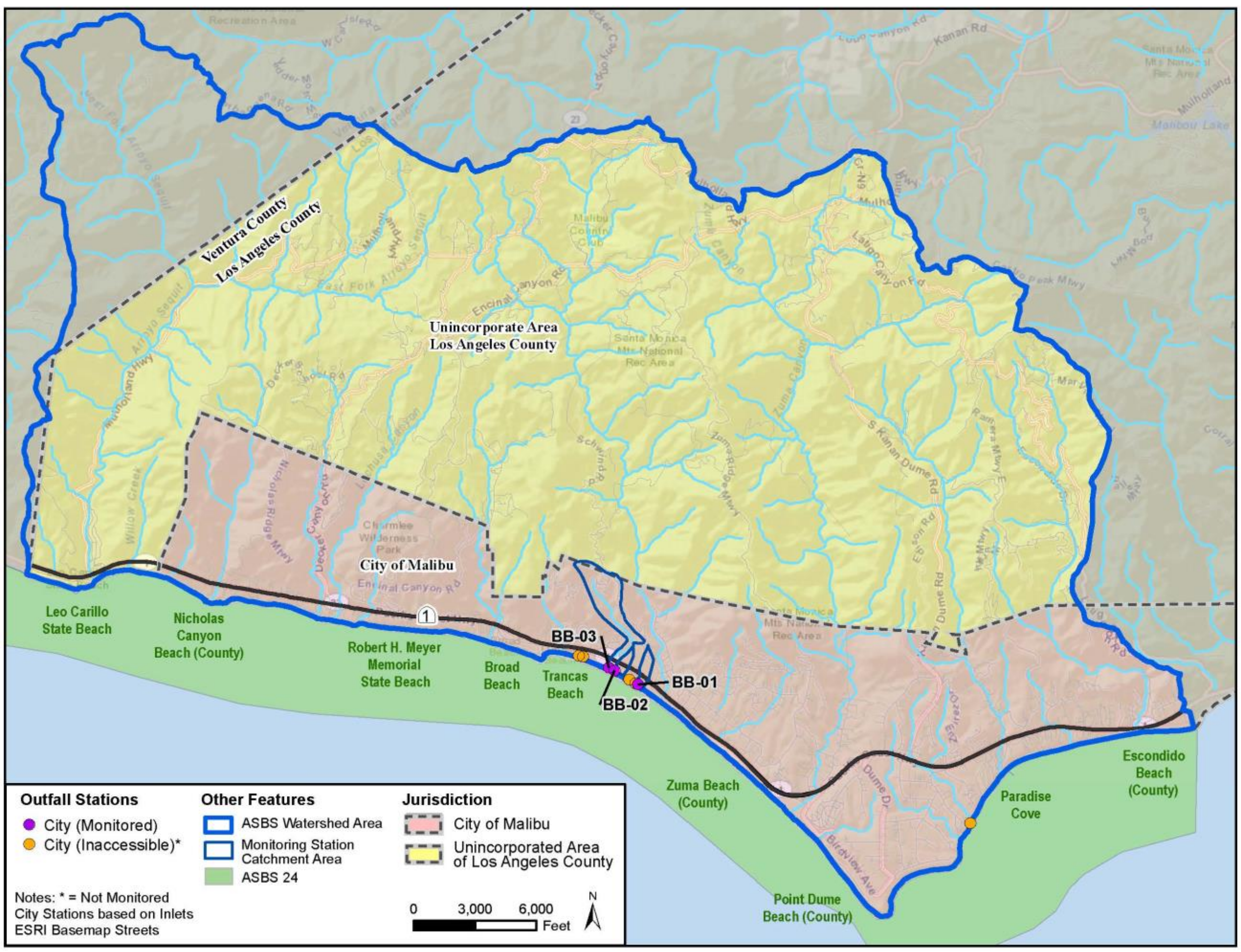

Figure 2-38. City ASBS Outfall Location Map

Broad Beach Outfalls

Site 24-BB-01Z is a 24-inch outfall located at the southern end of Broad Beach, near the intersection of Trancas Canyon Road and PCH (Figure 2-39). The outfall is located behind rock revetment and is inaccessible during high tide or dangerous surf conditions. This outfall was successfully visited during the February 28, 2014, storm event, but no flow was observed. The watershed draining to 24-BB-01Z is 19.9 acres in size and consists primarily of single family residences, commercial, transportation right-of-way (ROW), and PCH ROW land uses. The landscape surrounding the outfall is composed of a rock revetment and narrow, sandy beach with near-shore reef and kelp.

Figure 2-39. 24-BB-01Z Outfall

Site 24-BB-02Z is an 18-inch outfall located at the southern end of Broad Beach, approximately 200 meters south of the intersection of Lunita Road and PCH (Figure 2-40), when viewed on an aerial. This outfall was successfully sampled during the February 28, 2014 and December 1, 2014 storm events. The outfall is located among the shoreline rock revetment and is inaccessible during high tide or dangerous surf conditions. The watershed draining to 24-BB-02Z is 13.9 acres in size and consists primarily of single family residences, vacant, transportation ROW, and PCH ROW land uses. The landscape surrounding the outfall is composed of rock revetment a narrow, sandy beach.

Figure 2-40. 24-BB-02Z Outfall

Figure 2-41. 24-BB-03Z Outfall

Site 24-BB-03Z is a 30-inch outfall located at the southern end of Broad Beach, approximately 100 meters south of the intersection of Lunita Road and PCH (Figure 2-41), when viewed on an aerial. This outfall was successfully sampled during the February 28, 2014 and December 1, 2014 storm events The outfall is located among the shoreline rock revetment and is inaccessible during high tide or dangerous surf conditions. The watershed draining to 24-BB-03Z is 127.6 acres in size and consists primarily of rural residential, vacant, single family residences, transportation ROW, and PCH ROW land uses. The landscape surrounding the outfall is composed of rock revetment and a narrow, sandy beach.

Site ASBS-B-Z (outfall has a potential correlation to the SWQCB list as SAD790, although not confirmed) is an 18-inch outfall located at the northern end of Broad Beach, directly across from the intersection of La Herran Road and PCH, when viewed on an aerial. The City owns the inlet to this site, but existence and ownership of the outfall has not been determined, as the outlet may have been reconfigured during installation of the private rock revetment. The outfall may be located among shoreline riprap; however, the outfall is currently not visible and thus, considered inaccessible. No sampling has been performed at this site. The landscape surrounding the outfall is composed of rock revetment and a narrow, sandy beach with some near-shore reef.

Figure 2-42. ASBS-C Outfall

Site ASBS-C-Z is a 30-inch outfall located at the northern end of Broad Beach, approximately 30 meters south of the intersection of La Herran Road and PCH (Figure 2-42), when viewed on an aerial. While the City owns the inlet to this outfall, the outfall is considered private. The outfall is located behind and partially buried by the rock revetment and is inaccessible at all times due to the steep rock revetment that surrounds the outfall. No sampling has been performed at this site. The watershed draining to ASBS-C is 66.8 acres in size and consists primarily of single family residences, vacant, transportation ROW, and PCH ROW land uses. The landscape surrounding the outfall is composed of rock revetment and a narrow, sandy beach with some near-shore reef.

Site ASBS-F is a 24-inch outfall located at the southern end of Broad Beach, approximately 350 meters northeast of the intersection of Trancas Canyon Road and PCH. The outfall is located among shoreline riprap; however, the outfall is currently not visible and thus, considered inaccessible. No sampling has been performed at this site, and the landscape surrounding the outfall is composed of a rock revetment and narrow, sandy beach.

Site ASBS-G (outfall has a potential correlation to SWQCB list as MUG232 or SAD900, although not confirmed) has a 24-inch outfall located at the southern end of Broad Beach, approximately 200 meters northeast of the intersection of Trancas Canyon Road and PCH. The outfall is located among shoreline riprap; however, the outfall is currently not visible and thus, considered inaccessible. No sampling has been performed at this site. The landscape surrounding the outfall is composed of a narrow, sandy beach.

Little Dume Beach Outfalls

Site ASBS-I (also referred to as PC02 in other documents) is an 18-inch outfall located on Little Dume Beach, approximately 100 m east of the end of Wildlife Drive (Figure 2-43). The outfall is located on a cliff-side bluff and is inaccessible. No sampling has been performed at this site. The watershed draining to ASBS-I is 6.7 acres in size and the landscape surrounding the outfall is composed of a narrow, sandy beach with near-shore reef and kelp.

Figure 2-43. ASBS-I Outfall

2.6 ASBS 24 Compliance Plan Map

A Compliance Plan Map for the ASBS 24 watershed area has been created and can be updated using ESRI ArcMap 10. This map shows storm water conveyances and other storm drain features associated with surface drainage of storm water runoff, including catch basins, inlets/outlets, outfalls, storm drain lines, channels, and creeks. The map identifies core monitoring stations and shows the location of other outfalls equal to or greater than 18 inches that are private, state, or federal and not monitored by the Parties. Drainage areas for the core monitoring stations, areas of potential sheet flow, the planned Broad Beach Road biofiltration best management practices (BMPs), watershed sub-basins and flow directions within these sub-basins are depicted, as well as the overall ASBS 24 watershed area. The map includes the locations of waste and hazardous material storage areas (located on private commercial properties), sewage conveyances and treatment facilities, landslide zones, and roads. Jurisdictional boundaries for the unincorporated area of the County, the City, and state and federal lands within these areas are shown. This subsection of the Compliance Plan provides information regarding the Compliance Plan Map datasets and the procedures for updating applicable GIS files and the map.

2.6.1 Compliance Plan Map Files

The Compliance Plan Map includes several types of files, organized by file type, in the following folders:

- MXD – MXD files are the map documents produced in ESRI ArcMap. An MXD contains the map template (e.g., size, layout) and calls upon ESRI GIS shapefiles that are stored in the Shapefiles folder. The MXD contains a table of contents, text, and graphic elements, and specifies how data will be displayed. The MXD establishes relative file paths to the shapefiles. Currently, the MXD folder contains only one file: Compliance_Plan_Map.MXD. Additional versions of the map can be saved in this folder, as needed.

- Shapefiles – Shapefiles are GIS format data files that are called upon by the map. Changes to shapefiles will be reflected in the map if the map calls upon the data stored in the shapefile. A spreadsheet listing all of the shapefiles, contents, and sources is provided as Table 2-8.

- Data Files – Data files contain MS Excel spreadsheets, including those added as tables to the MXD. Changes to MS Excel files do not update the map. New or revised tables must be added to the MXD, and can be used to create XY events (based on latitude and longitude data in the table), or joined to existing shapefiles through a common field ID to append additional data fields to the GIS features.

Table 2-8 lists the GIS shapefiles used in the Compliance Plan Map by filename, and provides GIS feature types (e.g., points, lines, polygons), descriptions of the contents of the GIS file, information regarding the original source, and how to update the data in the Compliance Plan Map as needed. The file order in this table is based on the order of the items in the map legend (Figure 2-44).

2.6.2 Compliance Plan Map Update Procedures

Update procedures are provided by GIS shape file on Table 2-8 and are dependent upon original source and other considerations. Many of the original source GIS files were provided by LACDPW, some files by the City, and were received in GIS shapefile format; therefore, files have been maintained in shapefile format (i.e., not converted to geodatabase format). The County possesses a complete set of the files used to prepare the map (Compliance Plan Map dataset). As these base data layers are updated by the Parties in their primary GIS database, the revised GIS files can be provided to the County and copied in the local Compliance Plan Map dataset, processed, and used to replace the older file versions. The City and County/District Outfall Stations (and Other Outfalls) locations are maintained in separate shapefiles such that this information can be updated independently by each party and then reinserted into the GIS database without overwriting another parties' information. If the new filename is the same as the previous version, the new data should display within ArcMap when the file is replaced in the Shapefile folder. However, if the data attribute options have been updated, the symbology for the data layer should be checked in the table of contents to ensure that all values have a symbol and will be drawn. If the map layer does not display (i.e., a red exclamation point will appear in the table of contents next to the filename), check the data source file path and update as needed. GIS shapefiles should be clipped to the overall ASBS watershed area (GIS file), and geometry recalculated to update line lengths and polygon areas. All GIS data should be maintained in the following projected coordinate system: CA State Plane, Datum NAD83, Zone V, units Survey Feet for consistency.

In addition, GIS files can be edited within ESRI ArcMap to update map features and attribute data, such as a change in monitoring stations, a revision to the monitoring station catchment areas, the inclusion of monitoring data results to outfall locations, or the addition of new BMPs to the BMP shapefile. This process can be performed in an edit session using the Editing toolbar. Note that map labels on the map are currently static (i.e., have been converted to annotation stored in the map) to better control their placement. Therefore, text labels will need to be created for new features that are added to existing shapefiles or for new shapefile features for which map labeling is appropriate.

Facilities with hazardous material storage areas should be updated on an annual basis by requesting the Active Facility Inventory List from LA County Fire for Zip Code 90265. The address information can be formatted in an MS Excel spreadsheet for the geocoding process. After adding the table to ArcMap, run the geocoder tool, and clip the resulting shapefile to the ASBS 24 watershed area.

Updates can also be made to the MXD, such as adding new features layers, revising the layout, or other map template items to change the look of the map. New GIS files can also be easily added to the map as additional data become available related to compliance activities. Note that the map legend is static and will not automatically update when new GIS files are added to the MXD. The legend can be manually updated using the drawing and text tools or a new legend inserted. An MXD can be saved as a new file to maintain previous versions in the database.

Table 2-8. GIS Shapefiles Used in Compliance Plan Map

Filename	Type	Description	Original Source	To Update
LAC_ASBS24_Outfalls	Point	County and District Monitoring Stations in ASBS 24 Monitoring Program, including Core MS4 Outfalls, Outfalls that have Caltrans Inlets but undetermined ownership of Outfalls (not monitored) and Ocean Receiving Water Stations, and creek reference station. Includes ownership information.	Core Monitoring Stations provided by LADPW in table format and imported into GIS from an MS Excel spreadsheet using latitude and longitude data provided in file to map locations.	Station locations and attribute data can be edited in GIS to update file (i.e., add, remove, or change location or attribute data associated with monitoring stations).
City_Outfalls	Point	Outfalls identified for the City's ASBS 24 Monitoring Program. City has jurisdiction of inlets but outfalls were determined by City to be privately owned. Three of these eight Outfalls are monitored, and five are considered inaccessible. Includes the City's Ocean Receiving Water station.	Field notes in an MS PowerPoint file provided by the City. GIS file created using latitude and longitude data. Other outfalls ≥ 18 inches that were listed in the field notes but not included in monitoring program are provided in file called "Other_Outfalls_City_Recon".	Edit or replace GIS file as needed to add, remove, or change location or attribute data associated with monitoring stations.
Other_Outfalls_County_Recon	Point	This file contains outfalls that were identified in field reconnaissance activities by the County for which ownership is private or undetermined. These outfalls are not in the monitoring program. Not all outfalls were visible or could be verified.	Provided by LADPW in table format and imported into GIS from an MS Excel spreadsheet using latitude and longitude data fields provided in file.	Station locations and attribute data can be edited in GIS to update file. This file complements the LAC_ASBS24_Outfalls file as the outfalls ≥ 18 inches but not in County monitoring program as ownership is private or undetermined.
Other_Outfalls_City_Recon	Point	This file contains outfalls that were identified in field reconnaissance activities by the City of Malibu and were determined to be privately owned and were not included in the monitoring program. Not all outfalls were visible or could be verified.	Field notes in an MS PowerPoint file provided by the City. Tabular data imported into GIS using latitude and longitude data from field notes.	Station locations and attribute data can be edited in GIS to update file. This file complements the City_Outfalls that were also identified in the City recon activities, found to be privately owned but chosen for compliance monitoring.
Catchbasins_ws	Point	Catch basin locations within the ASBS 24 watershed area. Ownership or maintenance of catch basins given in file as: LACFCD for District, City, Road Maintenance Division or not listed (blank).	Based on integrating data from two different catch basin files and removing duplicates. One file provided by LADPW (used as primary data source), the other found on LA County GIS data portal (supplementary).	Replace GIS file with updated one (LADPW source) as available and clip to the ASBS 24 watershed boundary. Record catch basin cleaning frequency attribute data.
Inlet_Outlet_from_LADPW_ws	Point	Inlet and outlet locations clipped to ASBS 24 watershed.	Provided by LADPW. Feature type (inlet or outlet) attribute data was blank, so features could not be symbolized differently.	Replace GIS file with updated one (LADPW source) as available and clip to the ASBS 24 watershed boundary. Improve data by completing data fields.
City_inlets_ASBS_Drainage	Point	Point locations for inlets identified by the City as owned by the City.	Table provided by the City.	Locations and attribute information can be edited in GIS or a new table imported into GIS.
Lateral_Lines_SD_from_LADPW_ws	Line	Lateral line storm drains clipped to ASBS 24 watershed.	Provided by LADPW.	Replace GIS file with updated one (LADPW source) as available and clip to the ASBS 24 watershed boundary.
Gravity_Main_SD_from_LADPW_ws	Line	Storm drain mains clipped to ASBS 24 watershed.	Provided by LADPW.	Replace GIS file with updated one (LADPW source) as available and clip to ASBS 24 watershed boundary.
Storm_Drains_LADPW_clip_ws	Line	Includes pipes, channels, and creeks that convey stormwater runoff clipped to the watershed boundary.	LA County GIS data portal.	Replace GIS file with updated one (LADPW source) as available and clip to the ASBS 24 watershed boundary.
Prelimin_drain_areas_core_mon_outfalls	Polygon	Catchment areas delineated for the Core Monitoring Stations.	Delineated by Weston based on desktop data review using 2-ft contour data, sub-basins, and storm drain data. Not field-verified and should be considered preliminary.	Catchment areas and attribute data can be edited in GIS to update file. New drainage areas will need to be delineated as stations are added.
BMP_Areas	Polygon	Shows structural BMPs that can be mapped, and currently displays the Planned Biofiltration BMP at Broad Beach Rd. Does not include non-structure BMPS or Operations and Maintenance Activities (See compliance plan for details).	Based upon project boundary shown in Biofiltration Project report.	Edit or replace GIS file as needed to add, remove, or change location or attribute data associated with these features.
ASBS_24_Watershed	Polygon	An overall boundary watershed based on the eight watersheds that drain to the ASBS 24 area.	Based on sub-basins GIS file from LADPW with internal boundaries dissolved for the eight watersheds.	Edit boundary in GIS as needed.

Table 2-8. GIS Shapefiles Used in Compliance Plan Map

Filename	Type	Description	Original Source	To Update
Subbasins_ws	Polygon	Watershed sub-basins clipped to the ASBS 24 watershed boundary	Provided by LADPW.	Replace GIS file with updated one (LADPW source) as available and clip to the ASBS 24 watershed boundary.
Subbasins_flow_dir_ws	Line	Watershed sub-basins clipped to the ASBS 24 watershed boundary.	Provided by LADPW.	Replace GIS file with updated one (LADPW source) as available and clip to the ASBS 24 watershed boundary.
Sewer_Treatment_Plant_ws	Point	Sewer treatment plant locations within the ASBS 24 watershed area.	Provided by LADPW.	Replace GIS file with updated one (LADPW source) as available and clip to the ASBS 24 watershed boundary.
Sewer_Pump_Station_ws	Point	Sewer pump station locations within the ASBS 24 watershed area.	Provided by LADPW.	Replace GIS file with updated one (LADPW source) as available and clip to the ASBS 24 watershed boundary.
Areas_potential_sheet_flow	Polygon	Areas identified as having potential sheet flow are the parking lots at Nicholas Canyon, Zuma, and Westward Beaches.	Parking lot areas were digitized from aerial imagery to create the polygon file.	Edit or replace GIS file as needed to add, remove, or change location or attribute data associated with these features.
Sewer_Pipe_ws	Line	Sewer pump station locations within the ASBS 24 watershed area.	Provided by LADPW.	Replace GIS file with updated one (LADPW source) as available and clip to the ASBS 24 watershed boundary.
Sewer_Maintenance_Service_Area_ws	Polygon	Sewer maintenance service area within the ASBS 24 watershed area.	Provided by LADPW.	Replace GIS file with updated one (LADPW source) as available and clip to the ASBS 24 watershed boundary.
Pacific_Coast_Highway_ws	Line	Centerline feature of PCH (State Hwy 1) extracted from CAMS 2011 GIS file and clipped to the ASBS 24 watershed boundary.	LA County GIS data portal: http://egis3.lacounty.gov/dataportal/2011/12/09/2011-la-county-street-centerline-street-address-file/.	As updated versions of file become available, extract PCH lines from the new shapefile and clip to the ASBS 24 watershed.
Roads_ws	Line	Non-private road centerline features extracted from the CAMS 2011 GIS file and clipped to the ASBS 24 watershed boundary.	LA County GIS data portal: http://egis3.lacounty.gov/dataportal/2011/12/09/2011-la-county-street-centerline-street-address-file/.	Replace road file with updated versions as available and clip to the ASBS 24 watershed.
Facilities_with_haz_materials	Point	Geocoded addressed for facilities that generate or store hazardous materials within the ASBS 24 watershed.	Facility addresses provided by LA County Fire Dept in excel spreadsheet.	Request the annual update of Facility (Active) Inventory List from LA County Fire for Zip Code 90265. Format address data in Excel spreadsheet for geocoder. Geocode in ArcMap and clip the shapefile to the ASBS24 watershed.
County_Bndry	Polygon	Boundary of the County.	Los Angeles County GIS Data Portal.	No update expected.
Jurisdictional_Boundary_ws	Polygon	Jurisdictional boundaries for the unincorporated portion of the County and the City clipped to the ASBS 24 watershed.	Los Angeles County GIS Data Portal.	Replace GIS file with updated one (LADPW source) as available and clip to the ASBS 24 watershed boundary.
State_and_Federal_Lands_ws	Polygon	Land areas identified as in state or rederal ownership clipped to the ASBS watershed area.	Based on parcels in state or federal ownership extracted from Parcel GIS data file provided by LADPW.	Process updated parcel file (LADPW source) to extract parcels with state or federal ownership; dissolve boundaries by owner type/code; clip to the ASBS 24 watershed boundary.
ASBS_24_Boundary	Polygon	ASBS 24 watershed boundary.	CA State Water Resources Control Board.	To be updated only if boundary is changed. Replace GIS file if new one is published by agency.
USGS_Landslides_zone_clipped_ws	Polygon	Landslide zones for 1:24k USGS sheets of Point Dume and Trifuno Pass merged into a single GIS file.	Provided by the City, available from USGS.	Update GIS file as new data are published by USGS or if County revises data based on landslide activity.

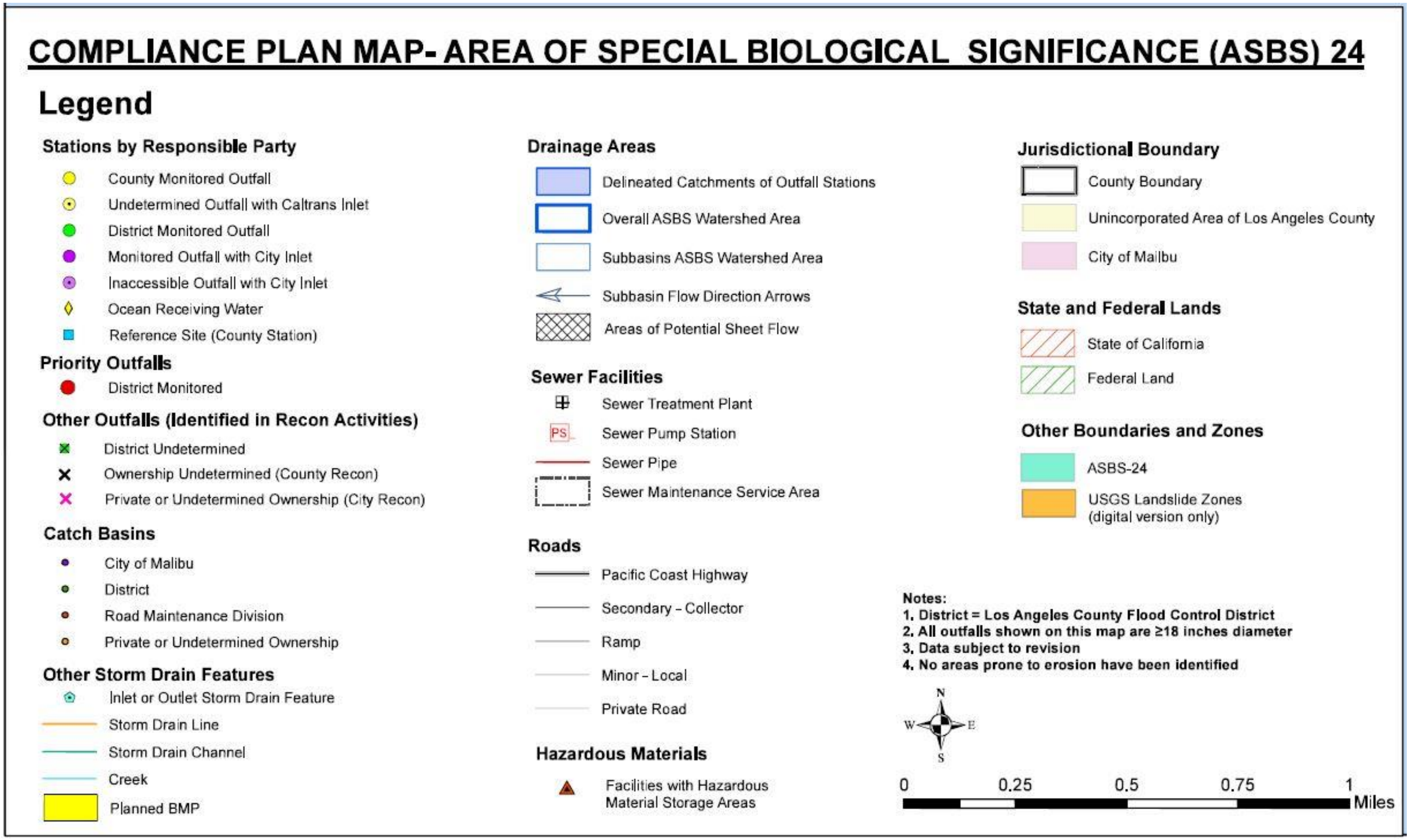

Figure 2-44. Compliance Plan Map Legend

3.0 DRY WEATHER COMPLIANCE

Section I.A.2.b of the General Exception states that the ASBS Compliance Plan will describe measures taken by the Parties to eliminate non-authorized, non-storm water runoff (e.g., dry weather flows), how these measures will be maintained over time, and how these measures are monitored and documented (SWRCB, 2012b).

As discussed in more detail in the following sections, the Parties' existing dry weather elimination programs have been effective in eliminating non-exempt discharges. However, conditionally exempt hillside dewatering and natural creek flows are expected to continue to be a source of discharges from MS4 outfalls. The County, FCD, and City will continue to implement the non-structural programs, identified in this document, that have been designed to prevent non-exempt dry weather discharges. Two key components of these programs are the City's dry weather runoff elimination and water conservation programs.

The ASBS dry weather runoff elimination program was originally established as part of a State Proposition 84 grant-funded ASBS focused outreach project. This program included creating the Coastal Preservation Specialist (CPS) position to educate residents and business owners about dry weather runoff elimination, pollution prevention, and water conservation within the City of Malibu in areas potentially tributary to the ASBS. As the need for drought education grew, coordination of the local water conservation program was expanded and integrated more thoroughly into the runoff elimination program.

Elimination of non-stormwater runoff to the entire MS4 system within the City, and thus all potential dry weather discharges to the ASBS, was targeted through these programs. In addition to the CPS position, the programs also provide education, resources, and tools, such as opportunities for site evaluations, rebates, and incentives. Having shown that additional resources and focused staff were necessary for successful runoff elimination and public awareness about the ASBS, the CPS position was permanently established as the Environmental Programs Specialist (Specialist) to conduct citywide monitoring, documentation, and reporting on dry weather discharges, among other assignments.

The City will continue to respond to reports of runoff and over-irrigation; most reports are received either directly by staff at City Hall, the City's 24-hour Pollution Prevention Hotline, online water waster reporting form, or as observations by staff in the field. The City will also periodically proactively patrol neighborhoods with a history of over-irrigation, and will address or prevent non-stormwater discharges by meeting with property owners and home/property owner associations within the entire area tributary to ASBS 24 within the City limits. Ongoing efforts include property owner education regarding discharge prevention and source control with enforcement actions when necessary.

The City also continues to conduct a PIPP by providing educational information about the ASBS and BMPs to the beach going community at large. The City's multi-platform educational outreach campaign, *Keep It Clean, Malibu,* continues to be promoted throughout the community. The community has been receptive and enthusiastic about the program. The *Keep It Clean, Malibu* campaign and relevant videos may be found at www.KeepItCleanMalibu.com and ASBS

education in general at www.MalibuCity.org/ASBS. To date, Malibu's *Keep It Clean* Campaign has won five awards and received both national and statewide recognition.
The City provides a 24-hour Pollution Prevention Hotline for the community to report any environmental concerns, including runoff. The hotline is advertised on the City's website and in a display at City Hall.

The City also maintains a website (www.malibucity.org/waterwaster) for reporting water wasting activities including, but not limited to, excessive irrigation and overspray. Though focused on water conservation, this website also serves to receive information about runoff from community members who may not normally be aware of water quality issues, but, due to public information programs on California's current severe drought, may be more engaged in water issues. With additional eyes on the street, the City can be promptly notified if any dry weather discharges are observed, and coordinate with the County when any of their FCD or Public Works MS4 is affected. Since implementing the hotline and *waterwaster* website, response to complaints and enforcement actions to cease runoff or discharges have improved citywide and enhanced the ability to more effectively document incidents.

The following sections identify the nonstructural measures the Parties have implemented that are designed to eliminate non-authorized, non-storm water runoff, including public information and participation programs (PIPPs), operations and maintenance (O&M) programs, and enforcement programs. A list of existing programs is provided in Appendix B. When used in combination, nonstructural controls have been proven to provide improved effectiveness in load and flow reduction, at a lower cost, than many structural solutions (Brown et al., 2010; Pohl, 2010; Cac and Ogawa, 2010; Krieger et al., 2010). Ongoing dry weather elimination program activities will be documented and the results will be submitted in the MS4 Annual Report to the Los Angeles Regional Water Quality Control Board.

Dry weather monitoring of outfalls has been performed to ensure compliance with the requirements of the General Exception. This document summarizes those monitoring activities and results.

3.1 Nonstructural Controls

Nonstructural controls are designed to prevent dry weather runoff and pollution generation, control sources of dry weather runoff and pollution once generated, and eliminate the true source of pollutants, if appropriate. This document identifies nonstructural controls used by the Parties in order to meet the requirements of the General Exception and Special Protections of the California Ocean Plan (SWRCB, 2012a).

3.1.1 Nonstructural Program Terms and Definitions

Nonstructural programs are designed to prevent pollution generation, control sources of pollution once generated, and eliminate the true source of pollutants. The following common terms and definitions are related to nonstructural controls, which are used throughout the document, including:

- Pollution Prevention Measures target pollutants and wastes before they are generated. These measures typically emphasize conserving or reusing resources to prevent pollution.
- Source Controls target specific sources of pollution to reduce or eliminate pollutants from entering the municipal separate storm sewer system (MS4) and / or ultimately the receiving water. Source controls may include institutional controls (e.g., codes, ordinances, and regulations), outreach, education, incentive programs, and enforcement measures.
- True Source Controls recognize that the source pollutant may be the physical design of a product, such as copper-based pesticides or copper break-pads. In this instance, product regulation and true source control can only be achieved at the state or national level. True source controls support regulatory change outside the local jurisdiction.

Nonstructural programs have been classified in this document using a "three-legged stool" approach where the three legs of the stool consist of PIPPs, Enforcement Programs, and O&M Programs (see Figure 3-1). When used in combination, nonstructural controls have been proven to provide improved effectiveness in load and flow reduction, at a lower cost, than many structural solutions (Brown et al., 2010; Pohl, 2010; Cac and Ogawa, 2010; Krieger et al., 2010).

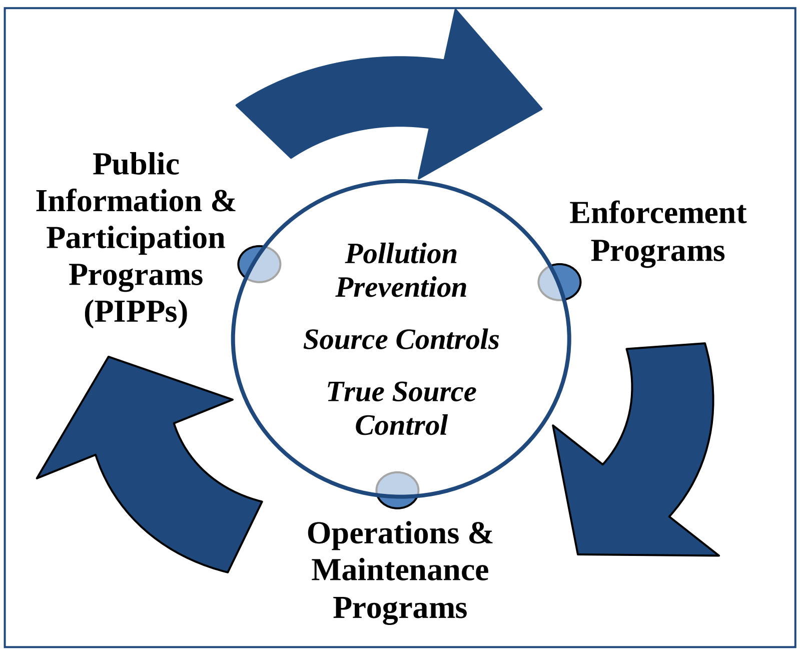

Figure 3-1. ASBS 24 Nonstructural Programs

3.1.2 Nonstructural Program Adaptive Management Process

The ASBS 24 PIPPs, enforcement, and O&M nonstructural programs have been implemented using adaptive management (

Figure 3-2) to plan, implement, assess, and refine individual nonstructural controls. Nonstructural programs implemented to date have ensured compliance with the zero dry weather discharge criteria of the Special Protections. Receiving water data collected under the 2013 Regional Monitoring Program represent the initial assessment of wet weather loading to ASBS 24. Some nonstructural programs implemented to date, identified in this document, also have the potential to help reduce wet weather pollutant loads. Effectiveness assessments will play a key role in ongoing implementation of the nonstructural program by identifying the optimal enhanced programs and establishing a process for planning subsequent phases of nonstructural implementation.

Figure 3-2. Adaptive Management Process

3.2 Existing Nonstructural Programs

The Parties proactively participate in regional nonstructural planning efforts and implement nonstructural controls to protect the receiving water quality of ASBS 24. A detailed list of existing PIPPs, enforcement programs, and O&M programs is provided in Appendix B. This section contains a description of key nonstructural programs related to compliance with the prohibited discharges listed in the General Exception.

3.2.1 Public Information and Participation Programs

PIPPs encompass the education, outreach efforts, and rebate / incentive programs implemented by the Parties which encourage positive behavior changes that eliminate or reduce potential polluting behaviors, encourage reporting and cleanup of discharges, and reduce water consumption. Waste management and water conservation PIPPs have been implemented by the County and the City and are described in the following sub-sections.

3.2.1.1 Waste Management PIPPs – Outreach Programs

Clean LA is the County's main PIPP. Clean LA offers online and hotline resources to residents, businesses, and local governments to answer questions related to household hazardous and electronic waste collection, composting, recycling, illegal dumping prevention, and water quality impacts of proper waste management. The Clean LA hotline, which is shared with the District, fielded 34,064 calls throughout Los Angeles County during the fiscal year covered under the 2011-2012 Annual Report (LACDPW, 2012). Within the Clean LA tool box, the Rethink LA program encourages "rethinking" about opportunities to implement reduction, recycling, and reuse, and offers the Los Angeles County Materials Exchange (LACoMAX) as a unique Web platform for buying recycled products, exchanging materials, and advertising garage sales. These online educational resources are interlinked and represent the types of programmatic tiering possible within a PIPP.

Similarly, the Malibu Green Room Web page, a one-stop resource for all things "green" in the City, is one of the City's key PIPP resources. The Web page includes information related to environmental protection ordinances, the City's 24-Hour Pollution Prevention Hotline (initiated in June 2012), special waste collection events, the ocean friendly gardens (OFG) and California (CA) Friendly Landscapes programs and examples of properties where such gardens are installed, design and implementation of structural BMPs, and environmental events, as well as examples of what actions the City has taken to become more sustainable. This Web page is linked with other City-managed Web pages, such as the ASBS Web page, the *Keep it Clean, Malibu* campaign and projects and programs offered by partner agencies.

3.2.1.2 Water Conservation PIPPs – Incentive Programs

Three incentive programs are managed regionally by the Los Angeles County Waterworks and local water districts and are advertised within the ASBS 24 watershed by the County and City. The programs are used to encourage water conservation for outdoor landscaping, thereby preventing dry weather runoff to ASBS 24 from over-irrigation. These programs vary based on available funding, but have included the Landscape Irrigation Efficiency Program (completed in 2013), which offered installation of free, efficient sprinkler heads and an irrigation survey at qualified properties; the Water Saving Devices Rebate Program, a residential rebate program for water saving devices such as rotary sprinkler nozzles and irrigation controllers; and Cash for Grass, a residential rebate program for replacing grass with water-efficient landscaping.

3.2.1.3 Water Conservation PIPP – Surfrider Ocean Friendly Garden (OFG) Program

The Surfrider OFG Program is a regional effort to promote water conservation and eliminate dry weather runoff from over-irrigation and other urban sources. The County and City manage webpages identifying OFG "case studies" within their jurisdiction and frequently host educational and outreach events at OFGs located at public facilities. The City also promotes the Metropolitan Water District-funded California Friendly Landscapes program, which is a reimagining of the OFG program intended to engage a broader audience who might not otherwise resonate with the concept of "ocean friendly".

3.2.1.4 Water Conservation PIPP – CA Friendly Landscaping Program

The CA Friendly Landscaping Program targets residences and businesses to promote water conservation and eliminate non-point source pollution from landscaping. It is a reimagining of the OFG Program by the Metropolitan Water District in an attempt to engage a broader audience statewide. Similarly to the OFG Program, it is promoted by its local water Districts and agencies. The program includes educational workshops, training events, and incentives such as landscape water efficiency rebates. The City hosted two CA Friendly Landscaping Workshops from 2013-2014.

3.2.1.5 Water Conservation PIPP – City of Malibu ASBS Focused Outreach Program

The City of Malibu Focused ASBS Outreach Program included a CPS position that was created by the City under a Proposition 84 grant to perform direct and focused outreach to residents and to develop an outreach campaign to reach the community at large raising awareness of ASBS 24. One of the roles of the CPS was to develop and implement PIPPs that prevent dry weather flows. The CPS mailed a general ASBS education letter to every parcel within the ASBS and regularly gave public educational and school presentations on ASBS topics (e.g., OFGs, water conservation) that may be implemented by residents and are being implemented by the City. Additionally, the CPS attended public events to educate about protecting the ASBS. As the City's representative, the CPS interfaced with schools for environmental education programs with Pepperdine University, Point Dume Marine Science School, and Malibu High School. The CPS also developed new ASBS content and maintained pages on the City's web page, interfaced with the media, and expanded the City's outreach of ASBS topics using social media platforms including Facebook, Twitter, and Instagram. The *Keep It Clean, Malibu* website was enhance though this program and encourages residents to prevent pollution by providing guidance on the proper use of common products and best practices relating to other sources (e.g., pet waste).

In addition, ASBS 24 coastline and inland areas that could be tributary to it were regularly patrolled by the CPS, who looked for dry-weather runoff and other pollution threats in the coastal and inland areas. County staff routinely coordinated with the CPS by reported over irrigation. When individual properties were identified as non-compliant with ASBS regulations, such as due to over-irrigation, they were mailed educational materials and a cease-and-desist letter. The CPS personally engaged with these property owners and residents by providing education on the potential impacts to the ASBS and tailoring solutions to the property.

As part of the Proposition 84 State funding, the CPS was tasked with developing an outreach campaign to educate people about the issue and the result was *Keep it Clean, Malibu* – a multi-platform educational campaign designed to positively, proactively make people think about storm drains and what goes into them. The campaign contains five main elements:

1. A series of four Public Service Announcements starring a beautiful urban mermaid coming into contact with the pollutants we create on land.
2. A series of four storm drains painted by a local artist to draw attention to the drains and their connection to the ocean. A video highlighting the making of this artwork was also created.
3. An active social media campaign on Instagram primarily, but also Facebook and Twitter. Citizens are encouraged to get involved in celebrating the ASBS by posting pictures of the gorgeous marine life in the area.

4. Two special events designed to kick off the campaign and draw attention to the issue – a ribbon cutting ceremony for the storm drain art project and a red carpet premier for the video series, which was held on Earth Day.
5. Distribution of wearable collateral materials (bright blue hats and temporary tattoos) which prominently feature the "Keep it Clean, Malibu" slogan, in effect creating walking billboards of the message.

In addition to these five main elements, the City partnered with local organizations to promote the ASBS campaign messages at their special events and through their websites and social media. These partnerships range from water and energy utilities to schools to business and community groups. The special events included:

1. Pepperdine University Earth Day Fair
2. Earth Day Celebration hosted by Malibu Chamber of Commerce and Malibu Country Mart
3. Rhyming in the Universe Earth Day Celebration hosted by Team United and Malibu Ballet Performing Arts Society
4. Fiesta Malibu hosted by Juan Cabrillo Elementary School

The bright blue hats and temporary tattoos used to promote the *Keep It Clean, Malibu* message were received with enthusiasm. In order to receive a hat, citizens sign an ASBS Pledge to prevent polluted runoff and protect ocean water quality with their daily activities.

Even though the grant-funded outreach project that included the CPS is complete, the City added a new position in July 2014 which assumed the outreach and inspections duties of the CPS. The *Keep It Clean, Malibu* campaign and relevant videos may be found at www.keepitcleanmalibu.com and ASBS education in general at www.malibucity.org/ASBS.

3.2.2 Operations and Maintenance Programs

O&M programs are in place to maintain infrastructure within the area draining to ASBS 24. O&M programs, including street and parking lot sweeping, catch basin cleaning, and trash management and recycling programs, have been implemented by the LACDPW and the City and are described in the following sections. A map of the different programs and their implementation areas is presented in Figure 3-3.

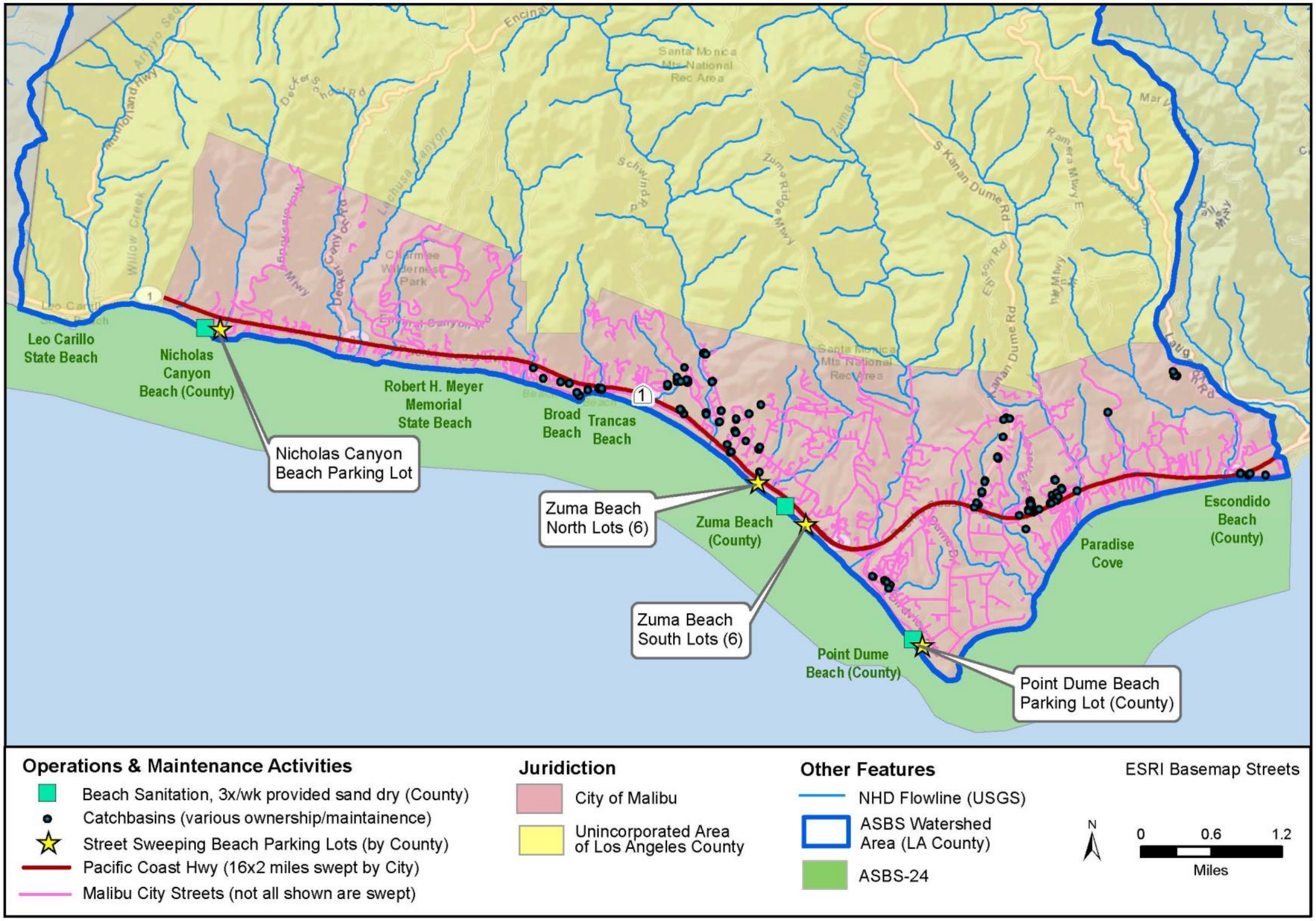

Figure 3-3. Locations of O&M Operations

3.2.2.1 Street and Parking Lot Sweeping

Studies have demonstrated that street sweeping is effective in reducing sediment, metals, and pesticide loading and, to a lesser extent, bacteria loading to the receiving water through physical removal of pollutants from paved surfaces (City of San Diego, 2010a, City of Portland, 2006). The County and City regularly maintain the roads, streets, and parking lots within the area draining to ASBS 24. The existing sweeping programs are presented on Table 3-1. Within the ASBS 24 drainage area, the County has jurisdiction over three beaches with County-maintained parking lots. All parking lots are swept on Saturday, Sunday, and Monday by a vacuum or regenerative air sweeper. The City shares a contract with California Department of Transportation (Caltrans) for sweeping PCH. The City's sweeping program was modified in 2013 to agree with Caltrans' statewide street sweeping policy, which requires use of mechanical sweeping equipment no more than once per week. The PCH is scheduled to be swept on Friday mornings (from 2:00 a.m. to 7:00 a.m.) to optimize sweeper access to the curb and gutter. City-maintained streets are swept monthly with a mechanical sweeper. The City maintains four regular sweeping schedules that are completed on the first, second, or third Monday or the third Wednesday of each month.

Table 3-1. Existing Street and Parking Lot Sweeping Programs within ASBS 24

<table>
<tr><th>Agency</th><th>Location</th><th>Technology</th><th>Frequency</th></tr>
<tr><td rowspan="3">Los Angeles County

Dept. of Beaches & Harbors</td><td>Nicholas Canyon County Beach Parking Lot</td><td>Vacuum/ Regenerative Air</td><td>3 times/week</td></tr>
<tr><td>Zuma Beach County Beach (12 Parking Lots)</td><td>Vacuum/ Regenerative Air</td><td>3 times/week</td></tr>
<tr><td>Point Dume County Beach Parking Lot</td><td>Vacuum/ Regenerative Air</td><td>3 times/week</td></tr>
<tr><td rowspan="2">City of Malibu</td><td>Pacific Coast Highway</td><td>Mechanical</td><td>Once/week</td></tr>
<tr><td>City-Maintained Streets</td><td>Mechanical</td><td>Once/month</td></tr>
</table>

3.2.2.2 Catch Basin Cleaning

The LACDPW and City implemented catch basin inspection and cleaning programs are designed to ensure that catch basins are: 1) properly marked with a "no dumping" message, most commonly applied with paint and stencil2) free of debris, and 3) in good condition. Catch basins are visually inspected by staff in the field and problem systems are flagged for maintenance. The routine inspection and cleaning/repair program is implemented in accordance with the priority assigned by each permittee to each system (i.e., catch basins consistently generating the highest volumes of trash and debris are Priority A; moderate volumes are Priority B; low volumes are Priority C). Priority A catch basins are cleaned four times a year, Priority B catch basins are cleaned twice a year, and Priority C catch basins are cleaned once a year. There are 152 catch basins within the ASBS 24 drainage area under the Parties' jurisdiction. As reported in the City of Malibu's 2011-2012 Annual Report, the material removed from the catch basins within the drainage areas to ASBS 24 mostly consists of "green waste that grows and thrives in the Southern California climate." There are 21 catch basins under the City's jurisdiction, which are classified as Priority B. There are 93 Priority B catch basins under the District's jurisdiction. The remaining 38 are under the County's jurisdiction (Road Maintenance Division) and are located in the upper portion of the watershed. These 38 catch basins are not part of the MS4 that drains to the ASBS and are classified as Priority C catch basins.

3.2.2.3 Waste Management & Recycling Programs

The County's and City's waste management programs include collection of waste and recyclables in public places such as bus stops, safe disposal of household hazardous waste; used oil collection/recycling events; waste management education; solid waste hauler permitting; Christmas tree recycling; brush clearance/green waste recycling events; bulky item collection; construction and demolition debris recycling; electronic and universal waste disposal; and an expanded polystyrene foam recycling program (i.e., Waste to Waves program). Education about recycling opportunities is provided through the PIPP discussed in Section 3.2.1.

The County's waste management program includes a regional beach sand "sanitation" program that is implemented at the three County Beaches located within ASBS 24. The beach sanitation program involves collecting beach debris in a screened hopper pulled by a tractor and properly disposing of the material. A rake system attached to the back of the tractor turns over the sand and allows solar radiation to "sanitize" the beach sand. Beach sand sanitation activities are implemented three times per week, provided that the beach sand is not wet. The implementation is scheduled during the morning hours to allow for maximal day-light exposure.

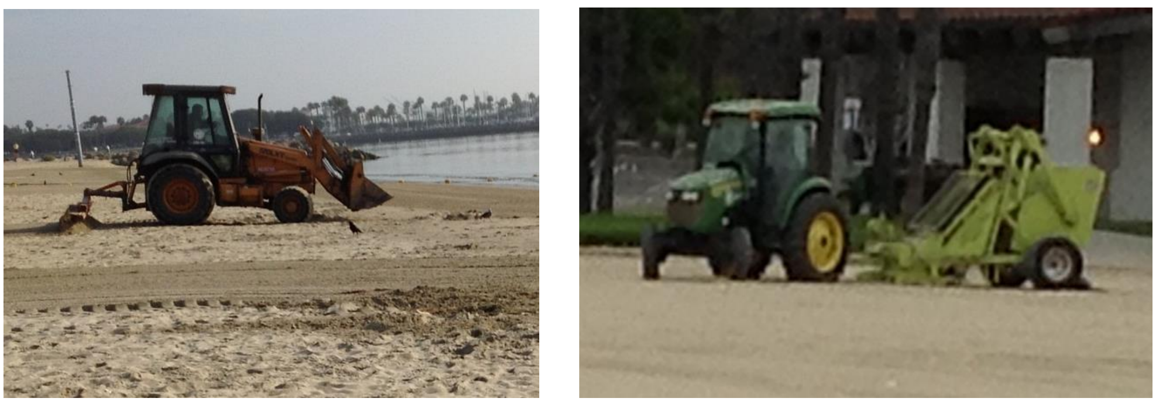

Figure 3-4. County Beach Sand Sanitation Program Equipment at Work

3.2.3 Enforcement Programs

Enforcement programs supporting environmental ordinances passed by the County and City are intended to eliminate non-authorized flows as defined in the General Exception; control illicit discharges; provide sediment and erosion control for construction sites'; verify National Pollutant Discharge Elimination System (NPDES) and ASBS compliance; and implement appropriate education and enforcement in response to urban runoff, trash, and other greening efforts. Existing enforcement programs within the area draining to ASBS 24 include the LACDPW and City illicit connection/illicit discharge (IC/ID) elimination programs, LACDPW and City construction programs, the City's commercial and industrial (should an industrial facility begin operating; there are currently no industrial facilities in the City) business inspection program, and City enforcement of violations observed while implementing the Clean Bay Restaurant certificate program (discussed in further detail later in this document). IC/ID elimination programs are discussed in the following section, and construction programs, commercial and industrial business inspection programs, and the Clean Bay Restaurant certificate program are discussed as part of the Inspection Program Assessment in Section 3.3.1.

3.2.3.1 Illicit Connection/Illicit Discharge Elimination Programs

The IC/ID Programs implemented by the Parties are designed to eliminate pollution by illicit connections and discharges to the MS4 and ultimately the ocean receiving waters. The regional IC/ID Programs start with detection. The LACDPW staffs a 24-hour Pollution Prevention Hotline, which is shared with the District and available in English and Spanish. A Chinese hotline is also offered, which is available in Mandarin. Any IC/IDs reported to the hotlines are routed to the appropriate personnel for response, which may include ceasing, cleaning up, or diverting IC/ID flows before they reach the ocean receiving water. The City utilized the LACDPW's hotlines for public reporting of IC/IDs through June 2012, and then the City launched its own 24-hour Pollution Prevention Hotline. IC/IDs may also be detected by the Parties during desktop screening of the MS4. Permitted and suspected IC/IDs are stored in the Maintenance Management System database for the LACDPW and District and in an Access database for the City. Regional IC/ID investigation data collected by the Parties and reported for the last 11 fiscal years, which run from July 1st of the previous calendar year through June 30th of the corresponding calendar year, are presented on Table 3-2.

The need for enforcement actions within the area draining to ASBS 24 is infrequent, with an overall decreasing pattern in the past 5 years. Recent dry weather monitoring of LACDPW outfalls has determined that no dry weather flows from these outfalls reach the ocean receiving water. Annually, there are relatively few IC/IDs within the City's jurisdiction and most of the IC/IDs tracked have been related to irrigation runoff. When individual properties are identified as non-compliant with ASBS regulations due to irrigation runoff, they are mailed a letter to "cease and desist" the observed discharge. The City staff (previously CPS) then works with the property owners to help correct the runoff problem. The property owner must submit a report within 1 month detailing how the problem was fixed. The City may conduct additional site visits and continue monitoring the site, or other additional actions depending on the specific case. General letters, including Notices to Comply, are sent to high-priority neighborhoods and individuals identified, based on the City's field reconnaissance and historic data. Areas where discharges, if they were to occur, are more likely to impact the ASBS are deemed a high priority. The purpose is to inform and educate the public about ASBS discharge restrictions. The City maintains a database with information on every case, including all communication and photos.

Table 3-2. 2011-2012 IC/ID Program Regional Data

Fiscal Year[1]	Total Reported/ Identified		Cleaned Up/ Terminated/ Discontinued		No Evidence Discharge		Conditionally Exempt/In Compliance		Enforcement or Other Action	
	IDs	ICs	IDs	ICs	IDs	ICs	IDs	ICs	IDs	ICs
County of Los Angeles (Source LACDPW, 2012)										
2002	18	2	18	2	0	-	0	0	0	0
2003	73	4	73	4	0	-	0	0	0	0
2004	11	0	11	0	0	-	0	0	0	0
2005	77	0	77	0	0	-	0	0	0	0
2006	65	0	65	0	0	-	0	0	0	0
2007	39	0	39	0	0	-	0	0	0	0
2008	219	1	219	1	7	-	0	0	0	1
2009	72	2	66	1	28	-	4	0	5	2
2010	34	2	34	1	3	-	0	0	0	2
2011	6	0	6	0	1	-	0	0	0	0
2012	2	0	1	0	1	-	0	0	0	0
Fiscal Year[1]	**Total Reported/ Identified**		**Cleaned Up/ Terminated/ Discontinued**		**No Evidence Discharge**		**Conditionally Exempt/In Compliance**		**Enforcement or Other Action**	
	IDs	ICs	IDs	ICs	IDs	ICs	IDs	ICs	IDs	ICs
Los Angeles County Flood Control District (Source: District, 2012)										
2002	495	494	154	48	5	-	3	398	1	0
2003	631	1,563	268	123	0	-	1	85	1	154
2004	265	1,375	166	145	44	-	4	89	0	68
2005	203	1,352	170	138	59	-	2	523	6	33
2006	204	1,079	184	84	37	-	0	819	11	31
2007	221	479	204	41	16	-	0	226	9	36
2008	223	775	216	33	7	-	0	426	11	218
2009	151	534	138	40	12	-	0	262	0	46
2010	88	409	59	67	29	-	0	219	0	68
2011	51	99	51	17	0	-	0	68	0	12
2012	87	170	87	50	14	-	0	95	0	9
Fiscal Year[1, 2]	**Total Reported/ Identified**		**Cleaned Up/ Terminated/ Discontinued**		**No Evidence Discharge**		**Conditionally Exempt/In Compliance**		**Enforcement or Other Action**	
	IDs	ICs	IDs	ICs	IDs	ICs	IDs	ICs	IDs	ICs
City of Malibu (Source: City, 2012)										
2002	6	0	5	0	1	-	0	0	0	0
2003	9	0	7	0	2	-	0	0	0	0
2004	5	0	5	0	0	-	0	0	0	0
2005	9	0	6	0	3	-	0	0	1	0
2006	25	0	11	0	13	-	1	0	11	0
2007	11	0	6	0	5	-	0	0	7	0
2008	41	3	25	1	6	-	5	0	20	3
2009	36	2	26	2	4	-	0	0	28	2
2010	36	1	16	1	13	-	3	0	18	1
2011	27	0	15	0	7	-	3	0	8	0
2012	17	0	8	0	2	-	6	0	5	0

Note 1: IC/ID data covers the entire jurisdictional areas of the County, District, and City.
Note 2: Due to the ASBS restrictions on non-storm water discharges, the City considers any discharge inland of ASBS to not be conditionally exempt regardless of the nature of the discharge (with the exception of the exemptions in the Special Protections for seeps and other such natural flows including footing drains).

3.2.4 Dry Weather Monitoring

3.2.4.1 City of Malibu ASBS Focused Outreach Program

As part of the City of Malibu ASBS Focused Outreach Program the ASBS 24 was regularly patrolled by the CPS who looked for dry-weather runoff and other pollution threats in the coastal and inland areas. The CPS was funded by a Proposition 84 grant that continued through July 2014. Even though the grant-funded outreach project that included the CPS is complete, the City added a new position in July 2014 which assumed the outreach and inspections duties previously performed by the CPS. When individual properties are identified as being out of compliance with the Special Provisions and City policies, such as through over-irrigation, they are mailed educational materials and a cease-and-desist letter (see Section 3.2.3.1). City staff personally engages with these property owners by providing education on the potential impact to the ASBS and tailoring solutions (e.g., water conservation techniques, available rebate programs) to the property. There were eighty-three illicit discharge cases over the study period covered by the grant (November 2011 – March 2014) with a 96% success rate abating the runoff with “cease and desist discharge” letters followed by additional outreach, assistance, and sometimes site visits. Site visits were conducted at twenty-five properties to understand and mitigate runoff. Of the eighty-three cases over the project period, only three remain open. Two of the illicit discharge cases (2%) required assistance from code enforcement to gain compliance. Seventeen of the eighty-three properties were beachfront properties (20%), and only one illicit discharge from a low priority nonpoint source over the two and a half year project period actually reached the receiving water (1%). The patrol program coupled with outreach efforts to correct the observed issues is successful, but labor intensive.

3.2.4.2 County Dry Weather Outfall Inspections

County staff has been regularly performing inspections of outfalls along the ASBS to document the presence or absence of flow and where needed, take action to eliminate prohibited discharges. A summary of these outfall inspections for 2012 and 2013 is provided on Table 3-3 and Table 3-4, respectively. Of the inspected outfalls, only ASBS-002 had flows reaching the surf. Flow from this outfall was noted reaching the surf once out of the 13 times visited in 2012 and once out of the three times visited in 2013. In both cases these flows reaching the surf were observed in the first month that inspections occurred (January and February for 2012 and 2013, respectively). The suspected source of the flow was over-irrigation in 2012; outreach to residents has been performed as detailed Section 3.2.1. It is anticipated that this outreach effort has addressed the potential source of the non-storm water flows. In 2013 the suspected source of the flow was from a nearby construction site, and City staff visited that construction site to ensure that appropriated BMPs were in place to prevent future discharges. Inspections performed March and May of 2013 at ASBS-002 indicated that flow was not present. Several other outfalls were observed with flows or ponded water; however, due to the distance between the outfall and the surf zone, these minor flows did not reach the receiving water. Inspections will continue to ensure that discharges of non-storm, non-authorized runoff do not occur.

Table 3-3. 2012 Outfall Dry Weather Inspections Summary

Outfall	Beach	January, 2012			February, 2012			March, 2012			April, 2012			Source / Notes
		No. of Visits	No. of Flow	No. Flow to Surf	No. of Visits	No. of Flow	No. Flow to Surf	No. of Visits	No. of Flow	No. Flow to Surf	No. of Visits	No. of Flow	No. Flow to Surf	
ASBS-001	Broad Beach	1	1		4	2		4	2		3	1		Undetermined
ASBS-002	Broad Beach				6	3	1	4	2		3	1		Over irrigation
ASBS-003	Broad Beach	1			6			4			3			
ASBS-004	Zuma Beach	1			5	4		4	4		2	1		Over irrigation
ASBS-005	Zuma Beach	1			5			4			2			
ASBS-006	Zuma Beach				5	1		4			2			Undetermined low flow
ASBS-007	Zuma Beach				5	4		4	4		2	2		Hillside dewatering
ASBS-008	Zuma Beach													
ASBS-009	Zuma Beach				5			4			2			
ASBS-010	Zuma Beach													
ASBS-011	Zuma Beach				5	2		4	4		2	1		Hillside dewatering
ASBS-012	Zuma Beach													
ASBS-013	Zuma Beach													
ASBS-014	Zuma Beach													
ASBS-015	Zuma Beach													
ASBS-016	Zuma Beach													
ASBS-017	Zuma Beach													
ASBS-018	Zuma Beach													
ASBS-019	Zuma Beach													
ASBS-020	Zuma Beach													
ASBS-021	Westward Beach													
ASBS-022	Westward Beach													
ASBS-023	Westward Beach				2	1		3			2	1		Undetermined low flow
ASBS-024	Westward Beach													
ASBS-025	Escondido Beach													
ASBS-026	Escondido Beach													
ASBS-027	Escondido Beach	1	1		3	3		5	4		1	1		Hillside dewatering
ASBS-028	Escondido Beach													
ASBS-029	Escondido Beach				3	3		5	4		1	1		Hillside dewatering
ASBS-030	Escondido Beach				3	1		5			1			Sudsy water
ASBS-031	Nicholas Beach													

Table 3-4. 2013 Outfall Dry Weather Inspections Summary

Outfall	Beach	February, 2013			March, 2013			May, 2013			July, 2013			Source / Notes
		No. of Visits	No. of Flow	No. Flow to Surf	No. of Visits	No. of Flow	No. Flow to Surf	No. of Visits	No. of Flow	No. Flow to Surf	No. of Visits	No. of Flow	No. Flow to Surf	
ASBS-001	Broad Beach	1			1			1						
ASBS-002	Broad Beach	1	1	1	1			1						Construction site. Corrected.
ASBS-003	Broad Beach	1			1			1						
ASBS-004	Zuma Beach	1	1		1	1		1	1		1			Over irrigation
ASBS-005	Zuma Beach	1			1			1			1			
ASBS-006	Zuma Beach	1			1			1			1			
ASBS-007	Zuma Beach	1	1		1	1		1	1		1			Hillside dewatering
ASBS-008	Zuma Beach	1			1			1			1			
ASBS-009	Zuma Beach	1			1			1			1			
ASBS-010	Zuma Beach	1			1			1			1			
ASBS-011	Zuma Beach	1	1		1	1		1	1		1	1		Natural stream north of PCH
ASBS-012	Zuma Beach	1			1			1			1			
ASBS-013	Zuma Beach	1			1			1			1			
ASBS-014	Zuma Beach	1			1			1			1			
ASBS-015	Zuma Beach	1			1			1			1			
ASBS-016	Zuma Beach	1			1			1			1			
ASBS-017	Zuma Beach	1			1			1			1			
ASBS-018	Zuma Beach	1			1			1			1			
ASBS-019	Zuma Beach	1			1			1			1			
ASBS-020	Zuma Beach	1			1			1			1			
ASBS-021	Westward Beach	1			1			1			1			
ASBS-022	Westward Beach	1			1			1			1	1		Trickle of water drops observed
ASBS-023	Westward Beach	1			1			1			1			
ASBS-024	Westward Beach	1			1			1			1			
ASBS-025	Escondido Beach	1			1									
ASBS-026	Escondido Beach	1			1									
ASBS-027	Escondido Beach	1			1									
ASBS-028	Escondido Beach	1			1									
ASBS-029	Escondido Beach	1	1		1	1								Hillside dewatering
ASBS-030	Escondido Beach	1			1									
ASBS-031	Nicholas Beach	1			1			1			1			

3.3 Inspection Program Assessment

Section I.A.2.c of the General Exception states that for MS4s, the ASBS Compliance Plan requires the following minimum inspection frequencies:

1. Weekly during the rainy season for construction sites.
2. Monthly during rainy season for industrial facilities.
3. Twice during the rainy season for commercial facilities.

In addition, the General Exception states that storm water drain outfalls equal to or greater than 18 inches in diameter or width will be inspected once prior to the beginning of the rainy season and once during the rainy season, and maintained to remove trash and other anthropogenic debris (SWRCB, 2012b).

Section 3.3.1 outlines the Parties' existing inspection programs and Section 3.3.2 outlines the recommended inspection program enhancements that would meet the requirements of the General Exception.

3.3.1 Existing Inspection Programs

The following sections outline the Parties' inspection programs that are currently in place. Discussions of specific LACDPW, District, and City inspections, where available, are limited to those areas draining to ASBS 24.

3.3.1.1 Commercial and Industrial Inspection Programs

Existing inspection programs for commercial and industrial facilities (e.g., restaurants, retail gasoline outlets (RGOs), automotive service facilities, United States Environmental Protection Agency (EPA) Phase I facilities, landfills) were conducted in accordance with the requirements of the 2001 NPDES permit (Order No. 01-182) (LARWQCB, 2001). The Permit included requirements for tracking, inspecting, and ensuring compliance for those facilities that are critical sources of storm water pollutants. The 2012 NPDES permit (Order No. R4-2012-0175) inspection frequencies are unchanged from the 2001 Permit requirements, although the minimum interval between inspections is reduced from 12 months to 6 months. The 2012 Permit also includes the requirement that commercial and industrial facility operators be notified of BMP requirements applicable to their site at least once during the 5-year permit cycle.

Commercial facility inspections are required by the NPDES Permit at a minimum of twice during the 5-year permit cycle. In 2008, the City began inspecting food-service related commercial businesses annually, exceeding the permit requirements. For industrial facilities, one industrial facility inspection is required within the first 2 years of the 2012 Permit and a second inspection is only required if an industrial facility has not filed a No Exposure Certification with the SWRCB. The City inspects RGOs and auto service facilities at least every other year, exceeding the permit requirement. The 2012 Permit requires follow-up inspections to be completed within 4 weeks of an infraction, and a minimum of two follow-up inspections and two enforcement letters must be issued to demonstrate a permittee's good faith effort to encourage a business to comply with the NPDES requirements.

Overall, the General Exception requires more frequent inspections than the NPDES permits. Commercial facility inspections are required at a minimum of twice per year during the rainy season. Industrial facility inspections are required a minimum of monthly, also during the rainy season. A summary of the seasonal minimum inspection frequencies required by the two NPDES permits and the General Exception for commercial and industrial facilities are presented on Table 3-5.

Table 3-5. Minimum Inspection Frequencies for Commercial and Industrial Facilities

Inspection Program	Inspection Frequency Required in ASBS 24	Historic Inspection Frequency, NPDES Permit Order R4-2012-0175	Historic Inspection Frequency, NPDES Permit Order No. 01-182
Commercial	Twice/year (rainy season)	Twice/5-year permit cycle, with at least 6 months between inspections	Twice/5-year Permit cycle, with at least one year between inspections[3]
Industrial[1]	Monthly (rainy season)	Twice/5-year permit cycle, with at least 6 months between inspections[2]	

[1]Industrial inspections frequencies will be implemented, if applicable to the ASBS 24 watershed.
[2] First inspection is required within 2 years of permit effective date. Second inspection (with at least 6 months between) is required before permit expiration if a No Exposure Certification has not been filed. Second inspections will also be performed at a minimum of 25% of facilities with No Exposure Certifications.
[3] No second inspection required at Phase I Tier II facilities determined to have no risk of exposure of industrial activities to storm water.

3.3.1.2 County Industrial and Commercial Inspection Program

The land use under the LACDPW's jurisdiction within the area draining to ASBS 24 is primarily undeveloped open space. There are no industrial facilities or commercial facilities within the area draining to ASBS 24 that must comply with the inspection frequencies outlined in the General Exception.

3.3.1.3 District Industrial and Commercial Inspection Program

Aside from its own properties and facilities, the District has no planning, zoning, development, permitting, or other land use authority over industrial or commercial facilities within its service area. As such, the District has no qualifying industrial or commercial facilities within the area draining to ASBS 24 that must comply with the inspection frequencies outlined in the General Exception.

3.3.1.4 City Industrial/Commercial Facilities Inspection Program

The goals of the City's commercial and industrial (should an industrial facility begin operating; there are currently no industrial facilities in the City) inspection program include compliance verification, enforcement as needed, and education regarding storm water and urban runoff issues, recycling, and City environmental quality ordinances.

The City's commercial and industrial inspection program is overseen by environmental programs staff. During an inspection, educational materials that may be provided include surface cleaning techniques, waste management, waste minimization, and recycling options; storm water pollution prevention tips; and potential BMPs tailored to the inspected business. Businesses may call City staff with any storm water- or inspection-related questions. City environmental programs staff also coordinates interdepartmentally with other City staff including the code enforcement officer,Public Works and the Building Safety inspectors, who have been trained to watch for storm water BMP infractions and are authorized to issue correction notices in the field. Code enforcement and the environmental programs staff work together to issue cease-and-desist letters if violations have not been corrected. Repeat offenses are subject to increased enforcement procedures and may be subject to Malibu's administrative citation ordinance, exposing the violator to civil penalties as well as traditional enforcement remedies.

The City conducts annual inspections of food-service commercial facilities and at least every other year on automotive related service facilities, going above and beyond the historic requirements of the NPDES Permit. There is not an extensive base of commercial businesses operating within the City. As reported in the 2011-2012 Annual Report (City, 2012), the City inspected 60 restaurants/food service-related businesses, three grocers,[1] six RGOs, and three automotive services[2] during the reporting year. Only a subset of these commercial businesses is located within the ASBS 24 watershed. Based on a review of available data, the area draining to ASBS 24 contains approximately 15 businesses that sell or serve food, three inns/motels/hotels, a couple of other stores, and one service station.

In conjunction with the annual commercial inspection program, the City implements the Clean Bay Restaurant Certification program of the Bay Foundation in partnership with several other agencies in the south Santa Monica Bay area specifically for food-service related businesses. Through the program, restaurants and other food management businesses are inspected and certified for proper handling of food waste, managing wash water, and implementing environmental policies that protect the storm drain system and ultimately the ocean receiving waters. The program certifies businesses as either 100% compliant with all program criteria or as non-compliant and therefore not certified under the Clean Bay Restaurant program. The program's primary success stems from brand recognition. It is a benefit to the partner agencies to work together in a larger regional and more recognized certification program so they may share resources such as promotional items and marketing materials, the advantage of Bay Foundation staff helping to promote the program at special events, and a standardized protocol; in essence, taking advantage of strength in numbers. As popularity and name recognition increases, there is a greater incentive to be certified in the program and more businesses will want to participate and take the extra steps to ensure they maintain certification. If a participant is found to not meet criteria or have a violation during the year that they are certified, they are subject to a strict rescinding policy and may have the certification revoked until the next period. The City's 2011-2012 Annual Report indicated that 93% of relevant businesses under the City's jurisdiction were currently certified under the program (City, 2012).

The City has complied with requirements to conduct inspections of industrial facilities when applicable. Industrial land use is very limited within the City's jurisdiction; in the 2011-2012 Annual Report, only one facility had active coverage under the State Industrial Activities Storm

[1] During the 2012-2013 annual reporting year, the Hughes Market grocery closed for business. The business will be replaced with a new organic grocer.
[2] All four RGOs that formerly housed automotive bays no longer offer these services. Two of the automotive service facilities are primarily RGOs.

Water General Permit and was in the process of terminating coverage. This business is under new ownership and is now a hardware store.

The City is exploring protocols to identify and track any new commercial and industrial facilities located within the area draining to ASBS 24 and ensure that inspections are implemented in accordance with the General Exception requirements. All current commercial facilities have been identified. Food service-related and RGO businesses in the area which may drain to the ASBS are being inspected at least twice in the wet season. There are no industrial facilities.

3.3.1.5 Construction Site Inspection Programs

In accordance with the Los Angeles County Municipal NPDES Permit, permittees are required to develop, implement, and enforce a construction program that prevents illicit construction-related discharges of pollutants into the MS4 and receiving waters; implements and maintains structural and nonstructural BMPs to reduce pollutants in storm water runoff from construction sites; reduces construction site discharges of pollutants to the MS4 to the maximum extent practicable; and prevents construction site discharges to the MS4 from causing or contributing to a violation of water quality standards.

Existing construction site inspection programs were implemented in accordance with the requirements of the 2001 NPDES permit. The Permit requires permittees to inspect all construction sites (1 acre and greater) a minimum of once during the wet season and requires implementation of BMPs such as inspection of graded areas during rain events to control erosion from slopes and channels. For all construction sites where a Storm Water Pollution Prevention Plan (SWPPP) is not adequately implemented, permittees are required to conduct a follow-up inspection within 2 weeks of the initial inspection. In addition, proof of a Waste Discharger Identification (WDID) number for filing a Notice of Intent (NOI) for coverage under the General Construction Storm Water Permit and certification that a SWPPP has been prepared is required prior to issuance of a grading permit. Permittees are also required to use a database or other effective system to track grading permits for construction sites totaling 5 acres or greater. In the case of violations, two follow-up inspections within 3 months and two enforcement letters must be issued to demonstrate a permittee’s good faith effort to encourage a business to comply with the NPDES requirements.

The 2012 NPDES Permit outlines the new, more stringent requirements for construction site frequency that became effective on December 28, 2012. According to the 2012 NPDES Permit, construction sites with a minimum of 1 acre of soil disturbance must be inspected by permittees a minimum of three times (e.g., prior to land disturbance, during active construction, and at the conclusion of the project) and at least monthly during the rainy season. Additionally, sites that discharge to a water body listed on the Section 303(d) List as impaired for sediment or turbidity, or determined to be a “significant threat to water quality,” will be inspected by permittees at least once every 2 weeks during the rainy season. All sites will be inspected prior to a forecasted storm event[3] and within 48 hours after a recorded storm event.[4] The 2012 NPDES Permit

[3] A forecast storm event is defined by the NPDES permit as two or more consecutive days with a greater than 50% chance of rainfall that has been predicted by the National Oceanic and Atmospheric Administration (NOAA). This definition is in agreement with the definition of a storm event in the Construction General Permit.

requires construction sites consisting of less than 1 acre of soil disturbance to be managed through the permittees' erosion and sediment control ordinances and building permit requirements. These smaller construction sites shall be inspected on an as-needed basis. The inspection requirements of the 2012 NPDES Permit are in addition to the visual inspection programs implemented by the construction contractor's Qualified SWPPP Practitioner in accordance with the requirements of the Construction General Permit.[5] Under the 2012 NPDES Permit, permittees are required to use an electronic system to inventory permits for all construction sites.

The General Exception requires more frequent inspections than the 2012 NPDES Permit in areas draining to ASBS 24. Construction sites, defined as sites with 1 acre or more of disturbance (SWRCB, 2010), must be inspected weekly during the rainy season. A summary of the seasonal minimum inspection frequencies required by the two NPDES permits and the General Exception are presented on Table 3-6.

Table 3-6. Minimum Inspection Frequencies for Construction Sites (1 Acre or Greater)

Inspection Program	Inspection Frequency Required in ASBS 24	Historic Inspection Frequency, NPDES Permit Order R4-2012-0175	Historic Inspection Frequency, NPDES Permit Order No. 01-182
Construction	Weekly (rainy season)	Three times (before, during, and following construction) and: Monthly (rainy season) or Once every two weeks (rainy season)*	Once/year, following rain event

*For construction sites tributary to a water body on the Section 303(d) List due to sediment or turbidity.

3.3.1.6 County Construction Site Inspection Program

The LACDPW Architectural Engineering, Construction, and Building and Safety Divisions, along with applicable County departments, are responsible for County construction inspections. The LACDPW's construction program requires all construction projects to develop and implement erosion and sediment control BMP plans prior to the start of construction (i.e., Wet Weather Erosion Control Plan [WWECP] for sites less than one acre of disturbed land, Local Storm Water Pollution Prevention Plan [LSWPPP] and a WWECP for sites greater than 1 acre of disturbed land). The LSWPPP must include year-round BMPs to control pollutants that originate from the construction site due to construction activities.

[4] A recorded storm event is defined in the NPDES permit as a ½-inch rain event. This definition is in agreement with the definition of a storm event in the Construction General Permit.

[5] In accordance with the Construction General Permit, non-storm water visual inspections are required weekly for Risk Level 1, 2, and 3 projects. These inspections are recorded quarterly and performed daily for LUP Type 1, 2, and 3 projects. Inspections are also required before forecasted storm events and within 48 hours of a recorded storm event.

In addition to filing an LSWPPP, for projects greater than 1 acre, the applicant must file a NOI per the State General Construction Storm Water Permit and obtain a WDID number from the State Water Resources Control Board (SWRCB, 2010). Prior to grading plan approvals, the LACDPW requires the applicant to submit copies of the NOI, WDID, and SWPPP. Projects are notified of any required changes to the SWPPP and BMPs prior to the start of the rainy season. Inspections occur thereafter, and also after each significant rainfall event. Post-construction structural BMPs are inspected annually as part of the permit renewal process. In the event that enforcement actions are taken, they occur in the order listed: warnings, stop-work notices, office meetings, notices of violation, referrals to the Regional Board, and fines or non-payment of general contractor's invoices until the violation is corrected.

The LACDPW has begun implementing new protocols to identify and track active construction sites located within the area draining to outfalls that discharge to the ASBS 24 in order to ensure that inspections are implemented in accordance with the General Exception schedule requirements, where applicable.

3.3.1.7 District Construction Site Inspection Program

Aside from its own properties and facilities, the District has no planning, zoning, development, permitting, or other land use authority over new developments or redevelopment projects, or development construction sites within its service area. Under the 2012 NPDES Permit, the District is subject to the minimum control measures of a Public Agency Activities Program, which differ from the minimum control measures imposed on other permittees. Only the Public Construction Activities Management Program, a component of the Public Agency Activities Program, could potentially be applicable to District facilities within the area draining to ASBS 24. When active construction sites under the jurisdiction of District are located within the area draining to ASBS 24, internal construction site inspections would be implemented in accordance with the existing inspection criteria defined by the LACDPW, as discussed in Section 3.3.1.6.

3.3.1.8 City Construction Site Inspection Program

Grading within the City is limited to single-lot development. The area of disturbance is restricted due to development constraints implemented by the Santa Monica Mountains Local Coastal Plan and the Municipal Code. The Development Construction Inspection Program is implemented by the Environmental Sustainability Department and the Public Works Department. Applicants are notified if an NOI for coverage under the State General Construction Storm Water Permit is required, and plans are not approved until proof of a WDID has been submitted.

The City's construction inspection program for all sediment-disturbing projects begins with a pre-grading meeting with the general contractor, deputy building official, and environmental & building safety inspector (occasionally the LACDPW inspector). At the pre-grading meeting, the SWPPP is reviewed and appropriate BMPs, including sediment and erosion controls, are discussed, and the implementation schedule is developed by construction phase. During the meeting, it is stressed to all contractors that the job site will be shut down until the required measures are in place if the contractor fails to comply. The SWPPP is discussed with the general contractor at commencement of building construction activities, with a reminder of the repercussions (i.e., tiered enforcement actions, up to and including site closure) of failing to comply. Project sites are visited regularly during the grading phase. During the construction phase, the building inspector routinely conducts on-site inspections. The implementation and maintenance of the appropriate BMPs are checked at each inspection.

Violations are addressed immediately. All issues receive an Initial Notice of Violation/Warning and corrective actions are required with strict compliance deadlines (24 hours during rainy weather and up to 72 hours during non-critical times). Sites are then re-inspected to verify compliance and a stop-work order may be issued until compliance is verified (City, 2012).

In accordance the General Construction Permit construction projects of 1 acre or greater are inspected at least twice during the rainy season The City currently inspects all construction sites monthly, and higher risk construction sites before/during rain events as of the 2013-2014 winter. The City is implementing new protocols to identify and track active single-lot construction sites located within the area draining to outfalls that discharge to the ASBS 24 to ensure that construction site inspections are implemented weekly during the rainy season, in accordance with the General Exception requirements (summarized on Table 3-6).

3.3.1.9 Storm Drain Outfall Inspection and Cleaning Programs

Existing storm drain inspection programs were implemented in accordance with the requirements of the 2001 NPDES Permit . Each permittee was required to implement a Public Agency Activities Program to minimize storm water pollution impacts and to identify opportunities to reduce these impacts from areas of existing development. One of the activities covered under the Public Agency Activities Program is storm drain operation and maintenance, which includes visual monitoring of open-channels and other drainage structures for trash and debris at least annually; removal of trash and debris from open channels at least once annually prior to the wet season; elimination of the discharge of contaminants during MS4 maintenance; and proper disposal of debris and trash removed during storm drain maintenance. The storm drain inspection frequency was not modified in the 2012 NPDES Permit .

In addition to the annual inspection required by the NPDES Permits, the General Exception requires an additional inspection during the rainy season. A summary of the minimum inspection frequencies required by the two NPDES Permits and the General Exception is presented on Table 3-7.

Table 3-7. Minimum Inspection Frequencies for Storm Drain Outfalls

Inspection Program	Inspection Frequency Required in ASBS 24	Historic Inspection Frequency, NPDES Permit Order R4-2012-0175	Historic Inspection Frequency, NPDES Permit Order No. 01-182
MS4 outfalls	Once prior to rainy season; once during rainy season	Once/year, before the rainy season	Once/year, before the rainy season

3.3.1.10 County MS4 Outfall Inspection Program

Systems within the area draining to ASBS 24 that are at least 18 inches in diameter are generally located in the parking lots along County beaches. Beach sand frequently piles up in the outlet of these systems. These outfalls are cleared by DBH prior to the rainy season and catch basin systems are cleaned out in late summer or early fall, prior to the rainy season and again during the rainy season, as part of the LACDPW's Road Maintenance Division annual drainage inspection program.

The LACDPW has begun implementing new protocols to identify applicable outfalls that discharge to ASBS 24 to ensure that inspections are implemented in accordance with the General Exception schedule requirements (i.e., in addition to prior to the rainy season, second inspection to be performed during the rainy season).

3.3.1.11 City MS4 Outfall Inspection and Cleaning Program

The City's Storm Drain/Culvert Facilities Maintenance program is in place for annual and post-storm inspection and cleaning of storm drain facilities. All storm drain inlets are cleaned annually, and priority storm drains are cleaned at a minimum of twice annually. This program ensures that litter, debris, and pollutants are removed to prevent them from getting into the local waterways and impacting beneficial uses. In collaboration with LACDPW, the City will be conducting similar protocols to identify outfalls that discharge to ASBS 24. In general, citywide outlets are inspected when accessible. No applicable ASBS outlets are owned by the City. A contract service provider conducts the culvert cleaning and maintenance work on behalf of the City.

3.3.2 Inspection Program Enhancements to Comply with ASBS Special Protection Requirements

As the Parties modify their inspection programs to comply with the requirements of the current 2012 NPDES Permit, the Parties will need to include enhanced protocols for inspection programs implemented for sites within the area draining to outfalls that discharge to the ASBS 24. The inspection program requirements of the 2012 NPDES Permit and the General Exception are presented in Section 3.3.1 and the details of the required program enhancements are discussed in the following sections.

3.3.2.1 County Inspection Program Enhancements

The recommended enhancements to the LACDPW's existing inspection program are presented on Table 3-8 and include:

- During the rainy season, increase the inspection frequency to once per week for construction sites (at least 1 acre) under the LACDPW's jurisdiction that are located within the applicable area draining to ASBS 24.
- Conduct inspection and cleaning of storm drain outfalls measuring at least 18 inches in diameter or width catch basins that are located within the area draining to ASBS 24 once prior to the rainy season and once during the rainy season, at a minimum.

Table 3-8. County Inspection Program Enhancements

Program	Enhancement	Frequency
Commercial	Not applicable	-
Industrial	Not applicable	-
Construction (at least 1 acre)	Increase inspection frequency	Once/week (rainy season)
Storm Drain Outfalls	Coordinate inspections with	Once/dry season (prior to rainy season)

	ASBS criteria	and once/rainy season/year

3.3.2.2 District Inspection Program Enhancements

The recommendations for the DPW's inspection program are presented on Table 3-9 and include the following:

- When the District's active construction sites (at least 1 acre) are located within the applicable area draining to ASBS 24, District will implement inspections once per week during the rainy season in accordance with Special Protections and during the dry season in accordance with the requirements of the 2012 NPDES Permit.
- Conduct inspection and cleaning of storm drain outfalls measuring at least 18 inches in diameter or width catch basins which are located within the area draining to ASBS 24 once prior to the rainy season and once during the rainy season, at a minimum.

Table 3-9. District Inspection Program Enhancements

Program	Enhancement	Frequency
Commercial	Not applicable	-
Industrial	Not applicable	-
Construction (at least 1 acre)	Increase inspection frequency	Once/week (rainy season)
Storm Drain Outfalls	Coordinate inspections with ASBS criteria	Once/dry season (prior to rainy season) and once/rainy season/year

3.3.2.3 City Inspection Program Enhancements

The recommended enhancements to the City's existing inspection program are presented on Table 3-10 and include the following:

- During the wet season, increase the inspection frequency for construction sites (at least 1 acre) within the City's jurisdiction that are located within the applicable area draining to ASBS 24 to once per week. Applicable construction sites are being inspected at this increased frequency.
- The outfalls associated with City maintained inlets are located on private properties and considered private. The City does not own or maintain outfalls that discharge to ASBS 24. As such, no enhancements are currently proposed for the City to inspect and clean outfalls.

Table 3-10. City Inspection Program Enhancements

Program	Enhancement	Frequency
Commercial	Increase inspection frequency	Twice/year (rainy season)
Industrial	Currently not applicable based on existing land uses	-
Construction (at least 1 acre)	Increase inspection frequency	Once/week (rainy season)

4.0 RECEIVING WATER ASSESSMENT

A determination of whether there is currently an exceedance of the natural water quality of the ASBS is the first step in the process of assessing the potential pollutant load reductions targets required to enhance the water quality of the ASBS. Wet weather receiving water quality monitoring data results were evaluated in comparison to data for reference monitoring sites, in accordance with the flowchart provided as Attachment 1 to the General Exception, to determine if an exceedance of the natural water quality currently exists.

4.1 Determination of Compliance with Natural Water Quality

In 2008, a study was conducted as part of Bight 2008 to assess water quality in southern California ASBS (Schiff et al., 2011). The study was designed to evaluate the range of natural water quality near reference drainage locations and to compare water quality near ASBS discharges to these natural water quality conditions. Additional reference monitoring was performed under the Regional Monitoring Program. During the development of the draft Compliance Plan, compliance with natural water quality was determined by comparing receiving water data from wet weather monitoring conducted for ASBS 24 to the 85th percentile threshold of reference sample concentrations measured during Bight 2008 and Bight 2013.

Concentrations of pollutants in post-storm receiving water were compared to those in pre-storm receiving water and to the 85th percentile threshold of reference sample concentrations. When post-storm receiving water concentrations are greater than the 85th percentile threshold and are greater than pre-storm concentrations for two or more storm events, results from the next storm are analyzed. If post-storm receiving water concentrations are again greater than the 85th percentile threshold and pre-storm concentrations, the constituent(s) are classified as exceedances of natural water quality. Concentrations of TSS, ammonia, nitrate, total orthophosphate, and total metals were compared to the 85th percentile thresholds.

Wet weather monitoring was performed by LACDPW at two receiving water locations: 1) S01, located off Zuma Beach directly out from ASBS-016, a 60-inch storm drain; and 2) S02, located off Escondido Beach, directly out from ASBS-028, a 36-inch storm drain. Monitoring was conducted during storm events occurring on February 19 and March 8, 2013, and February 28, 2014. Wet weather flows from ASBS-016 only reached the ocean receiving water at S01 during the February 28, 2014, monitored event. The City performed monitoring at receiving water Site 24-BB-03R. For safety reasons, this site was only sampled during the February 28, 2014, event. Therefore, the assessment of compliance with natural water quality was primarily performed for receiving water station S02, which had samples collected during three wet weather events. Receiving water station S02 is associated with ASBS-028, which is a 36-inch outfall that drains a mixture of developed and vacant land. There are additional identified point source clustered west and east of this site with three (ASBS-025, ASBS-026, and ASBS-027) located to the west (within 0.25 miles) and two (ASBS-029 and ASBS-030) located to the east (within 0.1 miles). Therefore, receiving water station S02 is considered to be representative of the typical to worst case scenario of the potential impact that storm water runoff may have on the water quality within the ASBS. **Error! Reference source not found.** shows the locations of the receiving ater stations monitored in support of the preparation of this Plan.

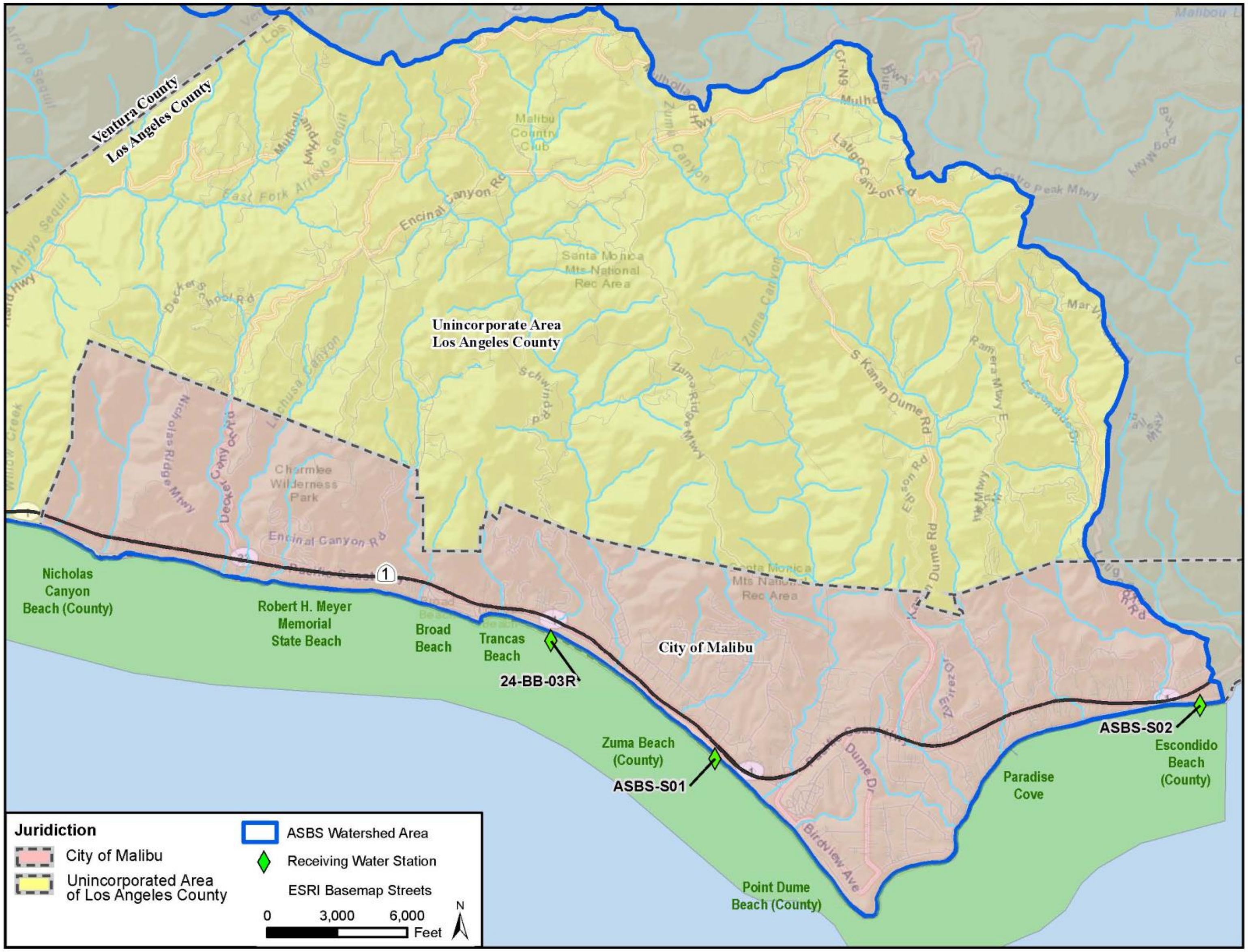

Figure 4-1. ASBS 24 Receiving Water Monitoring Location

RB-AR 7449

4.1.1 February 19, 2013, Storm Event Receiving Water Monitoring

The February 2013 storm event resulted in approximately 0.12 inches of rainfall based on rain gauge data obtained from County Fire Station 70 located at 3970 Carbon Canyon Road in Malibu, CA. Receiving water results were compared to the available list of constituents of reference site 85th percentile values. Post-storm concentrations of nitrate as nitrogen (N), selenium, total PAHs, and total pyrethroids were greater than the 85th percentile threshold (see Table 4-1). However, the nitrate as N post-storm concentration was less than the pre-storm concentration; therefore, the nitrate as N concentration is considered to be similar to background concentrations and is not classified as an exceedance. Since the selenium, total PAHs, and total pyrethroids concentrations were greater than the 85th percentile threshold and were greater than pre-storm concentrations, results from the proceeding storm event were analyzed to determine whether the natural water quality has been exceeded.

For constituents that are summed to get total values for comparison to 85th percentile total values (e.g., all OP pesticides, total PAHs, total pyrethroids), half of the method detection limits (MDL) were used for non-detect values. In the case of total pyrethroids for example, the reference sampling resulted in all non-detect values, and therefore the summation of the MDLs for the 10 selected pyrethroids is 6.75 µg/L. Following this process to determine total pyrethroids for the ASBS 24 receiving water stations results in an exceedance of 85th percentile threshold value anytime a pyrethroid included in the assessment has a measurable result (i.e., 85th percentile threshold in reality is zero). In actuality, the individual pyrethroid values may be less than half the MDL values (undetermined currently based on laboratory limitations) resulting in the possibility that the total pyrethroid value is less than the 85th percentile threshold. The same is true for both all OP pesticides and total PAHs assessments.

Table 4-1. February 2013 Receiving Water Results

Parameter	Units	85th Percentile of Reference Data	S01-PRE	S02-PRE	S02-POST
			2/18/2013	2/18/2013	2/19/2013
General Chemistry					
Ammonia as N	mg/L	0.015	0.09	0.04J	<0.02
Nitrate as N	mg/L	0.374	0.51	0.38	0.25
Oil & Grease	mg/L	0.5	14.1	<1	<1
Total Orthophosphate as P	mg/L	0.114	0.02	0.02	0.03
Total Suspended Solids	mg/L	55.4	5.2	7.9	40.5
Total Metals					
Arsenic (As)	µg/L	`	1.718	1.471	1.393
Cadmium (Cd)	µg/L	0.16	0.0229	0.0601	0.058
Chromium (Cr)	µg/L	2.6	0.3192	0.5437	0.6366
Copper (Cu)	µg/L	1.9	0.149	0.321	0.454
Lead (Pb)	µg/L	0.72	0.0513	0.102	0.1867
Mercury (Hg)	µg/L	0.0006	<0.0012	<0.0012	<0.0012
Nickel (Ni)	µg/L	2.2	0.2724	0.509	0.7661
Selenium (Se)	µg/L	0.017	0.007J	0.015	0.031
Silver (Ag)	µg/L	0.08	0.03	0.01J	<0.01
Zinc (Zn)	µg/L	19	1.0376	1.2033	12.2809
Organophosphorus Pesticides					
*All OP Pesticides	ng/L	6	6	6	6
Polynuclear Aromatic Hydrocarbons					
*Total PAHs	ng/L	12.5	12.5	12.5	41.1
Pyrethroids					
Bifenthrin	ng/L		<0.5	<0.5	<0.5
Deltamethrin/Tralomethrin	ng/L		<0.5	<0.5	<0.5
Esfenvalerate	ng/L		1.1J	<0.5	0.8J
All Other Pyrethroids	ng/L		ND	ND	ND
*Total Pyrethroids	ng/L	6.75	8.6	6.75	7.3

< - result less than the MDL.
ND - results less than the MDLs (multiple MDL values)
J - Analyte was detected at a concentration below the reporting limit and above the method detection limit. Reported value is estimated.

Red outline – Post-storm receiving water concentration is greater than 85th percentile of Reference Data AND greater than pre-storm concentration.

*Totals calculated using result values when if detected and half the MDL when results were <MDL.

4.1.2 March 8, 2013, Storm Event Receiving Water Monitoring

The March 2013 storm event resulted in approximately 0.74 inches of rainfall based on rain gauge data obtained from County Fire Station 70. The selenium and total PAHs concentrations in the receiving water were again greater than both the 85th percentile threshold and pre-storm concentrations (see Table 4-2). As a result, the concentrations of both constituents are considered to be exceedances of natural water quality and may be contributing to alterations in natural ocean water quality within ASBS 24. In addition, concentrations of nitrate as N, copper, lead, mercury, zinc, and total PAHs were greater than both the 85th percentile threshold and pre-storm concentrations. Results from the subsequent monitored wet weather event (February 2014) were used to evaluate whether the listed constituents in storm water runoff were considered to be contributing to an exceedance of natural water quality.

The receiving water Site S02 results for the first monitored event (February 2013 event) included a concentration total pyrethroid that was greater than both the 85th percentile threshold and pre-storm concentrations (see Table 4-1). The February 2014 receiving water Site S02 concentration for total pyrethroid was not greater than both the 85th percentile threshold and pre-storm concentrations (see Table 4-2).

Table 4-2. March 2013 Receiving Water Results

Parameter	Units	85th Percentile of Reference Data	S01-PRE 3/6/2013	S02-PRE 3/6/2013	S02-POST 3/8/2013
General Chemistry					
Ammonia as N	mg/L	0.015	0.04J	0.03J	<0.02
Nitrate as N	mg/L	0.374	0.48	0.49	0.54
Oil & Grease	mg/L	0.5	<1	<1	<1
Total Orthophosphate as P	mg/L	0.114	0.03	0.03	0.06
Total Suspended Solids	mg/L	55.4	3.8	14.9	33.3
Total Metals					
Arsenic (As)	µg/L	1.72	1.558	1.563	1.577
Cadmium (Cd)	µg/L	0.16	0.0281	0.0587	0.1396
Chromium (Cr)	µg/L	2.6	0.2422	0.6549	2.5224
Copper (Cu)	µg/L	1.9	0.157	0.378	2.924
Lead (Pb)	µg/L	0.72	0.0288	0.1558	1.0434
Mercury (Hg)	µg/L	0.0006	<0.0012	<0.0012	0.0046J
Nickel (Ni)	µg/L	2.2	0.2849	0.625	1.8595
Selenium (Se)	µg/L	0.017	0.008J	0.017	0.052
Silver (Ag)	µg/L	0.08	<0.01	0.01J	<0.01
Zinc (Zn)	µg/L	19	2.6986	37.8762	54.1039
Organophosphorus Pesticides					
*All OP Pesticides	ng/L	6	6	6	6
Polynuclear Aromatic Hydrocarbons					
*Total PAHs	ng/L	12.5	12.5	12.5	25.5
Pyrethroids					
Bifenthrin	ng/L		<0.5	<0.5	8.4
Deltamethrin/Tralomethrin	ng/L		10.6	26.6	<0.5
Esfenvalerate	ng/L		<0.5	<0.5	<0.5
All Other Pyrethroids	ng/L		ND	ND	ND
*Total Pyrethroids	ng/L	6.75	19.85	35.85	17.65

< - result less than the MDL.
ND - results less than the MDLs (multiple MDL values)
J - Analyte was detected at a concentration below the reporting limit and above the method detection limit. Reported value is estimated.
Red outline – Post-storm receiving water concentration is greater than 85th percentile of Reference Data AND greater than pre-storm concentration.
Orange fill – Analyte concentration has exceeded 85th percentile of Reference Data during 1st and 2nd monitoring event.
*Totals calculated using result values if above the MDL and half the MDL when results were less than the MDL.

4.1.3 February 28, 2014, Storm Event Receiving Water Monitoring

The February 2014 storm event resulted in a total event rainfall of approximately 2.26 inches of rainfall based on rain gauge data obtained from County Fire Station 70. Pre- and post-storm samples were collected at Sites S01, S02, and 24-BB-03R.

The concentrations of total orthophosphate as P, TSS, mercury, selenium, silver, total PAHs, and total pyrethroids in receiving water at Site S02 were greater than both the 85th percentile threshold and pre-storm concentrations (see Table 4-3). Based on the results from the first and second monitored events in accordance with the General Exception, selenium and total PAHs are considered to be exceedances of natural water quality. The selenium and total PAHs results at Site S02 from the February 2014 event are consistent with those previous data. The mercury result being higher than both the 85th percentile threshold and pre-storm concentration for the second consecutive monitored event is considered to be exceedance of the natural water quality and may be contributing to alterations in natural ocean water quality within ASBS 24. Of the three storms monitored, the February 2014 events results for Site S02 are the only one where orthophosphate as P, TSS, or silver were above both the 85th percentile threshold and pre-storm concentrations. Therefore, the receiving water Site S02 measured concentrations of total orthophosphate as P, TSS, and silver being above both the 85th percentile threshold and pre-storm concentrations during one event are not considered to be exceedances of natural water quality.

The receiving water Site S02 results for the second monitored event (March 2013 event) included concentrations of nitrate as N, copper, lead and zinc that were greater than both the 85th percentile threshold and pre-storm concentrations (see Table 4-2). The February 2014 receiving water Site S02 concentrations for nitrate as N, copper, lead, and zinc were not greater than both the 85th percentile threshold and pre-storm concentrations (see Table 4-3), and therefore these constituents are not considered to be exceedances of the natural water quality.

Mercury, silver, zinc, and total PAHs concentrations in receiving water were greater than both the 85th percentile threshold and pre-storm concentrations for Site S01 (see Table 4-3). This monitored event was the only one of three in which flow from ASBS-016 reached the receiving water at Site S01, and thus, was the only time receiving water chemistry data were obtained at S01 as part of the General Exception monitoring. Based on first and second event results for Site S02, total PAHs is considered to be an exceedances of natural water quality. Based on second and third event results for Site S02, mercury is considered to be an exceedance of natural water quality. The receiving water Site S01 measured concentrations of silver and zinc being above both the 85th percentile threshold and pre-storm concentrations during one event is not considered to be an exceedance of natural water quality.

Pre-storm and post-storm samples were collected and analyzed at Site 24-BB-03R. For safety reasons, this site was not sampled previous to this event. The selenium concentration in the receiving water was greater than both the 85th percentile threshold and pre-storm concentrations for Site 24-BB-03R (see Table 4-3). The concentration of selenium being above the 85th percentile threshold and pre-storm concentrations is not considered an exceedance of natural water quality at Site 24-BB-03R. The selenium result at Site 24-BB-03R above the 85th percentile threshold and pre-storm concentrations are consist with the results for Site S02 where selenium is considered to be an exceedance of natural water quality based on the first and second event results.

Table 4-3. February 2014 Receiving Water Results

Parameter	Units	85th Percentile of Reference Data	S01-PRE 2/25/2014	S01-POST 2/28/2014	S02-PRE 2/25/2014	S02-POST 2/28/2014	24-BB-03R-PRE 2/25/2014	24-BB-03R-POST 2/28/2014
General Chemistry								
Ammonia as N	mg/L	0.015	<0.02	<0.02	<0.02	<0.02	ND	ND
Nitrate as N	mg/L	0.374	0.03J	0.02J	0.02J	<0.01	0.04	ND
Oil & Grease	mg/L	0.5	<1	<1	<1	<1	ND	ND
Total Orthophosphate as P	mg/L	0.114	0.02	0.02	0.02	0.18	0.02	0.02
Total Suspended Solids	mg/L	55.4	19.5	25.2	87.7	150	10.8	7.1
Total Metals								
Arsenic (As)	μg/L	1.72	1.472	1.283	6.604	4.122	1.388	1.322
Cadmium (Cd)	μg/L	0.16	0.0249	0.0228	0.5099	0.2623	0.0152	0.022
Chromium (Cr)	μg/L	2.6	1.1131	0.3893	26.0119	4.9578	1.4705	0.6962
Copper (Cu)	μg/L	1.9	0.676	0.221	6.001	2.289	0.167	0.646
Lead (Pb)	μg/L	0.72	0.2367	0.0584	7.265	1.5477	ND	0.2159
Mercury (Hg)	μg/L	0.0006	<0.0012J	0.014	<0.0012	0.0261	ND	ND
Nickel (Ni)	μg/L	2.2	0.8679	0.3565	21.5664	4.2441	0.2951	0.4901
Selenium (Se)	μg/L	0.017	0.016	0.011J	0.083	0.155	0.012	0.026
Silver (Ag)	μg/L	0.08	0.09	0.18	0.03	0.14	0.14	0.12
Zinc (Zn)	μg/L	19	5.3515	21.0509	41.7076	12.0229	2.9144	17.3532
Organophosphorus Pesticides								
*All OP Pesticides	ng/L	6	6	6	6	6	6	6
Polynuclear Aromatic Hydrocarbons								
*Total PAHs	ng/L	12.5	17.4	18.5	29.6	84.1	19.2	18.8
Pyrethroids								
Bifenthrin	ng/L		<0.5	<0.5	<0.5	2.5	<0.5	<0.5
Deltamethrin/Tralomethrin	ng/L		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Esfenvalerate	ng/L		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
All Other Pyrethroids	ng/L		ND	ND	ND	ND	ND	ND
*Total Pyrethroids	ng/L	6.75	6.75	6.75	6.75	9	6.75	6.75

< - result less than the MDL.
ND - results less than the MDLs (multiple MDL values)
J - Analyte was detected at a concentration below the reporting limit and above the method detection limit. Reported value is estimated.
Red outline – Post-storm receiving water concentration is greater than 85th percentile of Reference Data AND greater than pre-storm concentration.
Orange fill – Analyte concentration has exceeded 85th percentile of Reference Data during 1st and 2nd monitoring event.
*Totals calculated using result values if above the MDL and half the MDL when results were less than the MDL.

4.1.4 December 2, 2014, Storm Event Receiving Water Monitoring

The December 2014 storm event resulted in a total event rainfall of approximately 1.14 inches based on rain gauge data obtained from County Fire Station 70. Pre- and post-storm samples were collected at Site 24-BB-03R.

The concentrations of total ammonia as N, silver, and total PAHs, in receiving water at Site 24-BB-03R were greater than both the 85th percentile threshold and pre-storm concentrations (see

Table 4-4. December 2014 Receiving Water Results). Based on the results from the third (see Table 4-3) and fourth monitored events, in accordance with the General Exception, there were no exceedances of natural water quality. Of the two storms monitored, the December 2014 event result for Site 24-BB-03R is the only one in which total ammonia as N, silver, or total PAHs were above both the 85th percentile threshold and pre-storm concentrations. Therefore, the receiving water Site 24-BB-03R measured concentrations of total ammonia as N, silver, and total PAHs being above both the 85th percentile threshold and pre-storm concentrations during one event are not considered to be exceedances of natural water quality.

Table 4-4. December 2014 Receiving Water Results

Parameter	Units	85th Percentile of Reference Data	24-BB-03R PRE 12/2/2014	24-BB-03R POST 12/2/2014
General Chemistry				
Ammonia as N	mg/L	0.015	ND	0.19
Nitrate as N	mg/L	0.374	0.03	0.02
Oil & Grease	mg/L	0.5	ND	ND
Total Orthophosphate as P	mg/L	0.114	0.02	0.02
Total Suspended Solids	mg/L	55.4	16.3	4.7
Total Metals				
Arsenic (As)	µg/L	1.72	1.321	1.387
Cadmium (Cd)	µg/L	0.16	0.0257	0.0168
Chromium (Cr)	µg/L	2.6	0.5345	0.2928
Copper (Cu)	µg/L	1.9	0.577	0.317
Lead (Pb)	µg/L	0.72	0.3221	0.2596
Mercury (Hg)	µg/L	0.0006	ND	ND
Nickel (Ni)	µg/L	2.2	0.6118	0.2955
Selenium (Se)	µg/L	0.017	ND	0.01
Silver (Ag)	µg/L	0.08	0.07	0.12
Zinc (Zn)	µg/L	19	6.6900	7.0000
Organophosphorus Pesticides				
*All OP Pesticides ng/L		6	ND	ND
Polynuclear Aromatic Hydrocarbons				
Total PAHs ng/L		12.5	41.3	41.4
Pyrethroids				
Bifenthrin	ng/L		ND	ND
Deltamethrin/Tralomethrin	ng/L		ND	ND
Esfenvalerate	ng/L		ND	ND
All Other Pyrethroids	ng/L		ND	ND
*Total Pyrethroids	ng/L	6.75	ND	ND

< - result less than the MDL.
ND - results less than the MDLs (multiple MDL values)
J - Analyte was detected at a concentration below the reporting limit and above the method detection limit. Reported value is estimated.
Red outline – Post-storm receiving water concentration is greater than 85th percentile of Reference Data AND greater than pre-storm concentration.
Orange fill – Analyte concentration has exceeded 85th percentile of Reference Data during 1st and 2nd monitoring event.
*Totals calculated using result values if above the MDL and half the MDL when results were less than the MDL.

4.1.5 Receiving Water Monitoring Conclusions

In post-storm samples collected in the receiving water (Site S02), selenium and total PAHs concentrations were above the 85^{th} percentile reference threshold and had post-storm concentrations that exceeded those of the pre-storm samples collected during three consecutive monitored storm events (February and March 2013 and February 2014). Mercury results at Site S02 were above 85^{th} percentile reference threshold and pre-storm concentrations for two consecutive events (March 2013 and February 2014). Based on the guidance found in Attachment 1 of the General Exception, this indicates an exceedance of natural water of the ASBS for these constituents.

Receiving water samples (Site S02) collected during the second monitored event had concentrations of nitrate as N, copper, lead, and zinc above the 85^{th} percentile reference thresholds and were above the pre-storm concentrations. Based on Attachment 1 of the General Exception, if these constituents are above the 85^{th} percentile reference thresholds in post-storm receiving water samples collected during the next monitoring event, then there would be an exceedance in the natural water quality of the ASBS for these additional constituents. February 2014 receiving water (Site S02) concentrations for nitrate as N, copper, lead, and nickel were not greater than both the 85^{th} percentile threshold and pre-storm concentrations, and these constituents are not considered an exceedance of natural water quality.

Of the three storms monitored, the only event in which flow from ASBS-016 reached the receiving water at Site S01 was during the February 28, 2014, storm (third monitored event), and thus, was the only time receiving water chemistry data were obtained at S01 as part of the General Exception monitoring. Mercury, silver, zinc and total PAHs concentrations in receiving water were greater than both the 85^{th} percentile threshold and pre-storm concentrations for Site S01. Based on the Site S02 results from the first and second events total PAHs is considered to be exceedance of natural water quality. Based on the Site S02 results from the second and third events mercury is considered to be exceedance of natural water quality. The receiving water Site S01 measured concentrations of silver and zinc being above both the 85^{th} percentile thresholds and pre-storm concentrations during one event is not considered to be exceedances of natural water quality.

Pre-storm and post-storm samples were collected and analyzed at Site 24-BB-03R during the February 2014 and December 2014 events. For safety reasons, this site was not sampled at other events. The ammonia as N, silver, and PAH concentrations in the receiving water were greater than both the 85^{th} percentile and the pre-storm concentration for site 24-BB-03R during the December event (see Table 4-4). However, during the February 2014 event only selenium concentration in the receiving water was greater than both the 85^{th} percentile threshold and pre-storm concentration for Site 24-BB-03R (see Table 4-3). Therefore, the concentration of ammonia, silver, PAH, and selenium being above the 85th percentile threshold and pre-storm concentrations are not considered exceedances of natural water quality at Site 24-BB-03R.

4.2 Bight 2008 Data for ASBS 24

A review of Bight 2008 ASBS 24 data was conducted, and a summary of the review is provided for reference and for comparison to the determination made in this Compliance Plan. Bight 2008 constituent concentrations values were obtained from a series of graphs provided as an appendix to the Bight 2008 report and are approximate (tabular data not currently available). The Bight 2008 effort included collecting and analyzing both reference and discharge receiving water samples. The Bight 2008 report showed the comparison between the reference 85th percentile threshold values and discharge samples (Schiff et al., 2011).

4.2.1 Metals

For total chromium, the Bight 2008 85th percentile threshold of reference conditions was 1.6 µg/L (revised by Bight 2013 data to 2.6 µg/L). Of the five ASBS 24 post-storm samples assessed for total chromium during Bight 2008, four had concentrations below the threshold (ranging from approximately 0.5 to 1.0 µg/L) and one was above the threshold (approximately 3.4 µg/L)(Schiff et al., 2011).

For total copper, the Bight 2008 85th percentile threshold was 2.2 µg/L (revised by Bight 2013 data to 1.9 µg/L). Of the three ASBS 24 post-storm samples assessed for total copper during Bight 2008, two had concentrations below the threshold (approximately 0.4 and 0.5 µg/L) and one was slightly above the threshold (approximately 2.3 µg/L)(Schiff et al., 2011).

For total nickel, the Bight 2008 85th percentile threshold was 1.5 µg/L (revised by Bight 2013 data to 2.2 µg/L). For the three ASBS 24 post-storm samples assessed during Bight 2008, two had concentrations below the threshold (approximately 0.5 and 0.7 µg/L) and one was above the threshold (approximately 4.2 µg/L)(Schiff et al., 2011).

For total zinc, the Bight 2008 85th percentile threshold was 8.6 µg/L (revised by Bight 2013 data to 19 µg/L). Of the five ASBS 24 post-storm samples assessed for total zinc during Bight 2008, three had concentrations below the threshold (ranging from 0 to approximately 2.1 µg/L) and two were above the threshold (approximately 10.5 and 11.0 µg/L)(Schiff et al., 2011).

Samples collected as part of the Bight 2008 efforts were not analyzed for mercury or selenium, and thus no Bight 85th percentile thresholds were established for these constituents.

4.2.2 Total Suspended Solids

For TSS, the Bight 2008 85th percentile threshold was 16.5 mg/L (revised by Bight 2013 data to 55.4 µg/). Of the five ASBS 24 post-storm samples assessed for TSS during the Bight 2008, two had concentrations below the threshold (approximately 8.0 and 10.0 µg/L) and three were above the threshold (ranging from approximately 50 to 130 µg/L)(Schiff et al., 2011).

4.2.3 Total PAHs

For total PAHs, the Bight 2008 85th percentile threshold was 19.6 ng/L (revised by Bight 2013 data to 12.5 ng/L). Of the four ASBS 24 post-storm samples assessed for total PAHs during the Bight 2008, all four samples had concentrations below the threshold (approximately 0, 5, 8, and 11 ng/L)(Schiff et al., 2011).

4.2.4 Organophosphorus Pesticides and Pyrethroids

Samples collected as part of the Bight 2008 efforts were not analyzed for organophosphorus pesticides or pyrethroids, and thus no Bight 85th percentile thresholds were established for these constituents.

5.0 OUTFALL ASSESSMENT OF POLLUTANT LOAD REDUCTION TARGETS

An assessment of the potential pollutant load reductions targets was performed to determine the magnitude of controls required to be implemented in order to enhance the water quality of the ASBS. The first step in the assessment process was to evaluate wet weather receiving water quality monitoring data in comparison to data for reference monitoring sites, in accordance with the flowchart provided as Attachment 1 to the General Exception, to determine if an exceedance of the natural water quality currently exists (see Section 4.0). This evaluation determined that an exceedance of natural water exists for three constituents at receiving water Site S02 and discussed in more detail in Section 4.0. Water quality results from outfall monitoring were evaluated for the applicable constituent to identify discharge locations that have a potential to be contributing to the exceedance of natural water quality. More specifically, the assessment evaluated where BMPs may be required to achieve outfall design storm discharge concentrations, on average, by either: 1) end-of-pipe concentrations below the Table B Instantaneous Maximum Water Quality Objectives (WQOs) in Chapter II of the Ocean Plan, or 2) achieving a 90% reduction in pollutant loading during storm events for the responsible applicant's total discharge. The Ocean Plan was updated subsequent to the General Exception adoption. The updated Ocean Plan now refers to Table B as Table 1 (formerly Table B), and this Plan utilized the updated table title.

5.1 Outfall Wet Weather Monitoring Results

The General Exception states that the ASBS Compliance Plan shall describe how the necessary pollutant reductions in storm water runoff will be achieved through prioritization of outfalls and implementation of BMPs to reduce end-of-pipe pollutant concentrations during a design storm to below either the Table 1 Instantaneous Maximum WQOs in Chapter II of the Ocean Plan or a 90% reduction in pollutant loading during storm events for the applicant's total discharge. For the constituents that are currently in exceedance of the natural water quality of the ASBS (mercury, selenium, and total PAHs), this draft ASBS Compliance Plan evaluates outfall discharges in comparison to the Table 1 Instantaneous Maximum WQOs as the pollutant load targets in order to be in compliance with the General Exception.

Chemistry results obtained from outfalls to ASBS 24 during the February 2013, March 2013, February 2014, and December 2014 storm events are presented on Table 5-1 through Table 5-4, respectively. Site ASBS-008 was not added to the monitoring list until after the February 19, 2013, storm event, so no data were collected during the first monitoring event. Site ASBS-008 was inadvertently not monitored during the third storm event. Sites ASBS-013, ASBS-016, and ASBS-031 did not flow during the February 19, 2013, storm event, and Sites ASBS-013 and ASBS-031 did not flow during the March 8, 2013, storm event. Site ASBS-031 did not flow during the February 2014 storm event. Outfalls that were less than 36 inches in diameter were evaluated for oil and grease and TSS only, while outfalls that were 36 inches or greater in diameter were evaluated for ammonia, nitrate, oil and grease, TSS, total orthophosphate, total metals, PAHs, organophosphorus pesticides, and pyrethroids. Table 5-1 through Table 5-3 include both PAHs (based on 13 constituents listed in the Ocean Plan) and total PAHs (based on the 25 constituents analyzed by the laboratory based on guidance from the Bight 2013

Committee). These tables also list the more commonly detected individual pyrethroids as well as the total pyrethroids.

Table 5-1. February 2013 Outfall Chemistry Results

Parameter	Units	CA Ocean Plan	001	002	003	004	005	008	011	013	016[1]	018	021	022	023	024	025	026	027	028[2]	029	030	031
		Instantaneous Maximum	2/19/2013	2/19/2013	2/19/2013	2/19/2013	2/19/2013	2/19/2013	2/19/2013	2/19/2013	2/19/2013	2/19/2013	2/19/2013	2/19/2013	2/19/2013	2/19/2013	2/19/2013	2/19/2013	2/19/2013	2/19/2013	2/19/2013	2/19/2013	2/19/2013
General Chemistry																							
Ammonia as N	mg/L	6			1.47		1.12	Not sampled		Not sampled	Not sampled		0.78	1	0.68					0.64			Not sampled
Nitrate as N	mg/L				10.15		5.57						4.48	8.24	12.45					7.02			
Oil & Grease	mg/L		1.3	1.4	1.6	4	1.6		<1			<1	<1	1.9	2.3	6	3.7	7	3.1	<1	<1	30.9	
Total Orthophosphate as P	mg/L				0.53		0.6						0.22	0.35	0.63					0.28			
Total Suspended Solids	mg/L		270.7	53.8	584	284	186.5		1.8			75.5	22.5	38.7	63.2	453	90.5	870	218	16.3	133	61.3	
Total Metals																							
Arsenic (As)	µg/L	80			2.129		1.664	Not sampled		Not sampled	Not sampled		1.15	0.949	2.231					0.876			Not sampled
Cadmium (Cd)	µg/L	10			0.3074		0.3482						0.0953	0.1168	0.201					0.269			
Chromium (Cr)	µg/L	20			10.1209		7.9002						1.393	3.1286	3.2046					1.8548			
Copper (Cu)	µg/L	30			63.557		30.469						11.434	84.928	266.162					13.136			
Lead (Pb)	µg/L	20			13.9921		5.8034						1.317	4.3272	4.8762					2.0076			
Mercury (Hg)	µg/L	0.4			0.1611		0.0505						<0.0012	<0.0012	<0.0012					<0.0012			
Nickel (Ni)	µg/L	50			11.5741		10.4739						2.7542	3.1307	7.007					5.2478			
Selenium (Se)	µg/L	150			0.794		0.102						0.138	0.151	0.355					0.435			
Silver (Ag)	µg/L	7			<0.01		<0.01						<0.01	<0.01	<0.01					<0.01			
Zinc (Zn)	µg/L	200			141.3834		128.8537						60.3801	135.3146	269.0515					38.9739			
Organophosphorus Pesticides																							
*All OP Pesticides	ng/L				ND		ND	N.S.		N.S.	N.S.		ND	ND	2868.9					ND			N.S.
Polynuclear Aromatic Hydrocarbons																							
Fluoranthene	ng/L				59.2		122	Not Sampled		Not Sampled	Not Sampled		26.9	70.9	101.2					<1			Not Sampled
PAHs[3]	ng/L				102		208.4						42	103.7	255.6					<1			
Total PAHs[4]	ng/L				161.2		341.4						68.9	174.6	380.2					6.1			
Pyrethroids																							
Bifenthrin	ng/L				700.8		<0.5	Not Sampled		Not Sampled	Not Sampled		<0.5	320.9	1184.5					<0.5			Not Sampled
Deltamethrin/Tralomethrin	ng/L				<0.5		<0.5						<0.5	<0.5	<0.5					<0.5			
Esfenvalerate	ng/L				152.4		<0.5						<0.5	<0.5	<0.5					<0.5			
All Other Pyrethroids	ng/L				29.3		ND						ND	ND	344.4					ND			
*Total Pyethroids	ng/L				882.5		ND						ND	320.9	1528.9					ND			

< - results less than the method detection limit (MDL).
ND - results less than the MDLs (multiple results)
Green fill- concentration is greater than California Ocean Plan Imax criteria
Note 1 - Site associated with Receiving Water Station S01
Note 2 - Site associated with Receiving Water Station S02
Note 3 - PAHs based on constituents listed in Ocean Plan
Note 4 - Total PAHs based on constituents listed in Bight 2013 Work Plan.

Table 5-2. March 2013 Outfall Chemistry Results

Parameter	Units	CA Ocean Plan	001	002	003	004	005	008	011	013	016[1]	018	021	022	023	024	025	026	027	028[2]	029	030	031
		Instantaneous Maximum	3/8/2013	3/8/2013	3/8/2013	3/7/2013	3/7/2013	3/8/2013	3/7/2013	3/7/2013	3/8/2013	3/8/2013	3/8/2013	3/7/2013	3/8/2013	3/8/2013	3/8/2013	3/7/2013	3/7/2013	3/8/2013	3/7/2013	3/7/2013	3/7/2013
General Chemistry																							
Ammonia as N	mg/L	6			2.1		4.75			Not Sampled	4.8		0.57	1.32	0.66					7.8			Not Sampled
Nitrate as N	mg/L				3.78		3.51				10.2		3.24	4.84	5.15					5.29			
Oil & Grease	mg/L		221.1	<1	1.1	83.4	<1	<1	<1		<1	<1	<1	<1	1.3	1.2	1.5	4.8	1.7	6.7	<1	1.2	
Total Orthophosphate as P	mg/L				0.5		0.34				0.79		0.51	0.16	0.51					0.75			
Total Suspended Solids	mg/L		531	52.7	315.7	17.5	37.1	115.4	<0.5		782	58.1	64.1	10.7	33	63.6	64.3	660	17.9	616	29.7	32.4	
Total Metals																							
Arsenic (As)	µg/L	80			2.505		1.43			Not Sampled	3.738		2.13	2.257	2.158					7.287			Not Sampled
Cadmium (Cd)	µg/L	10			0.6881		0.0848				1.2527		0.5355	0.0901	0.0767					10.9524			
Chromium (Cr)	µg/L	20			23.8781		2.5783				39.2081		7.1327	1.9708	1.8344					32.3596			
Copper (Cu)	µg/L	30			41.556		27.149				33.872		20.484	35.044	116.98					198.495			
Lead (Pb)	µg/L	20			19.8277		1.7097				10.1402		3.9416	1.0592	3.6519					46.2982			
Mercury (Hg)	µg/L	0.4			0.0238		0.0158				0.0236		0.0148	0.007J	<0.0012					0.0596			
Nickel (Ni)	µg/L	50			22.3039		4.5323				47.8272		10.479	2.0729	3.4917					77.0818			
Selenium (Se)	µg/L	150			0.363		0.115				0.176		0.076J	0.521	0.151					1.004			
Silver (Ag)	µg/L	7			<0.01		0.06				<0.01		0.08	0.06	0.04					0.06			
Zinc (Zn)	µg/L	200			142.7101		104.6536				125.2092		88.1959	41.841	157.6642					800.687			
Organophosphorus Pesticides																							
*All OP Pesticides	ng/L				ND		ND			N.S.	ND		ND	ND	4128.6					ND			N.S.
Polynuclear Aromatic Hydrocarbons																							
Fluoranthene	ng/L				199.3		29.4			Not Sampled	70		51.8	9.8	83.8					476			Not Sampled
PAHs[3]	ng/L				665.2		53				231.3		131.8	18.5	251.4					1145.6			
Total PAHs[4]	ng/L				1036.2		101.4				340.2		205.2	31.3	473.9					1754.2			
Pyrethroids																							
Bifenthrin	ng/L				214		<0.5			Not Sampled	<0.5		<0.5	74.6	167.5					203.9			Not Sampled
Deltamethrin/Tralomethrin	ng/L				<0.5		50.3				<0.5		<0.5	<0.5	<0.5					<0.5			
Esfenvalerate	ng/L				<0.5		<0.5				<0.5		<0.5	<0.5	<0.5					<0.5			
All Other Pyrethroids	ng/L				ND		37.8				ND		ND	ND	268.6					ND			
*Total Pyethroids	ng/L				214		88.1				ND		ND	74.6	436.1					203.9			

< - results less than the method detection limit (MDL).
ND - results less than the MDLs (multiple results)
Green fill- concentration is greater than California Ocean Plan Imax criteria
Note 1 - Site associated with Receiving Water Station S01
Note 2 - Site associated with Receiving Water Station S02
Note 3 - PAHs based on constituents listed in Ocean Plan
Note 4 - Total PAHs based on constituents listed in Bight 2013 Work Plan.

Table 5-3. February 2014 Outfall Chemistry Results

Parameter	Units	CA Ocean Plan	001	002	003	004	005	008	011	013	016[1]	018	021	022	023	024	025	026	027	028[2]	029	030	031	24-BB-02Z	24-BB-03Z
		Instantaneous Maximum	2/28/2014	2/28/2014	2/28/2014	2/28/2014	2/28/2014	2/28/2014	2/28/2014	2/28/2014	2/28/2014	2/28/2014	2/28/2014	2/28/2014	2/28/2014	2/28/2014	2/28/2014	2/28/2014	2/28/2014	2/28/2014	2/28/2014	2/28/2014	2/28/2014	2/28/2014	2/28/2014
General Chemistry																									
Ammonia as N	mg/L	6			4.95		0.37				0.68		0.43	1.51	<0.02					0.21					0.47
Nitrate as N	mg/L				0.63		0.54				0.72		0.86	1.53	24.54					0.27					0.2
Oil & Grease	mg/L		<1	<1	2.5	<1	<1	Not Sampled	<1	<1	<1	<1	<1	<1	<1	<1	<1	2.5	1.3	1J	<1	1.3	Not Sampled	ND	ND
Total Orthophosphate as P	mg/L				1.08		0.2				0.86		0.83	0.84	0.94					0.27					0.34
Total Suspended Solids	mg/L		79.2	296	5095	593	497		70.4	119	803	55.3	148	7.9	4.8	27.5	18.2	103.2	78.8	40.3	1.9	42.6		82.8	393
Total Metals																									
Arsenic (As)	µg/L	80			9.083		1.792				2.748		3.523	3.733	4.731					0.656					2.598
Cadmium (Cd)	µg/L	10			3.8221		0.5467				1.4084		0.5483	0.1789	0.2771					0.1864					0.5776
Chromium (Cr)	µg/L	20			75.3533		20.632				23.607		5.9767	2.1554	1.7879					1.2621					22.7594
Copper (Cu)	µg/L	30			109.663		27.954				29.906		25.054	56.105	84.921					26.219					28.435
Lead (Pb)	µg/L	20			71.7821		6.1139	Not Sampled			8.1312		5.7255	2.1098	0.5393					17.5522			Not Sampled		16.3304
Mercury (Hg)	µg/L	0.4			<0.0012		<0.0012				<0.0012		<0.0012	<0.0012	<0.0012					<0.0012					<0.0012
Nickel (Ni)	µg/L	50			91.1114		25.8248				38.049		9.1185	4.7738	8.8064					2.9016					11.9473
Selenium (Se)	µg/L	150			0.331		0.221				0.226		0.319	1.22	5.101					0.334					0.099
Silver (Ag)	µg/L	7			0.17		0.08				0.1		0.07	0.21	0.06					0.01J					0.02
Zinc (Zn)	µg/L	200			454.8282		98.3671				151.1528		93.2702	97.0057	199.0364					87.6536					177.7661
Organophosphorus Pesticides																									
*All OP Pesticides	ng/L				ND		ND	N.S.			ND		ND	ND	ND					ND			N.S.		ND
Polynuclear Aromatic Hydrocarbons																									
Fluoranthene	ng/L				753.3		243				92.6		105.8	14.2	612.6					204.7					210.7
PAHs[3]	ng/L				7159.2		906.4	Not Sampled			778		570.3	54.7	1982.1					812.2			Not Sampled		1633.1
Total PAHs[4]	ng/L				9115.8		1341.8				1087.2		773.6	130.2	3195.6					1178.8					2187.2
Pyrethroids																									
Bifenthrin	ng/L				694.4		43.4				5.4		80.3	16.9	188.7					1673.6					31.6
Deltamethrin/Tralomethrin	ng/L				<0.5		<0.5				<0.5		<0.5	<0.5	<0.5					<0.5					<0.5
Esfenvalerate	ng/L				15.6		<0.5	Not Sampled			<0.5		1.5J	0.6J	<0.5					<0.5			Not Sampled		<0.5
All Other Pyrethroids	ng/L				3979.8		1.6				132.4		7.6	86.6	19.9					2.2					44.6
*Total Pyethroids	ng/L				4689.8		45				137.8		89.4	104.1	208.6					1675.8					76.2

< - results less than the method detection limit (MDL).
ND - results less than the MDLs (multiple results)
Green fill- concentration is greater than California Ocean Plan Imax criteria
Note 1 - Site associated with Receiving Water Station S01
Note 2 - Site associated with Receiving Water Station S02
Note 3 - PAHs based on constituents listed in Ocean Plan
Note 4 - Total PAHs based on constituents listed in Bight 2013 Work Plan.

Table 5-4. December 2014 Outfall Chemistry Results

Parameter	Units	CA Ocean Plan Instantaneous Maximum	24-BB-02Z 12/1/2014	24-BB-03Z 12/1/2014
General Chemistry				
Ammonia as N	mg/L	6		0.76
Nitrate as N	mg/L			0.8
Oil & Grease	mg/L		ND	0.76
Total Orthophosphate as P	mg/L			0.76
Total Suspended Solids	mg/L		555.0	1
Total Metals				
Arsenic (As)	µg/L	80		3.600
Cadmium (Cd)	µg/L	10		0.9106
Chromium (Cr)	µg/L	20		14.3354
Copper (Cu)	µg/L	30		43.640
Lead (Pb)	µg/L	20		18.3158
Mercury (Hg)	µg/L	0.4		ND
Nickel (Ni)	µg/L	50		15.9330
Selenium (Se)	µg/L	150		0.304
Silver (Ag)	µg/L	7		0.10
Zinc (Zn)	µg/L	200		154.3246
Organophosphorus Pesticides				
All OP Pesticides	ng/L			ND
Polynuclear Aromatic Hydrocarbons				
Fluoranthene	ng/L			210.7
PAHs[3]	ng/L			284.7
Total PAH5[4]	ng/L			533.1
Pyrethroids				
Bifenthrin	ng/L			34.5
Deltamethrin/Tralomethrin	ng/L			ND
Esfenvalerate	ng/L			ND
All Other Pyrethroids	ng/L			ND
Total Pyrethroids	ng/L			34.5

< - results less than the method detection limit (MDL).
ND - results less than the MDLs multiple results)
Green fill- concentration is greater than California Ocean Plan !max criteria
Note 1 - Site associated with Receiving Water Station SO1
Note 2 - Site associated with Receiving Water Station SO2
Note 3 - PAHs based on constituents listed in Ocean Plan
Note 4 - Total PAHs based on constituents listed in Bight 2013 Work Plan.

The Ocean Plan Table 1 Instantaneous Maximum WQOs for mercury and selenium are 0.4 µg/L and 150 µg/L, respectively. Table 1 does not list Instantaneous Maximum WQOs for PAHs. This Plan focused on mercury and selenium in this assessment of pollutant load reduction targets. During the four monitored events the sampling results were all below these Ocean Plan Table 1 Instantaneous Maximum values. During the first storm monitored in 2013 (February 8, 2013), the highest measured values of mercury and selenium were 0.16 µg/L and 0.79 µg/L, respectively, at ASBS-003. Outfall ASBS-028 had measured mercury and selenium concentrations of 0.06 µg/L and 1.0 µg/L, respectively, during the second monitored storm, which occurred in March 2013. During the third monitored storm, which occurred in February 2014, the measured selenium concentration at Outfall ASBS-023 was the highest value measured at 5.1 µg/L. All outfall samples collected and analyzed for mercury had results of non-detect during the third event. The summary of the highest measured values in comparison with the Ocean Plan Table 1 Instantaneous Maximum values as well as other Ocean Plan Table 1 limiting concentrations is provided on Table 5-5.

Table 5-5. Ocean Plan Comparison to Summary of Maximum Outfall Results

	Ocean Plan Table 1 Values (Receiving Water Mixing Zone)			Maximum Measured Value (in Outfall Prior to Mixing Zone)		
Parameter	6-Month Median	Daily Maximum	Instantaneous Maximum	February 2013, Event 1	March 2013, Event 2	February 2014, Event 3
Mercury	0.04	0.16	0.4	0.16	0.06	<0.0012
Selenium	15	60	150	0.79	1.0	5.1

The summary table of maximum outfall results values for mercury and selenium indicate that the pollutant loading storm water discharges from outfalls for these constituents is far below the Ocean Plan Table 1 Instantaneous Maximum values. The highest mercury value measured is equal to the Ocean Plan Table 1 Daily Maximum values. The highest selenium value measured is below the Ocean Plan Table 1 Instantaneous Maximum with over an order of magnitude difference between the two. The highest selenium value measured is also below the most limiting concentration of the Ocean Plan Table 1, which the 6-Month Median value. The measured values of mercury and selenium, besides those presented in the summary table above, were significantly less than the maximum measured.

Common major sources of mercury include scrap metal piles, deteriorating metal and paint, and airborne emissions from burning coal, oil or municipal waste (UWE, 1997). Selenium is a naturally occurring element that persists in soils and aquatic sediments and may be leached from sediments as a result of modifications in the natural hydrologic regime (LARWQCB, 2002). Higher levels of selenium are also documented to be associated with the Monterey/Modelogeologic formation, which is prevalent in this area.

5.2 Outfall Assessment Conclusions

Following the guidance found in the Special Protections an assessment of outfalls was performed to determine where structural controls may be required to achieve the specified pollutant loading limitations on point source discharges into ASBS 24. Preceding the outfall assessment was the receiving water assessment that indicated, also based on the guidance found in the Special

Protections, that there are exceedances of natural water in the receiving water during wet weather events for mercury, selenium, and total PAHs where samples were available for this assessment. The outfall assessment included comparing the monitoring data for mercury and selenium to Ocean Plan Table 1 Instantaneous Maximum limitations. The Ocean Plan Table 1 does not list Instantaneous Maximum values for the protection of marine aquatic life for total PAHs, it only lists 30-day Average concentration limits for the protection of human health. The results of the comparison indicate the discharges to the ASBS from point sources (outfalls) are currently achieving, and significantly below, the target levels. Therefore, based on available data and guidance documents, the outfalls being evaluated in this Plan under the Regional Monitoring Program are currently not considered priority outfalls, and in accordance with the Special Protections of the General Exception, additional controls (e.g., BMPs) to achieve pollutant load reductions are not required in the tributary drainage areas to the Parties' outfalls.

Based on the guidance presented within the Special Protections, the assessments performed in the preparation of this Compliance Plan indicated that additional structural BMPs are not required. However, the Parties recognize that the ABSB 24 is one of most valued resources in the region and that wherever possible, and feasible, additional reductions in pollutant loading should be achieved. Accordingly, in July 2015, the City deemed construction complete for structural BMPs for the areas of Broad Beach Road and Wildlife Road where City inlets drain to private outlets in the ASBS area. Various existing nonstructural programs will continue to be implemented in order to maintain compliance with the requirements of the Special Protections and possibly achieve further reductions in pollutant loading. The Parties are considering implementing nonstructural controls and enhancements to existing controls for the purpose of further reducing pollutant loading to the ASBS.

6.0 CONTROL MEASURES

6.1 Enhanced Nonstructural Programs

Existing nonstructural PIPPs, O&M programs, and enforcement programs will continue to be implemented and maintained into the future to ensure ongoing protection of ASBS 24 and to meet the requirements of the ASBS Special Protections. This section describes enhancements to existing nonstructural programs intended to further promote load reductions and further improve and protect ASBS water quality. Proposed Potential program enhancements for feasibility consideration that will be evaluated and are presented in Appendix C and include the following:

- Infrastructure priority re-evaluation program.
- Enhanced, collaborative, environmentally friendly, alternative services program(s).
- ASBS education signage (County).
- Aggressive street sweeping (City).
- Street sweeping parking ordinances (City).
- Architectural copper and metal building material mitigation program(s) (City).
- Metal building material ordinances (City).

6.1.1.1 Infrastructure Priority Re-Evaluation Program

Currently, the County is in the design phase of retrofitting Unincorporated County areas catch basins in in North Santa Monica Bay from Arroyo Sequit on the northwest through Topanga Canyon on the southeast with full capture trash screens (this area includes the ASBS 24 drainage area). This activity includes a complete field inventory of all catch basins in the area. The Parties will enhance their existing annual cleaning programs for retrofitted catch basins.

If evaluation of future wet weather monitoring data indicates that additional nonstructural solutions are necessary to meet the Special Protection water quality criteria, the City and County will review and re-evaluate the existing inspection/cleaning priorities assigned to infrastructures located in the ASBS 24 drainage area. Agency-wide infrastructure inspection/cleaning programs (priorities and frequencies) are established using NPDES permit criteria and historic debris load data for each system. The receiving water or watershed of each system (e.g., catch basin, street, and parking lot) is not directly considered. Increased cleaning may be appropriate for ASBS 24 to enhance source control of gross pollutants (e.g., trash, debris, sediments) as well as associated pollutants, such as metals, organics, and nutrients. An infrastructure re-evaluation program may also provide benefits such as a streamlined, efficient, and effective implementation program for ASBS 24.

6.1.1.2 Enhanced Collaborative Environmentally Friendly Alternative Services Program(s)

When implementing this type of program, the County and City will look for opportunities to enhance existing environmentally friendly alternative services and PIPPs currently provided by the Parties. Types of existing PIPPs that may be enhanced include the Clean Bay Restaurant Certification Program, the *Keep It Clean, Malibu* campaign, City of Malibu's Environmentally

Preferable Purchases and Practices Policy (EPPP), Recycled Products Purchasing Policy (RCPP), Restaurant Certification Program, and Los Angeles County's Rethink LA Program. The LACoMAX platform has been presented as an example of types of enhancements and synergies, which may be implemented depending on water quality needs and available funding.

Users have identified LACoMAX as "easy, fast and rewarding" and a "great resource for L.A. County" to exchange goods. To reach a larger audience, this program could be cross-referenced with similar programs such as the Malibu Green Room webpage, Craigslist-Los Angeles, and other regional websites. The platform currently provides six management regions for exchange, and the platform could be expanded to include ASBS- and TMDL-specific regions, along with educational information related to the benefits of the program and reduced impacts to the ASBS and receiving waters that may be caused by improper disposal of unwanted items. Partner webpages could provide links to other exchange programs and up-cycling venues (e.g., Goodwill, consignment, thrift stores, and swap meets). Additional enhancements to the platform may be identified by analyzing user data from the existing platform and/or requesting users to complete questionnaires.

6.1.1.3 ASBS Educational Signage

This program would involve the design and installation of educational placards along boardwalks and at parking lot entrances to the beaches. These placards, translated in both English and Spanish, will describe the unique resources of ASBS 24 and highlight features of interest specific to each beach. Additional educational messages related to source controls and pollution prevention measures will be determined based on wet weather data and targeted sources. This program could provide a direct nonstructural intervention to potential pollutant sources at County beaches, as well as influence behavior for local beachgoers who live in residential areas that discharge to ASBS 24.

6.1.1.4 Aggressive Street Sweeping

This program would involve enhancing the City's existing street sweeping program. Aggressive street sweeping may include increased frequency of sweeping, use of enhanced sweeping technologies, or other sweeping solutions (USEPA, 2012a). The City may choose to implement a pilot study to determine the optimal sweeping program prior to full-scale implementation.

The City currently sweeps roads within its jurisdiction once each month and shares a contract with Caltrans to have PCH swept weekly. This program would involve increasing the frequency of sweeping on City streets located within the area draining to ASBS 24 to once per week. Increasing the sweeping frequency has been shown to increase the potential load reduction associated with metals, sediments, trash, and debris (City of San Diego, 2010a).

Vacuum and regenerative-air street sweeping technologies have been shown to be more effective than mechanical sweeping technologies at removing fine particulate matter, especially related to metals debris (City of San Diego, 2010a; City of Portland, 2006). As of 2013, the City uses motorized mechanical street sweeping equipment for all street sweeping activities. This proposed nonstructural program enhancement would apply to all City-maintained streets and would involve either: 1) replacing mechanical street sweepers with enhanced sweeping technologies during the standard end of the equipment life-cycle, or 2) requiring contractors responsible for local sweeping activities to only use enhanced sweeping technologies.

Because the City shares a street sweeping contract with Caltrans for sweeping the PCH it is subject to conditions of an agreement. At present, Caltrans' policy requires once-per-week sweeping using mechanical sweeping equipment. Historically, the City used enhanced sweeping technologies for streets within their jurisdiction, including the PCH. The City was requested by Caltrans to use mechanical sweepers due to their state-wide policy. Implementation of this recommended nonstructural program enhancement will require one of the following Caltrans policy changes: 1) a state-wide policy change, 2) local exemption to the state-wide policy, or 3) agreement to do additional sweeping beyond the state-wide policy requirement, using a vacuum or regenerative-air sweeper along the PCH in the ASBS 24 drainage area.

6.1.1.5 Street Sweeping Parking Ordinances

Mechanical sweeping technologies are most effective at removing trash, debris, and sediment from paved surfaces when the equipment travels along the curb and gutter (City of San Diego, 2010a; City of Portland, 2006). Under the existing City street sweeping program, residents and business owners have been requested to use off-street parking on scheduled street sweeping days whenever possible. Vehicles continue to park along the PCH and City streets during street sweeping days. The City currently does not have an ordinance restricting parking.

The City may consider implementing an ordinance prohibiting parking on City-maintained streets during regularly scheduled street sweeping activities. This programmatic enhancement would increase the potential load reduction associated with street sweeping activities independent of modifications to existing street sweeping equipment and sweeping frequency. Prior to implementation of a general parking ordinance, the City may need to conduct an education and outreach campaign and public opinion survey to identify the most effective street sweeping schedule and evaluate the public's appetite for program implementation. However, it is important to note that such an ordinance would be subject to scrutiny by the California Coastal Commission due to public beach access concerns, and is not likely to be feasible.

6.1.1.6 Architectural Copper and Metal Building Material Mitigation Program(s)

Metal building materials may appear to be a limited wet weather source, but in coastal areas buildings may be a year-round source of runoff and metals loading because the marine layer can create measurable runoff as water condenses on rooftops and buildings structures (City of San Diego, 2010b). Monitoring data of storm water wash-off from some metal building materials has been shown to be associated with elevated copper and zinc levels (Golding, 2008).

This program will investigate the feasibility of offering rebates for architectural copper and zinc mitigation measures applied to metal building structures. Potential mitigation measures may include: application of sacrificial paint (e.g., copper and zinc oxidation protection paints), downspout diversions, rain barrels, and cisterns. The rebate program could be modeled after the Cash for Grass and other water conservation incentive programs discussed in Section 3.2.1.2. Education materials could be incorporated into existing materials, such as the Surfrider OFG materials and ASBS materials, and online media, such as the Malibu Green Room and Clean LA websites.

6.1.1.7 Metal Building Material Ordinances

As discussed in Section 6.1.1.6, buildings with metal architectural features may be a year-round source of runoff and metals loading. Metal building material ordinances, including the architectural copper ban and zinc alternative building material ordinance, are proposed as a potential programs enhancement and are a true source control. It is generally recognized that implementation of any kind of metal building material ordinance will require significant education and outreach. Targeted audiences will include residents and businesses, and may also include architects and engineers who design and build structures within the ASBS 24 drainage area. A program such as this would first need to go through a feasibility review and also receive City Council approval.

Architectural Copper Ban
This City ordinance would prohibit use of architectural copper for all new developments and re-development projects for buildings and facilities located within the ASBS 24 watershed.

Zinc Alternative Building Material Ordinance
Galvanized zinc is frequently specified by agencies, including Caltrans, for outdoor installations due to material durability and lack of maintenance requirements. This City program would evaluate the feasibility of implementing a zinc building material policy that would eliminate, reduce, mitigate, or control the use of zinc building materials. Concurrent with the feasibility analysis, stakeholders would be engaged through public meetings. Based upon the findings of the feasibility analysis and stakeholder engagement process, a proposed zinc ordinance would be implemented.

6.2 Structural BMPs

The pollutant loading reduction assessment (Section 5.0) performed in preparation of this Plan indicated that structural BMPs are not required (pollutant loading is on average below the Ocean Plan Table B Instantaneous Maximum WQOs for the modeled design storm). However, in July 2015, the City deemed construction complete for structural BMPs for the areas of Broad Beach Road and Wildlife Road where City inlets drain to private outlets in the ASBS area.. These projects each installed biofiltration BMPs,and the Wildlife Road project only also included limited infiltration improvements to capture and treat wet weather flows entering the associated catch basins. Additional information on these projects, including conceptual design and drainage analysis, is included in Appendix C.

6.3 Pollutant Load Reduction Quantification For Nonstructural Controls

This section demonstrates how existing nonstructural programs have contributed to compliance with the zero dry weather discharge criteria of the Special Protections. This section also discusses the quantifiable percent reductions that have been achieved and that will be achieved using enhanced nonstructural controls. The quantification of the effectiveness of nonstructural controls is a developing science. Although the effectiveness of most nonstructural controls is not well documented in available literature, data on recent studies (e.g., street sweeping and source studies) provide a basis for developing quantification estimates. It has also been documented

(City of San Diego, 2010a; Brown et al., 2010; Pohl, 2010; Cac and Ogawa, 2010; Krieger et al., 2010) that nonstructural controls that target operational and true source controls can provide far more cost-effective, long-term solutions than end-of-pipe treatment BMPs.

Nonstructural BMPs are designed to reduce the concentrations of constituents at the source prior to the generation of surface storm water runoff and therefore prior to runoff entering storm drains, reaching BMPs, and reaching the receiving water. Typical load reductions associated with the quantification of nonstructural programs is on the order of 25% (LARWQCB, 2005) (County of Los Angeles, 2012).

6.3.1 Load Reductions Associated with Nonstructural Solutions

The scope of the nonstructural program load reduction quantification is limited. Many nonstructural programs currently implemented within ASBS 24, such as the Parties' IC/ID and spill response programs, cannot be quantified and entered into a load reduction model because they are designed to control constituents at their source for a sporadic event. However, these programs do offer a water quality benefit, and various types of data are available and may be used to demonstrate changes in public behavior.

When targeted at the actual pollutant source, nonstructural solutions (e.g., operational source controls) have been shown in studies to be very effective at removing the source and therefore reducing concentrations/loads to below regulatory requirements. For example, the *Mission Bay Clean Beaches Initiative Bacterial Source Identification Study* found birds and over-irrigation to be two major sources of bacterial contamination (Weston, 2004). Monitoring conducted following a redesign of the irrigation system and relocation of an in-water raft popularly used by birds indicated that bacterial concentrations in the receiving waters were very low. During the study, there was one exceedance, and follow-up studies showed that the source of the exceedance was not associated with irrigation runoff or birds (Weston, 2006).

Furthermore, true source controls that replace or modify the constituent content of products that have been determined to impact water quality should be part of the nonstructural program. True source controls have been proven to be highly cost effective as in the case of the banning of the pesticide Diazinon, which has resulted in a clear reduction from well above to now below the water quality objective in the Chollas Creek watershed, which is under a TMDL for this contaminant (SDRWQCB, 2007). Senate Bill 346 adopted in 2010 which requires reduction of copper in brake pads in California was achieved through the Brake Pad Partnership. The legislation was based on scientific data showing the impact of copper from brake pads on water quality in urban areas. This true source control approach will significantly reduce copper concentrations in most urbanized watersheds. In the urbanized Chollas Creek watershed (which is under a dissolved metals TMDL), it has been estimated that approximately 90% of the copper loading is from brake pad deposition (City of San Diego, 2009). It is anticipated that most of the copper load reduction necessary to meet the Chollas Creek TMDL will be achieved from the reduction of copper in brake pads, a true source control strategy.

As indicated in the Outfall Wet Weather Monitoring Results for 2013 and the Pollutant Load Reduction Targets, zinc and TSS are currently considered to be in exceedance of the natural water quality in ASBS 24. Nonstructural controls that include both operational and true source control measures to reduce zinc and TSS loading have therefore been emphasized.

6.3.2 Aggressive Street Sweeping

According to the EPA, street sweeping programs may reduce the need for other structural storm water BMPs and may prove more cost effective than structural BMPs, especially in more urbanized areas (USEPA, 2012a). Aggressive street sweeping can be highly effective in reducing wet weather metals loading (City of San Diego, 2010a; Seattle Public Utilities, 2009; City of Portland, 2006) and, to a lesser extent, bacteria (Skinner et al., 2010), while continuing to address trash, debris, and sediment pollution.

The County has implemented an aggressive street sweeping program at County Beach parking lots (i.e., sweeping three to four times per week with enhanced sweeping equipment). Given that these parking lots experience a reduced traffic load compared to the PCH and City streets, and have an aggressive sweeping schedule and program, the County's existing parking lot sweeping program is considered to be appropriate for protecting ASBS 24 water quality (i.e., program at a high level where adding enhancements may provide diminishing returns).

The City currently implements a two-part street sweeping program, including weekly mechanical sweeping along PCH and monthly mechanical sweeping along City-maintained streets. Sections 6.1.1.4 and 6.1.1.5 discuss potential enhancements to the City's existing sweeping program, including modifications to the sweeping schedule, sweeping equipment, and City parking policies. The pollutant load reductions associated with these enhanced sweeping program options are discussed in Appendix A. Program implementation may be limited by cost, especially once enhanced sweeping programs have reached a point of diminishing returns (USEPA, 2012a).

6.3.3 Commercial Programs

Commercial land use represents a very small portion of the ASBS 24 watershed, and the City's existing commercial inspection and outreach programs have been effective at preventing discharges from these facilities. Restaurants and grocers represent the predominant commercial business within this drainage area and existing programs have ensured compliance with the zero dry weather runoff criteria of the Special Protections by eliminating outdoor washing activities and promoting pollution prevention measures. As of February 2013, 51 of the 63 qualifying restaurants and food management businesses within the City's entire jurisdiction (e.g., 81% overall participation) were re-certified as being 100% compliant with all Clean Bay Restaurant Certificate Program criteria, which includes zero dry weather discharge off-site. It is important to note that the program also includes criteria that are not related to water quality. For instance, if a business is not implementing a recycling program, they would not be eligible for certification. Therefore, the percentage of businesses protecting water quality is likely to be higher than the overall participation rate. Ongoing implementation of this program will continue to ensure continue compliance with the zero dry weather runoff criteria of the Special Protections.

The City's existing commercial programs also provide wet weather water quality benefits. For example, waste management and spill prevention programs eliminate or control outdoor trash, metals, grease, and bacteria sources, which may be washed into the MS4 during storm events. Elimination of outdoor washing activities, especially near landscaped areas, can also control erosion and sediment disturbance. To date, the existing commercial inspection and outreach programs implemented by the City have potentially resulted in a 1% to 4% pollutant load reduction and have been incorporated into the initial assessment of wet weather load. Additional future load reductions may be achieved as participation in the Clean Bay Restaurant Certificate Program grows towards 100% participation and as synergies between PIPP programs are identified and incorporated into Enhanced Collaborative Environmentally Friendly Alternative Services Program(s).

6.3.4 Outreach, Water Conservation, and Irrigation Management Programs

Nationally, lawn care accounts for 32% of the total residential outdoor water use (USEPA, 2013) and over-irrigation is a common source of runoff. While irrigation runoff is a freshwater source and does not represent a pollutant unto itself, irrigation-related dry weather flows have the potential to erode landscaping and mobilize pollutants. Even when irrigation water does not reach the MS4, pollutant mobilization to impervious surfaces can create a non-point source of pollution during wet weather.

Use of water-saving devices (e.g., irrigation controllers, sprinkler heads) conserve water and prevent over-irrigation. The former Landscape Irrigation Efficiency Program (LIEP) and Water Saving Devices Rebates Programs' educational literature provide an estimated water savings of 13,500 gallons per location converted per year. Use of drought-tolerant plants and landscaping in place of grass provides additional water savings and further reduces the likelihood of over-irrigation. The water conservation and over-irrigation reduction programs that the County and the City administer and provide educational support for in the ASBS 24 drainage area have helped control over-irrigation runoff and achieve compliance with the zero dry weather discharge criteria of the Special Protections. These programs have also helped reduce pollutant mobilization and creation of non-point sources on impervious surfaces. As participation in the rebate program grows, there is potential for an additional 1% to 2% wet weather pollutant load reduction through this indirect source control program.

OFGs and CA Friendly Landscapes are structural BMPs that infiltrate runoff and bio-remediate pollutants, effectively disconnecting both dry weather and the first flush of storm water runoff from the receiving water. The City has two demonstration landscapes that can be used as examples to the community: one at Legacy Park and one at Bluffs Park. The City recognizes three residential OFGs, one of which is located within ASBS 24 at Point Dume. Promotion of local OFGs contributes to their implementation by residents, educational institutions, and businesses. Ongoing implementation of this program and the resulting net increase in OFG implementation will likely translate to an additional 1% to 2% wet weather pollutant load reduction.

The City provides education and outreach on water-saving incentive programs and OFGs, and responds to irrigation-related IC/IDs. The City's 24-hour Pollution Prevention Hotline received fewer than 10 calls during the first year, or on average less than one per month. (The Clean LA hotline, which is shared with the District, fielded 34,064 calls during the fiscal year covered under the 2011-2012 Annual Report [LACDPW, 2012].) Most of the IC/ID field investigations have been due to over-irrigation and were resolved within a month through collaboration between the City and the property owner. Additionally, as of September 5, 2014, the City launched a online water wasting report form in response to the historic drought conditions. This reporting form makes it more efficient for the community to notify and the City to respond to incidents of runoff due to over-irrigation among other water wasting activities. Ongoing implementation of the ASBS Focused Outreach Program will continue to increase participation in rebate programs and OFG and CA Friendly Landscape implementation, contributing to the wet weather load reductions previously discussed.

6.3.5 Metal Building Material Management Program

Recent studies have shown that architectural copper and galvanized steel building materials can elevate the metals concentrations measured in storm water runoff from 10 to 100 times greater than concentrations measured for non-metal building materials (City of San Diego, 2009; Chang et al., 2004; Davis et al., 2001). Zinc in storm water runoff measured directly from galvanized metal surfaces is typically very high, between 1,000 and 15,000 µg/L (Golding, 2008).

An aggressive outreach and incentive program may encourage targeted audiences to proactively modify infrastructure (e.g., install OFGs and rain barrels to capture runoff, replace with non-metal materials, diversion of air conditioning condensate away from metal infrastructure) and behaviors (e.g., proactive housekeeping, apply and maintain sacrificial coatings). In the ASBS, a phase-out and full ban of copper and zinc building materials represents a true source control measure that could significantly reduce metals loading to ASBS 24. In Palo Alto, a similar metal building material ordinance for copper plumbing fixtures was implemented in response to a copper TMDL (City of Palo Alto, 2011). Institutional controls and regulatory change also represent an important step toward laying the foundation for inspections, if determined to be appropriate.

A Simple Method model was prepared to estimate the load reductions from implementing this program. To complete the model, several assumptions related to a typical watershed were made and include the following:

- An urban watershed composed of 50% residential, 40% open space, and 10% transportation.
- Of runoff from these land uses, 25% have elevated concentrations of copper resulting from building materials (e.g., copper rain gutters).
- Incentive program would be utilized by 20% of the residential land use area.
- Where the incentive program is utilized, copper concentration reductions in storm water would be in the range of 40% to 80%.

Based on these assumptions, metal building material management programs could result in a 6% to 12% pollutant load reduction. For more information on the load reduction calculations, see Appendix D.

7.0 ASSESSMENT OF ANTHROPOGENIC SEDIMENTATION POTENTIAL

In accordance with the requirements of the General Exemption, the natural habitat conditions in the ASBS shall not be altered as a result of anthropogenic sedimentation (SWRCB, 2012b). An assessment of the potential areas prone to anthropogenic sedimentation was performed as part of this Compliance Plan for the purpose of identifying areas where sediment control BMPs may be required. The general assessment process included first performing a desktop analysis of geological conditions, topography, land use, and aerial imagery for the applicable area. Next, a reconnaissance of the area was performed to verify desktop findings and further analyze the drainage areas. Finally, the desktop and reconnaissance data collected were then compiled into this Plan, which details the assessment methodologies, results, and conclusions.

7.1 Sedimentation Definitions

Basic definitions relating to sedimentation and the coverage/applicability of the sedimentation identification assessment are provided below. These terms are relevant to the entire sedimentation assessment. Additional terms, applicable to specific subsections, are defined within the applicable subsection, as needed.

Erosion
"The process by which soil particles are detached and transported by the actions of wind, water, or gravity." (SWRCB, 2010).

Sediment
"Solid particulate matter, both mineral and organic, that is in suspension, is being transported, or has been moved from its site of origin by air, water, gravity, or ice and has come to rest on the earth's surface either above or below sea level." (SWRCB, 2010).

Sedimentation
"Process of deposition of suspended matter carried by water, wastewater, or other liquids, by gravity. It is usually accomplished by reducing the velocity of the liquid below the point at which it can transport the suspended material." (SWRCB, 2010).

Anthropogenic Sedimentation
For the purposes of this assessment, anthropogenic sedimentation is defined as sedimentation resulting from mankind activities in the past or present. Stated differently, anthropogenic sedimentation is any sedimentation that would not be present in nature in the absence of mankind and mankind improvements (i.e., past and present absence of mankind).

Compliance Plan Anthropogenic Sedimentation Assessment Area
In accordance with the General Exception, the Compliance Plan focuses on the assessment of point source discharges, including pollutants, and the potential controls to reduce pollutant loading from these point sources. Therefore, the Compliance Plan assessment of areas prone to anthropogenic sedimentation was limited to the tributary drainages areas associated with the point source outfalls detailed in Section 2.6 of the Compliance Plan. Figure 7-1 shows the Parties' identified outfalls and drainage areas (catchment areas).

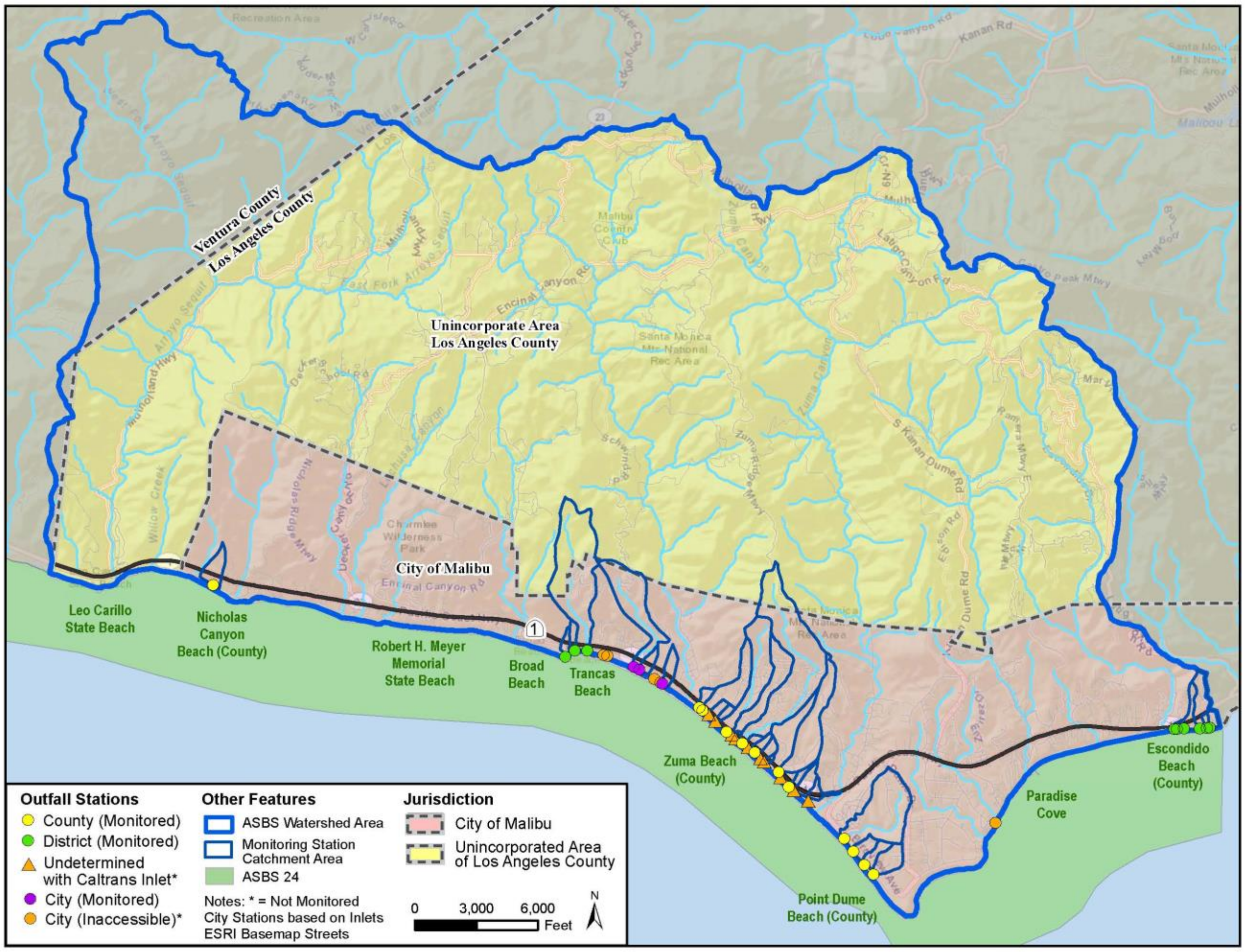

Figure 7-1. ASBS 24 Identified Outfall Catchment Areas

7.2 Desktop Analysis

A desktop analysis was performed evaluating the geology, topography, land use, and general surface condition (e.g., vegetation cover) in order to identify potential areas prone to erosion within the drainage areas tributary to the Parties' outfalls. The collection of area geological data included conducting literature reviews of five references applicable to the region ([City, 1995], [NPS, 1997], [Yerkes and Campbell, 1979],[SWRCB, 1979], and [SWRCB, 2012c]). County of Los Angeles Department of Transportation staff were interviewed regarding roadway maintenance activities and the frequency of sediment removal performed in the area. Sediment risk data for the area, obtained from the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Actives (Construction General Permit) (SWRCB, 2010), were evaluated to determine the general sediment risk for disturbed areas. GIS data relating to topography, land use, and aerial imagery were analyzed to evaluated surface gradients and vegetative coverage types in the area.

7.2.1 ASBS 24 Assessment Area Geology

As detailed in Section 2.6, the Compliance Plan identified 38 outfall point sources along the ASBS 24 coast within the Parties' jurisdiction. The drainage area for the northerly most outfall, located near Nicholas Canyon State Beach (ASBS-031), consists primarily of Santa Monica Mountain (Topanga Formations) with Trancas Formation along the shoreline. The drainage areas for the outfalls along the west half of Broad Beach (ASBS-001, -002, and -003) consist primarily of the Santa Monica Mountains (Topanga, Santa Susana/Coal Canyon, and Llajas Formations) with small areas of Trancas Formation along the coastline. The outfalls along the east half of Broad Beach and the northeast half of Zuma Beach (BB-001 through BB-003 and ASBS-004 through ASBS-016) have drainage areas that consist of varying percentages of Modelo Formation along the coast and Santa Monica Mountains (Topanga, Santa Susana/Coal Canyon, and Llajas Formations; Conejo Volcanics; and Diabase Intrusions). The outfalls located along the southeast half of Zuma Beach and Point Dume Beach (Westward Beach) (ASBS-017 through ASBS-024) have drainage areas within the Monterey/Modelo Formation. The drainage areas of the six outfalls located along Escondido consist of Santa Monica Mountain and small areas of Modelo Formation along the coast. Figure 7-2 and Figure 7-3 show the geological features and drainage areas of the Parties' outfalls identified in this Plan (NPS, 2007).

Map symbols used along the coastal area were defined using the National Geologic Map Database. Pleistocene marine terrace deposits along the shoreline include the Trancas and Monterey Formations. The symbols used to depict general costal geologic features in Figure 7-2 through Figure 7-3 included the following:

- Qa – Alluvial gravel, sand, and clay of flood plains.
- Qaf – Artificial cut and fill.
- Qao – Older dissected alluvial gravel, sand, and clay; on coastal area deposited in part on a wave-cut platform, forms several terraces.
- Qg – Gravel and sand of major stream channels.
- Qls – Landslide debris.
- Qos – Old dune sand at Point Dume.
- Qs – Beach Sand.
- Tr – Trancas Formation composed of marine sandstone, mudstone, silty shale, and claystone.
- Tmt – Monterey/Modelo Formation composed of marine clay shale and laminated to platy siltstone with sandstone.

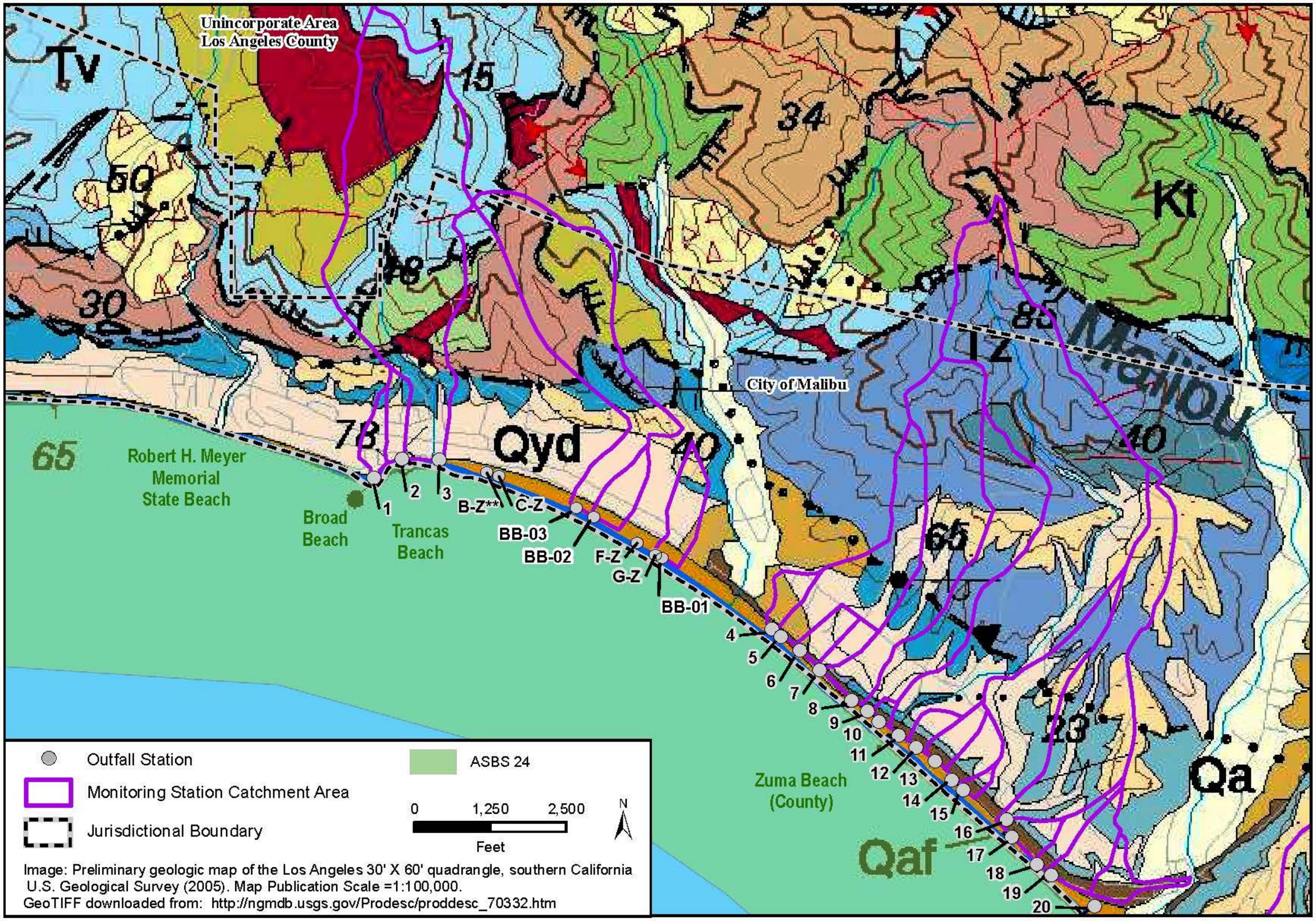

Figure 7-2. Geology of Outfall Drainage Areas, Broad Beach, and Zuma Beach

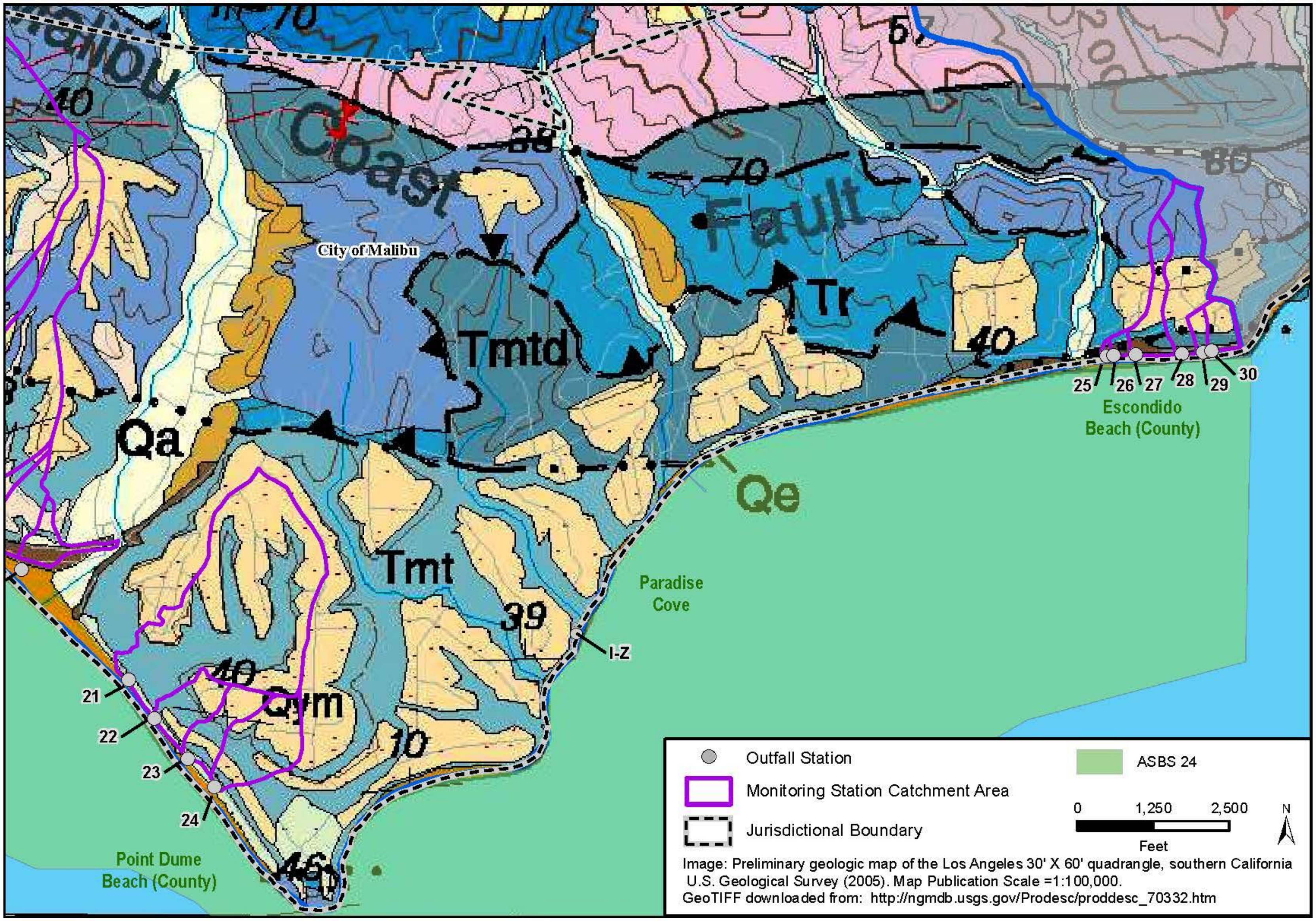

Figure 7-3. Geology of Outfall Drainage Areas, Point Dume Beach to Escondido Beach

7.2.2 Assessment Area Land Use

In general, land use within the drainage area tributary to the Parties' identified outfalls that discharge to ASBS 24 consists of various categories of residential and vacant land with relatively small amounts of commercial, transportation, and specialized (e.g., school, water storage) land uses. Table 7-1 summarizes the jurisdictional land uses for each catchment area.

Table 7-1. Outfall Drainage Area Land Use Summary

Land Use Designation	Catchment Outfall Designation													
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
City														
Beaches (Vacant)		0.1	0.3											
Horse Ranches													0.8	2.0
Nurseries		3.4	1.5											
Duplexes, Triplexes, and 2- or 3-Unit Condos and Townhouses (THs)														
Low-Rise Apartments, Condos, and THs	0.2		3.7											
High-Density, Single-Family Residential	2.7	1.3	0.3	2.9					0.3		0.4			
Low-Density, Single-Family Residential	1.2	0.3	1.5	2.5	8.7	2.0	4.9	14.3	10.1		18.9	2.5	1.6	2.5
Rural Residential, High-Density	1.9	2.0	36.3	1.6	36.0	4.9	0.8	45.3	55.2	0.7	110.2	2.5	2.2	5.2
Rural Residential, Low-Density			18.4											
Trailer Parks and Mobile Home Courts, High-Density														
Retail Centers (Non-strip)														
Senior High Schools											14.5		0.3	
Transportation Rights-of-Way (ROWs)	0.6	0.4	0.9	1.3	4.7		0.1	4.3	2.7		8.9		0.2	0.1
Transportation ROWs – Pacific Coast Highway (PCH)	0.9	0.7	1.5	0.7	1.0	1.1	0.4	1.9	0.5	0.6	0.9	0.8	1.1	1.0
Vacant Undifferentiated	2.1	2.6	52.0		9.7	1.2	1.4	19.0	9.4		11.4		2.4	
Water Storage Facilities					0.5			1.1			0.8			
Undeveloped Reg. Parks and Rec. (U.S. Government)					4.1			27.2			86.3			
City Subtotal	**9.6**	**10.8**	**116.4**	**9**	**64.7**	**9.2**	**7.6**	**113.1**	**78.2**	**1.3**	**252.3**	**5.8**	**8.6**	**10.8**
County														
Beach Parks				0.7	1.1	1	0.3	1.6	0.4	1.1	1.4	1.3	1.7	1.4
Rural Residential, Low-Density														
Transportation ROWs														
Vacant Undifferentiated			95.8								2.8			
Vacant Undifferentiated (U.S. Government)			41.3								47.0			
County Subtotal	**-**	**-**	**137.1**	**0.7**	**1.1**	**1**	**0.3**	**1.6**	**0.4**	**1.1**	**51.2**	**1.3**	**1.7**	**1.4**
Total	**9.6**	**10.8**	**253.5**	**9.7**	**65.8**	**10.2**	**7.9**	**114.7**	**78.6**	**2.4**	**303.5**	**7.1**	**10.3**	**12.2**

Table 7-1. Outfall Drainage Area Land Use Summary (Continued)

Land Use Designation	Catchment Outfall Designation													
	15	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**
City														
Beaches (Vacant)														
Horse Ranches														
Nurseries														2.9
Duplexes, Triplexes, and 2- or 3-Unit Condos and THs							3.3		0.2	1.7			0.5	1.0
Low-Rise Apartments, Condos, and THs							6.1							0.0
High-Density, Single-Family Residential		0.5							0.1		0.2	0.4	1.5	0.7
Low-Density, Single-Family Residential		14.5	0.4	2.2	4.4		19.7	5.4	4.8	6.7	0.1	0.3	2.7	1.4
Rural Residential, High-Density	1.2	26.5	2.8	4.7	7.9	3.7	86.2	8.4	9.2	22.2			9.0	13.1
Rural Residential, Low-Density														
Trailer Parks and Mobile Home Courts, High-Density							38.8							
Retail Centers (Non-Strip)						0.1	0.7							
Senior High Schools		38.2												
Transportation ROWs		8.1		0.3	0.5		4.4	1.8	1.1	1.8			0.5	
Transportation ROWs - PCH	0.6	0.5	1.7	0.7	1.7	3.1					0.6	0.7	1.9	5.0
Vacant Undifferentiated		24.1	1.4	1.3	3.7	2.5	4.6	1.8	1.8	1.7		1.0	2.8	11.8
Water Storage Facilities														
Undeveloped Reg. Parks and Rec. (U.S. Government)		2.1												
City Subtotal	**1.8**	**114.5**	**6.3**	**9.2**	**18.2**	**9.4**	**163.8**	**17.4**	**17.2**	**34.1**	**0.9**	**2.4**	**18.9**	**35.9**
County														
Beach Parks	1.2	0.6	2.6	0.9	2.6	2.8	1.9	1	1.1	0.7				
Rural Residential, Low-Density														
Transportation ROW							4.2							
Vacant Undifferentiated														
Vacant Undifferentiated (U.S. Government)														
County Subtotal	**1.2**	**0.6**	**2.6**	**0.9**	**2.6**	**2.8**	**6.1**	**1**	**1.1**	**0.7**	**-**	**-**	**-**	**-**
Total	**3.0**	**115.1**	**8.9**	**10.1**	**20.8**	**12.2**	**169.9**	**18.4**	**18.3**	**34.8**	**0.9**	**2.4**	**18.9**	**35.9**

Table 7-1. Outfall Drainage Area Land Use Summary (Continued)

Land Use Designation	Catchment Outfall Designation						
	29	30	31	BB01	BB02	BB03	Total
City							
Beaches (Vacant)							**0.4**
Horse Ranches							**2.8**
Nurseries							**7.8**
Duplexes, Triplexes, and 2- or 3-Unit Condos & THs						2.1	**8.8**
Low-Rise Apartments, Condos, and THs							**10.0**
High-Density, Single-Family Residential	0.3	0.7		0.3			**12.6**
Low-Density, Single-Family Residential				5.7	3.1	8.6	**151.0**
Rural Residential, High-Density	3.5	6.5	0.3			19.3	**529.3**
Rural Residential, Low-Density			5.4				**23.8**
Trailer Parks and Mobile Home Courts, High-Density							**38.8**
Retail Centers (Non-Strip)				0.7			**1.5**
Senior High Schools							**53.0**
Transportation ROWs		0.9		1.3	0.8	2.4	**48.1**
Transportation ROWs – PCH	0.1	0.1	2.3	1.1	1.3	0.9	**35.4**
Vacant Undifferentiated		0.8	13.5	10.6	8.6	89.0	**292.2**
Water Storage Facilities							**2.4**
Undeveloped Reg. Parks & Rec. (U.S. Government)							**119.7**
City Subtotal	**3.9**	**9**	**21.5**	**19.7**	**13.8**	**122.3**	**1337.6**
County							
Beach Parks			9.5				**36.9**
Rural Residential, Low-Density						0.7	**0.7**
Transportation ROW						0.1	**4.3**
Vacant Undifferentiated						4.5	**103.1**
Vacant Undifferentiated (U.S. Government)							**88.3**
County Subtotal	**-**	**-**	**9.5**	**-**	**-**	**5.3**	**233.3**
Total	**3.9**	**9.0**	**31.0**	**19.7**	**13.8**	**127.6**	**1,570.9**

7.2.3 Imagery Review

Aerial and other photographic imagery data were reviewed using Google Earth® software and Environmental Systems Research Institute® (ESRI) GIS imagery sources to determine the types of land cover within the Parties' outfall drainage areas. The review showed that areas occupied by residential lots along the coast typically consisted of single-family dwellings, each surrounded by large areas of well-maintained landscaping that included grass, shrubs and brushes, and trees. Further inland, north of the PCH, residential lots were occupied by single-family dwellings and either well-maintained landscape and/or open space, natural type vegetation. The Google Earth® street view tool imageries were reviewed, which showed the residential lots and secondary roadways as having well-maintained vegetated areas with very little non-vegetated (bare) areas.

Caltrans' PCH right-of-way and highway traverses several of the Parties' outfall drainage areas. Although Caltrans is not a responsible applicant included under this Compliance Plan, the area within the Caltrans right-of-way drains to the Parties' outfall and thus, was evaluated to determine if the area has the potential to contribute anthropogenic sedimentation to ASBS 24. The desktop review showed that some cuts (excavations) were made into native soils along the roadway. The review did not reveal obvious areas of excessive erosion and sedimentation. However, due to the common historic erosion problems associated with similar roadways throughout the state, the areas where cuts were potentially made during roadway construction were flagged for further detailed evaluation during the field reconnaissance phase.

7.2.4 General Sedimentation Risk Assessment

In order to estimate the general sediment risk for the areas that drain to the Parties' outfalls, a sediment risk was determined for a hypothetical site based on the procedures detailed in the *NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities* (Construction General Permit). The intent of this assessment is to determine the potential sediment for areas where minor improvements (e.g., landscaping) or other circumstances may result in bare soil that would not be considered construction activity. The assessment completed as part of this plan is not performed for the purpose of assessing construction activities, which are permitted and inspected through applicable County and City programs, and which require that risks be determined and mitigated through the proper implementation of BMPs.

7.2.4.1 Sedimentation Risk Assessment Methodology

The risk determination procedure detailed in the Construction General Permit includes determining both the "project sediment risk" and the "receiving water risk." The two risks are then used in combination to determine the overall project risk. However, for this plan (assessing potential sedimentation), only the sediment risk was evaluated.

The Construction General Permit describes two options for determining sediment risk: 1) GIS Map Method – EPA Rainfall Erosivity Calculator and GIS map, and 2) Individual Method – EPA Rainfall Erosivity Calculator and individual data. Both of these methods include using available EPA resources to estimate a rainfall-runoff erosivity factor. Depending on the method selected, the soil erodibility, project length, and slope parameters are estimated either from a map (Method 1) or from site-specific data applied to an erodibility factor nomograph and length-slope factor table (Method 2). For both methods, the data are applied to the Universal Soil Loss Equation (USLE) to estimate a sediment load for the applicable period (SWRCB, 2010). The USLE is detailed as follows:

$$A = R*K*LS*C*P$$

Where:

A = the computed soil loss (sheet and rill erosion) (tons/acre).
R = the rainfall erosive factor for the given period.
L = the slope length factor.
S = the slope gradient factor.
C = cover factor (1.0 for bare ground conditions).
P = management operations & support practice (1.0 for bare ground conditions).

Based on the computed soil loss (sediment load), the site is classified as having either a low-, medium-, or high-sediment risk (SWRCB, 2010). Table 7-2 summarizes the risk levels associated with the various soil loss quantities.

Table 7-2. Sediment Risk Levels

Soil Loss	Risk Level
<15 tons/acre	Low
15 – 75 tons/acre	Medium
>75 tons/acre	High

Source: SWRCB, 2010.

7.2.4.2 Sedimentation Assessment Calculations

To assess the general sediment risk for the area, a hypothetical site was evaluated using the methods described in the Construction General Permit. The time period was estimated to be 2 months in duration, from December 1st through January 31st.

The rainfall erositvity factor, or R factor, is calculated as a product of the Erosivity Index (EI) percentage and the average annual R value. These two parameters were obtained from the *Storm Water Phase II Final Rule Construction Rainfall Erosivity Wavier*. The R factors are used as surrogate measures of the impact that rainfall has on erosion and have been mapped using isoerodent contours (USEPA, 2012b). The R values are based on the analyses of data which indicated that when factors other than rainfall are held constant, soil loss is directly proportional to a rainfall factor composed of total storm kinetic energy (E) times the maximum 30-minute intensity (I). The numerical value of R is the average annual sum of EI for storm events during a rainfall record of at least 22 years, and the isoerodent maps were developed based on R values calculated for more than 1,000 locations in the western United States (SWRCB, 2010). The average annual R value, based on the referenced isoerodent contour maps for the area, was estimated to be between the values of 60 and 80 (80 selected), with units of hundreds ft.*tonf*in*(ac*h*yr)$^{-1}$.

Next, it was determined that the area is within EI distribution zone 25. Based on this zone, the percentages of the EI distributions throughout the year were determined and are summarized on Table 7-3.

Table 7-3. Erosivity Index, Annual Distribution for Zone 25

Month	Jan	Jan	Jan	Feb	Mar	Mar	Mar	Apr	Apr	May	May	Jun	Jun
Day	1	16	31	15	1	16	31	15	30	15	30	14	29
EI (%)	0	9.8	20.8	30.2	37.6	45.8	50.6	54.4	56.0	56.8	57.1	57.11	57.2
Month	Jul	Jul	Aug	Aug	Sept	Sept	Oct	Oct	Nov	Nov	Dec	Dec	
Day	14	29	13	28	12	27	12	27	11	26	11	31	
EI (%)	57.6	58.5	59.8	62.2	65.3	67.5	68.2	69.4	74.8	86.6	93	100	

Source: USEPA, 2012b.

The final R factor calculation is summarized on Table 7-4.

Table 7-4. R Factor Calculation Summary

Parameter	Value
EI % (Oct. 1 – Dec. 31)	11.7%
EI % (Jan. 1 – Mar. 30)	20.8%
Total EI %	32.5%
Average Annual R Factor	80 (100*ft.*tonf*in)*(ac*h*yr)$^{-1}$
Computed R Factor	26.0 (100*ft.*tonf*in)*(ac*h*yr)$^{-1}$

7.2.4.3 GIS Map Method for KLS Factor

The Construction General Permit details the use of the EPA Monitoring & Assessment Program (EPA EMAP) map to assist with determining the combined K, L, and S parameters for use in the USLE equation.

The soil erodibility factor K represents the susceptibility of soil or surface material to erosion, transportability of the sediment, and the amount and rate of runoff given a particular rainfall input (or lack of absorption and infiltration), as measured under a standard condition. Fine-textured soils that are high in clay have low K values (approximately 0.05 to 0.15) because the particles are resistant to detachment. Coarse-textured sandy soils also have low K values (approximately 0.05 to 0.2) because of high infiltration resulting in low runoff. Medium-textured soils (e.g., silt loam) have moderate K values (approximately 0.25 to 0.45) because they are moderately susceptible to particle detachment and produce runoff at moderate rates. Soils having a high silt content are especially susceptible to erosion and have high K values, which can exceed 0.45 and be as large as 0.65 (SWRCB, 2010).

The effect of topography on erosion is accounted for by the LS factor, which combines the effects of a slope length factor, L, and the slope gradient factor, S. Typically, as slope length and/or slope gradient increase, soil loss increases.

Figure 7-4 shows the EPA EMAP map. Based on this map, a KLS value of 1.6 was selected for the ASBS 24 drainage area.

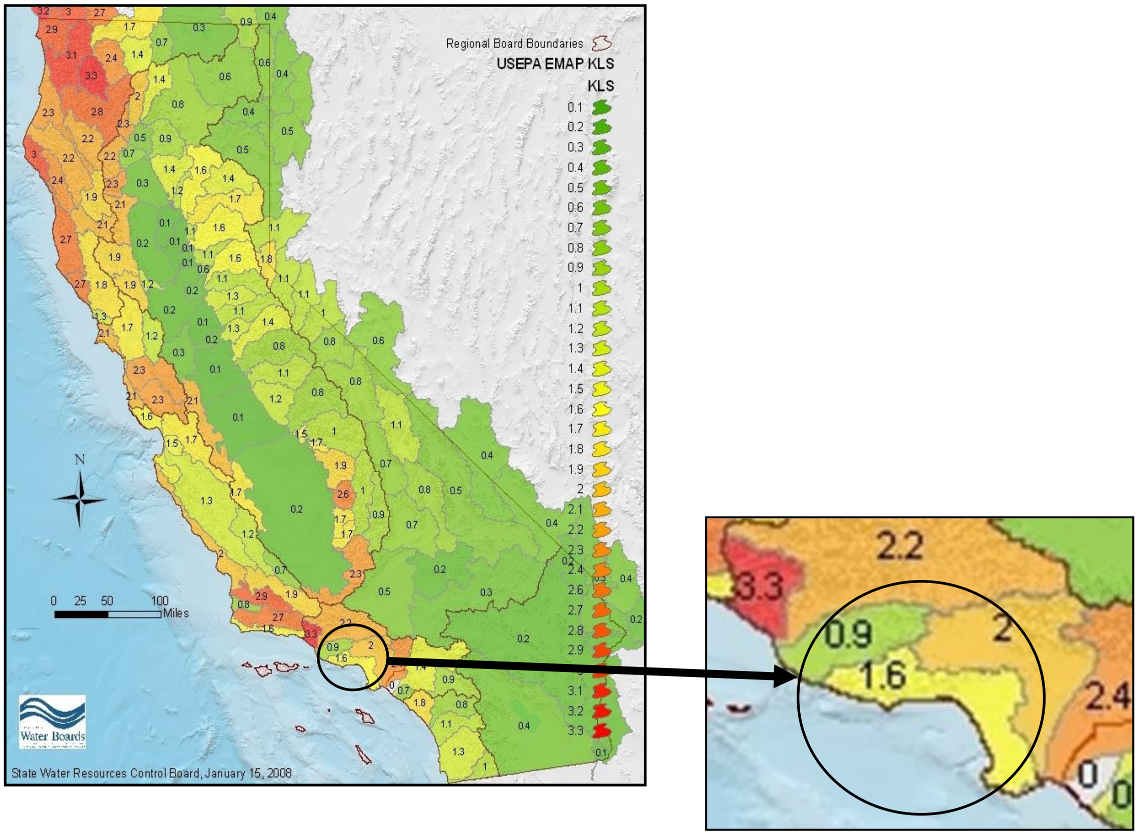

Figure 7-4. EPA EMAP (SWRCB, 2010)

The soil loss was calculated based on the assumptions made and values determined in this assessment. The soil loss for the hypothetical site was calculated to be 41.6 tons per acre. Based on the Construction General Permit sediment risk matrix (summarized on Table 7-2) and this value, disturbed areas (e.g., bare soil) draining to the ASBS would have, in general, a medium-level sediment risk.

7.2.4.4 Individual Method for KLS Factor

The Construction General Permit allows for site-specific data to be used in determining the KLS factor for the USLE equation. This includes performing soil analysis to determine the soil grain size distribution, site length, and average slope. This method was performed with the assumption that the soils consist of 60% sandy, 20% silty, and 20% clayey materials, which is reasonable for mountain formations and coastal bluffs. Based on an area of 0.25 acres (square), a length of 100 ft. was estimated. Based on the topography in the developed areas with slopes of approximately 2 to 10%, the higher end of the range was selected (10% slope).

Using the Soil Erodibility Factor Nomograph provided in the Construction General Permit, the K factor for the assumed soil composition was determined to be 0.19. Based on the LS Factors Table provided in the Construction General Permit and the stated assumptions, the LS factor was determined to be 1.46. Combining these parameters, it was determined that KLS is 0.277, the soil loss would be 7.2 tons per acre. Based on the Construction General Permit sediment risk matrix (summarized on Table 7-2), this value is considered a low-sediment risk for the applicable disturbed area.

7.2.4.5 Sediment Risk Assessment Summary

The assessment of the general sediment risk for disturbed areas with the ASBS 24 drainage area indicates that an area of disturbed soils without controls during the two relatively high rainfall months (December and January) during average conditions would have a potential sediment load of 7.2 tons per acre (per Method 2, individual site data calculations) or 41.6 tons per acre (per Method 1, GIS map data calculations). Smaller areas would have proportionally lower potential yields, as would disturbed areas with controls and/or disturbed areas that do not have a direct connection to the storm drain inlets (e.g., small area of disturbance above turf vegetation). Based on guidance found in the Construction General Permit, this equates to a low- (Method 1) to medium- (Method 2) sediment risk.

The difference between methods is based solely on the method used to calculate the KLS factor. The GIS map shows a large area with the same value, including the Santa Monica Mountains. Including the steep mountain terrain in the weighted average (by area), the slope calculation for the GIS map appears to have overestimated the KLS for the areas along the ASBS coast where developed areas are located. Additionally, the GIS map may overestimate the project slope length factor and slope gradient factor (LS factor). As such, the Method 2, site-specific data method seems much more accurate for the applicable area.

This assessment provides a general estimate of the sediment yield potential for disturbed (or bare) soil cover for the stated assumptions. The results of this assessment were used to aid in the evaluation of the drainage areas during field reconnaissance. Considering the soil loss calculations, the R factor is fixed for the area and the K factor may change slightly in the different geology across the drainage areas. However, the slope length (L) and slope gradient (S) vary greatly when areas with the potential to be prone to sedimentation are evaluated. The field reconnaissance was performed with a focus on the implications that the length and slope parameters have on the potential soil loss for areas of bare soil or spare vegetation. Table 7-5 provides annual soil loss calculations performed for various typical sloped small areas with bare soil or sparse vegetation cover throughout the year.

Table 7-5. Annual Soil Loss Calculations for Sloped Areas

Slope Length (ft.)	Slope Height (ft.)	Slope Gradient (%)	Width (ft.)	Area (acres)	KLS Factor	Annual Soil Loss (tons/year)
10	0.2	2	100	0.023	0.025	0.05
20	0.4	2	100	0.046	0.029	0.10
30	0.6	2	100	0.069	0.032	0.18
40	0.8	2	100	0.092	0.036	0.27
50	1	2	100	0.115	0.040	0.37
10	1	10	100	0.023	0.072	0.13
20	2	10	100	0.046	0.093	0.34
30	3	10	100	0.069	0.122	0.67
40	4	10	100	0.092	0.146	1.1
50	5	10	100	0.115	0.173	1.6
10	2.5	25	100	0.023	0.160	0.3
20	5	25	100	0.046	0.247	0.9
30	7.5	25	100	0.069	0.338	1.9
40	10	25	100	0.092	0.424	3.1
50	12.5	25	100	0.115	0.507	4.7
10	5	50	100	0.023	0.268	0.5
20	10	50	100	0.046	0.458	1.7
30	15	50	100	0.069	0.638	3.5
40	20	50	100	0.092	0.809	5.9
50	25	50	100	0.115	0.980	9.0

R = 80 (100*ft.*tonf*in)*(ac*h*yr)$^{-1}$.
K = 0.19.

Relative to the 50% (2:1 [horizontal: vertical]) gradient slope, the 2% slope gradient is estimated to lose only 4% as much soil for a 50-ft slope length, and the 10% slope gradient is estimated to lose approximately 18% as much. This relationship in non-linear, and as the slope gradient increases, the potential soil loss significantly increases. Similarly, as the slope length increases, the potential soil loss significantly increases. The 50-ft slope length calculation for the 2% slope gradient is estimated to have approximately seven times the soil loss of the 10-ft slope length for the same gradient. The 50-ft slope length calculation for the 50% slope gradient is estimated to have approximately 1,400% the soil loss of the 10-ft slope length for the same gradient. These typical calculations indicate that in areas where disturbance has created unnatural sloped areas, the potential for soil loss exponentially increases as the slope gradient and/or the slope length increase.

7.3 Sediment Assessment Field Reconnaissance

A field reconnaissance was conducted to confirm the desktop analysis and evaluate the ASBS 24 outfall drainage areas prone to erosion and sedimentation. All areas draining to outfalls that discharge to the ASBS 24 were observed for indications of existing or potential anthropogenic sedimentation. The field reconnaissance included driving the length of ASBS 24 as well as performing reconnaissance on foot within each outfall drainage area to perform a thorough evaluation. In general, the areas of developed land use evaluated were observed to be residences with associated hardscape (e.g., driveways, walkways) and well-maintained landscaping. Some areas were observed to have partially exposed (spare vegetation) natural bluff materials. Vegetation within the bluff areas consisted of a mixture of native scrubs and non-native species (e.g., ice plant). However, signs of erosion (e.g., rills, sloughing) were not observed on these exposed bluff materials, indicating that bluff material consisted of dense siltstone and/or sandstone formations consistent with a desktop geology evaluation performed as part of this plan. The field reconnaissance is presented, starting at the northerly most identified outfall located at Nicholas Canyon County Beach, moving south, and finishing at the southeast limits of ASBS 24 and the Escondido Beach area.

The photograph depicted in Figure 7-5 was taken looking west and downward towards the Nicholas Canyon County Beach parking lot. The up-gradient area between PCH and the parking lot is shown to have fairly good vegetation cover. A narrow foot/animal path leads down the sloped area. Signs of erosion were not observed in the area. Compared to natural cover, a parking lot with an impervious surface located on a mesa, such as the case here, increases storm water runoff quantity and velocity resulting in the potential to erode soils if not properly designed. The parking lot was observed to have several storm drain inlets with associated piping to convey collected storm water down to the ocean without the potential to increase erosion of the bluffs (i.e., outfall located at sea level along rocky shoreline).

Figure 7-5. Nicholas Canyon County Beach Parking Lot

Figure 7-6 shows the area east of the PCH up-gradient from Nicholas Canyon County Beach. PCH and a residence occupy the area, where it appears that the highway and residential access driveway were constructed by cutting away (excavating) some the native materials and creating 2:1 (horizontal: vertical) slopes. These slopes are shown with vegetation cover and without evidence of active erosion.

Figure 7-6. Nicholas Canyon Beach Upper Watershed Area

The photograph depicted in Figure 7-7 was taken above Broad Beach and shows the bluff area located between PCH and the residences that are situated along the shoreline. During the field reconnaissance, the majority of the bluff appeared to have vegetation cover. Some steep portions were exposed, resembling natural bluffs observed in the area where development has been restricted (e.g., the nearby El Matador State Beach). Signs of erosion from these bare areas were not observed in the bluff along Broad Beach Road.

Figure 7-7. Bluff Area Above Broad Beach

The photograph depicted in Figure 7-8 shows the area along PCH and directly above Broad Beach. Similar bluff materials, but having lower height, were observed at this location with similar vegetation cover as the bluffs located along Broad Beach. Thick vegetation was observed at the bottom of the bluff material adjacent to the roadway.

Figure 7-8. Directly Above Broad Beach Area

The east end of Broad Beach Road has thicker vegetation cover and a lower bluff height compared to the west area. Figure 7-9 shows the typical street composition of residences and associated improvements along the south (seaward) side and off-street parking area along the north side followed by a vegetated sloped area.

Figure 7-9. East Portion of Broad Beach

Further up the watershed to Broad Beach the geology changes to that of the Santa Monica Mountains with hills and valleys. Figure 7-10 shows the residential development and associated landscaping in this area.

Figure 7-10. Area Up-Gradient of Broad Beach

The photograph depicted in Figure 7-11 shows the area across from the southeast side of Zuma County Beach, north of PCH. Field reconnaissance observed a large vertical bluff. This bluff appears to be Miocene age Modelo Formation that may have been a naturally formed vertical wall or a result of grading associated with the construction of PCH. Evidence of erosion was not observed during the reconnaissance. The materials appeared to be very hard and resistant to erosive forces of nature.

Figure 7-11. Vertical Bluff Across from Zuma Beach

As with the other areas evaluated, away from the coast the geology was observed to be Santa Monica Mountains in the watersheds upstream of the Zuma County Beach shoreline. Good vegetation cover was observed in the sloped areas around the existing improvements, which included residences and a water tank (Figure 7-12). Thick native vegetation was observed above the developed areas.

Figure 7-12. Up-Gradient of Zuma Beach Area

Figure 7-13 shows a residential property located east of the intersection of Birdview Avenue and Bluewater Road. Typical of residences in the area, the landscaping included a mixture of brushes and trees on the sloped areas and turf in the flatter areas.

Figure 7-13. Residence Near Birdview Avenue & Bluewater Road

The photograph depicted in Figure 7-14 shows the area above Escondido Beach. This area was observed to have more gentle slopes of approximately 4:1 (horizontal: vertical) compared to the bluff areas observed near Zuma County Beach and Broad Beach. East of Escondido Creek and north of PCH, thick vegetation cover was observed, consisting primarily of ice plant, palm trees, and eucalyptus trees.

Figure 7-14. Pacific Coast Highway Near Escondido Beach

7.4 Anthropogenic Sedimentation Assessment Summary and Conclusion

The assessment included a review of the topography, geology, land use, and imagery to determine potential areas prone to anthropogenic sedimentation. This review indicated that the topography, geology, and land use are related. Geologic processes, beginning as far back as 80 million years, formed the sedimentary formations predominantly found along the coast shoreline and Point Dume upland mesa area, which include siltstone and sandstone. Approximately 16 million years ago, seismic actively began and continued for 3 million years to form the Santa Monica Mountains, which are composed of a combination of sedimentary and igneous rock formations (City, 1995). Land use zoning and development have occurred predominantly along the coast within the flatter areas at lower elevations. Some development has occurred inland within the Santa Monica Mountains, but for the most part, development in the mountainous areas of the ASBS 24 watershed has been restricted due to the conservation of the area at the federal, state, and local levels.

The desktop analysis included determining the general sediment risk for the area based on the procedures outlined in the Construction General Permit. These procedures included determining the rainfall erosivity (R factor), which is based on data collected over several years to determine the annual storm kinetic energy, on average, for the area. That factor, combined with properties of common soils and various slopes (up to 50%) and heights (up to 50 ft.), were used to determine the potential annual soils for disturbed loose soil areas within the watershed. Calculation results indicated that the potential for soil loss within disturbed areas increases rapidly for areas having slopes greater than 10% and heights of greater than a few feet. These results were used during the field reconnaissance to aid in determining if areas have the potential to contribute anthropogenic sedimentation to ASBS 24.

Field reconnaissance was performed in the areas with a focus on the areas that drain to the identified outfalls that discharge to the ASBS 24. In general, the drainage areas primarily consisted of larger lots (0.25 to approximately 1 acre) with existing residential structures, hardscape improvements, and landscaping. Landscape vegetation of sloped areas within developed areas, including residential properties and roadway rights-of-way, were observed to have fairly good cover. No signs of erosion (e.g., rills, gullies) were observed in sloped areas or alongside secondary roads or PCH.

The conclusion of this sediment identification assessment is that currently there are no areas prone to anthropogenic sedimentation within the drainage areas tributary to the identified outfalls that discharge to ASBS 24. Land use in the drainage areas consists predominantly of residential and vacant (open space) designations with associated roadway connections. The sloped areas associated with residential properties were observed to have good vegetation cover and appeared to be regularly maintained by landscaping professionals. Areas where cuts (excavation) were made during the construction of roadways were observed to have either good vegetation cover that has been maintained by responsible property owners or consist of hard coastal bluff materials resistant to erosive forces (e.g., large bluff along the southeast portion of Zuma County Beach, as shown in Figure 7-11). Therefore, at this time, no additional sediment BMPs are required by this plan.

8.0 IMPLEMENTATION SCHEDULES

8.1 General Exception Schedule

The General Exception (Resolution No. 2012-0012) was adopted and became effective on March 20, 2012. Resolution No. 2012-0031 amended the General Exception to revise some of the sections to be consistent with other sections. The two documents collectively are referenced to as the General Exception with Resolution No. 2012-0012, establishing the effective date and Resolution No. 2012-0031 providing referenced content. Table 8-1 provides a summary of the key milestones specified in the General Exception. The General Exception states that the Draft Compliance Plan shall be submitted to the State Board within 18 months of the effective date of the General Exception. However, due to the limited number of monitoring opportunities during the 2012-2013 wet season, the Parties requested and were granted an extension of 12 months in order to perform additional wet weather monitoring. This timeline extension is included in the summary table.

Table 8-1. General Exception Schedule of Milestones

Description	Duration	Date
Resolution No. 2012-012 (General Exception)		Adopted March 20, 2012
Resolution No. 2012-021 (Amended General Exception)		Adopted June 19, 2012
Non-authorized non-storm water discharges prohibited	Effective date of the General Exception	March 20, 2012
Nonstructural controls necessary to comply shall be implemented	18 months after the General Exception effective date	September 20, 2013
Draft Compliance Plan	*30 months after the General Exception effective date	September 20, 2014
Final Compliance Plan	*42 months after the General Exception effective date	September 20, 2015
Structural controls identified in Compliance Plan necessary to comply shall be operational	*7 years after the General Exception effective date	March 20, 2018
All discharges comply with the General Exception requirements	*7 years after the General Exception effective date	March 20, 2018

*Additional 12 months added to duration based on Draft Compliance Plan extension granted by State Board to allow for additional wet weather core monitoring.

8.2 Nonstructural Controls Implementation Schedule

The Compliance Plan uses adaptive management to plan (Figure 3-2. Adaptive Management Process), implement, assess, and refine nonstructural solutions implemented by the Parties in the ASBS 24 tributary drainage area. The initial assessment included special studies and existing PIPP, enforcement, and O&M nonstructural programs (see Appendix B); the Parties are currently meeting the compliance requirements detailed in the General Exception. The steps forward listed in this section include nonstructural programs that will allow the Parties to continue to be in compliance and may reduce wet weather pollutant loading. These steps forward include the following:

- Continue to implement, track, and refine effectiveness assessment protocols for nonstructural programs, as discussed in Section 3.0.

Table 8-2. Milestones and Schedule for Implementation of Enhanced Nonstructural Programs and Key Steps Forward

<table>
<tr><th>Timeline</th><th>Objective</th><th>Nonstructural Program(s) & Key Steps Forward</th></tr>
<tr><td><u>Initial Phase:</u>
2005–2012</td><td>1. Understand baseline conditions in ASBS.
2. Identify/address dry-weather and storm water runoff.
3. Progress towards zero dry weather runoff.</td><td>Progressed towards existing nonstructural programs identified in Section 3.2.</td></tr>
<tr><td>Before September 20, 2013</td><td>1. Zero discharge of non-authorized non-storm water to ASBS 24.
2. Inspection Policies in compliance with General Exception.</td><td>▪ Public Outreach (see Section 3.2).
▪ Outfall inspection program.
▪ Catch basin program re-evaluated.
▪ Amended Inspection Program (see Section 3.3).</td></tr>
<tr><td>09/20/2013</td><td colspan="2">Compliance with ASBS Special Protections for Dry Weather</td></tr>
<tr><td>09/20/2014</td><td colspan="2">Submit Draft ASBS Compliance Plan for ASBS 24</td></tr>
<tr><td><u>Wet Weather:</u>
2014–2015</td><td>1. Maintain zero dry weather runoff to ASBS 24.
2. Evaluate nonstructural BMPs that may provide wet weather load reductions.</td><td>▪ Evaluate aggressive street sweeping on City streets.
▪ Feasibility assessment and initial outreach for metal building materials ordinances.</td></tr>
<tr><td>09/20/2015</td><td colspan="2">Submit Final ASBS Compliance Plan for ASBS 24</td></tr>
<tr><td><u>Wet Weather:</u>
2015–2018</td><td>1. Maintain zero dry weather runoff to ASBS 24.
2. Evaluate nonstructural BMPs that may provide wet weather load reductions.</td><td>▪ Enhanced aggressive street sweeping on PCH, if feasible.
▪ Evaluate metal building materials ordinances and metal building material management incentive programs.
▪ Evaluate enhanced collaborative environmentally friendly alternative services program(s).</td></tr>
</table>

9.0 COST ESTIMATES

The Parties have implemented numerous nonstructural controls and related programs in order to eliminate non-authorized discharges to ASBS 24. The Parties continue to maintain these measures, and the annual estimated costs associated with the key programs, which are detailed in Section 3.0, are provided on Table 9-1. For more information on existing nonstructural measures, see Appendix B.

Table 9-1. Annual Nonstructural Program Costs

Program Type	Program Name	Approximate Cost ($/year)
Public Information & Participation Programs (PIPP)	Rethink L.A.	[1]$10,000
	Los Angeles County Materials Exchange (LACoMAX)	Costs in Rethink L.A.
	Water District #29 Tiered Water Rates Based on Increased Usage	N/A
	Water Conservation Program – Water Saving Devices Rebate Program	[1]$5,000
	Cash for Grass	[1]$5,000
	Landscape Irrigation Efficiency Program (LIEP)	[1]$5,000
	Ocean Friendly Garden (OFG) Program	Included in ASBS Focused Outreach Program
	Pepperdine Business School OFG Partnership	Included in ASBS Focused Outreach Program
	Solid Waste Management Program	$167,450
	Coastal Preservation Specialist (CPS)	[2]$35,957
PIPP Sub-total		**$228,407**
Operations & Maintenance (O&M)	City Curb & Gutter Cleaning & Repair Program	[3]$295,000
	City Storm Drain/Culvert Facilities Maintenance	[3]$25,000
	City Street Sweeping Contract	[3]$42,500
	Los Angeles County Street Sweeping	[1]$435,000
	City Trash Collection	[3]$25,000
	County Beaches Trash Collection	[1]$360,000
	County Beaches – Sanitation Program	Included in Trash Collect.
	Environmentally Preferable Purchases and Practices Policy (EPPP), Recycled Products Purchasing Policy (RCPP)	N/A
O&M Sub-total		**$1,182,500**
Enforcement	City IC/ID Elimination Program	$11,395
	County IC/ID Program	[1]$20,000
	City Pollution Prevention Hotline	$600
	Pollution Prevention Hotline, 1(888)Clean LA	[1]$3,000
	Coastal Preservation Specialist (CPS)	[2]$35,957
	Outfall Inspections	[4]$10,800
	City Commercial & Industrial Inspection Program	[4]$8,000
	Clean Bay Restaurant Certification Program	Included in Inspection
	Santa Monica Bay Regulations Review	N/A
	City Local Coastal Program	Included in Inspection
	City Construction Inspection Program	Included in Inspection
	Los Angeles County Construction Inspection Program	[4]$2,000
	Smoking at Beaches Ban	[1]$20,000
Enforcement Subtotal		**$111,752**
Total		**$1,522,659**

Note 1: Cost estimated based on fraction of regional program total cost (approximately 5%).
Note 2: Coastal Preservation Specialist cost divided evenly between PIPP and enforcement.
Note 3: Cost estimated based on fraction of City wide program total cost (approximately 50%).
Note 4: Cost estimated based on staff time to complete associated tasks.

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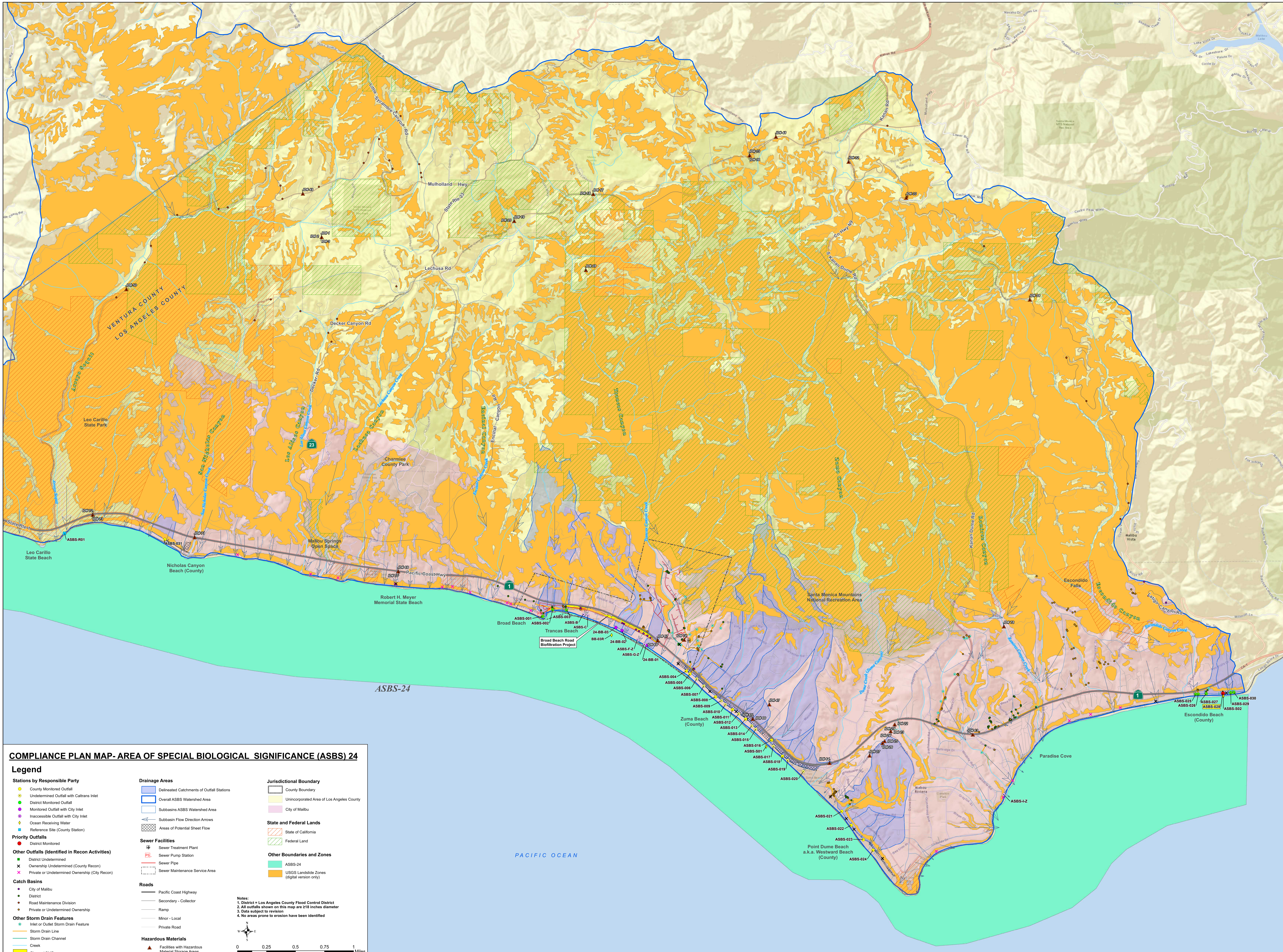
APPENDIX A

Compliance Plan Map



COMPLIANCE PLAN MAP- AREA OF SPECIAL BIOLOGICAL SIGNIFICANCE (ASBS) 24
Legend
Stations by Responsible Party
County Monitored Outfall
Undetermined Outfall with Caltrans Inlet
District Monitored Outfall
Monitored Outfall with City Inlet
Inaccessible Outfall with City Inlet
Ocean Receiving Water
Reference Site (County Station)
Priority Outfalls
District Monitored
Other Outfalls (Identified in Recon Activities)
District Undetermined
Ownership Undetermined (County Recon)
Private or Undetermined Ownership (City Recon)
Catch Basins
City of Malibu
District
Road Maintenance Division
Private or Undetermined Ownership
Other Storm Drain Features
Inlet or Outlet Storm Drain Feature
Storm Drain Line
Storm Drain Channel
Creek
Planned BMP
Drainage Areas
Delineated Catchments of Outfall Stations
Overall ASBS Watershed Area
Subbasins ASBS Watershed Area
Subbasin Flow Direction Arrows
Areas of Potential Sheet Flow
Sewer Facilities
Sewer Treatment Plant
Sewer Pump Station
Sewer Pipe
Sewer Maintenance Service Area
Roads
Pacific Coast Highway
Secondary - Collector
Ramp
Minor - Local
Private Road
Hazardous Materials
Facilities with Hazardous Material Storage Areas
Jurisdictional Boundary
County Boundary
Unincorporated Area of Los Angeles County
City of Malibu
State and Federal Lands
State of California
Federal Land
Other Boundaries and Zones
ASBS-24
USGS Landslide Zones (digital version only)
Notes:
1. District = Los Angeles County Flood Control District
2. All outfalls shown on this map are ≥18 inches diameter
3. Data subject to revision
4. No areas prone to erosion have been identified
0 0.25 0.5 0.75 1 Miles
VENTURA COUNTY
LOS ANGELES COUNTY
Leo Carillo State Park
Leo Carillo State Beach
Nicholas Canyon Beach (County)
Malibu Springs Open Space
Charmlee County Park
Robert H. Meyer Memorial State Beach
Broad Beach
Trancas Beach
Broad Beach Road Biofiltration Project
Zuma Beach (County)
Santa Monica Mountains National Recreation Area
Escondido Falls
Escondido Beach (County)
Paradise Cove
Point Dume Beach a.k.a. Westward Beach (County)
ASBS-24
PACIFIC OCEAN
Mulholland Hwy
Lechusa Rd
Decker Canyon Rd
Pacific Coast Hwy
Kanan Dume Rd
ASBS-R01
ASBS-031
ASBS-001
ASBS-002
ASBS-003
ASBS-B
ASBS-C
24-BB-03
BB-03R
24-BB-02
ASBS-F-Z
ASBS-G-Z
24-BB-01
ASBS-004
ASBS-005
ASBS-006
ASBS-007
ASBS-008
ASBS-009
ASBS-010
ASBS-011
ASBS-012
ASBS-013
ASBS-014
ASBS-015
ASBS-016
ASBS-S01
ASBS-017
ASBS-018
ASBS-019
ASBS-020
ASBS-021
ASBS-022
ASBS-023
ASBS-024
ASBS-I-Z
ASBS-025
ASBS-026
ASBS-027
ASBS-028
ASBS-029
ASBS-030
ASBS-S02

APPENDIX B

Existing Nonstructural Programs Table

Existing Nonstructural Programs Within the ASBS 24 Area

Nonstructural Program	Program Subcategory	Name of Nonstructural Control	Project Descriptions for Existing Nonstructural Controls	Project Location	Target Source/ Target Audience	Targeted Water Quality Problem	Method of Measure	Program Start Date	Implementation Status/ Completion Date	Lead Agency	Approx. Cost ($/year)
Enforcement	IC/ID	City of Malibu Illicit Connection/ Illicit Discharge (IC/ID) Elimination Program	This program involves coordination of multiple City Departments to cease and eliminate pollution by illicit connections and discharges to the storm water system. The City has an active education, response, and enforcement program.	Regional	Residential, Commercial	Urban Runoff	# IC/IDs responses/year	November 1997	Ongoing implementation	City of Malibu	$11,395 (City Wide)
Enforcement	IC/ID	Los Angeles County (County) IC/ID Program	This program involves coordination of multiple County departments to cease and eliminate pollution by illicit connections and discharges to the storm water system. The County has an active education, response, and enforcement program. The data are tracked for the County region, as well as for the County's Road Maintenance Division (RMD), as part of its annual pre-storm season drainage inspection program.	Regional	Residential, Commercial, Industrial	Urban Runoff	# IC/IDs responses/year	November 1997	Ongoing implementation	Los Angeles County, District	$443,500 *(Regional)*
Enforcement	IC/ID	City of Malibu Pollution Prevention Hotline	A 24-hour hotline was launched to enhance the IC/ID program. The goal of this program is to offer a consistent reporting tool to citizens during non-business hours for spills or runoff that may pollute streams or coastal waters. Calls are received and dispatched to the appropriate personnel for investigation and resolution. The hotline is available in English and Spanish. The community may call 310-359-8003 to report incidents.	Regional	Residential, Commercial	Urban Runoff	# Hotline calls/year # IC/ID abated/year due to hotline	June 2012	Ongoing implementation	City of Malibu	$600 (FY 13-14, phone)
Enforcement	IC/ID	Pollution Prevention Hotline, 1(888)Clean LA	A 24-hour, bilingual hotline offers County staff, cities, and the public a means to report spills or runoff that may pollute coastal waters. Calls are received and dispatched to the appropriate personnel for investigation and resolution. The hotline is available in English and Spanish. A Chinese hotline is also available in Mandarin.	Regional	Residential, Commercial, Industrial	Urban Runoff	# Hotline calls/year # IC/ID abated/year due to hotline	November 1997	Ongoing implementation	Los Angeles County, District	-
Enforcement	Education, Inspections, Enforcement and ID	City of Malibu Water Waster Online Reporting Form	An online form to allow the community to report water waste has been introduced. All stakeholders are encouraged to make a collective effort to use water wisely, eliminate runoff, and reduce water waste, creating a culture of water conservation and water quality protection, and keep each other accountable by talking with those they see wasting water and using the reporting form. The form includes options to report issues included in the City's water conservation code. The City will provide notice, education and enforcement where needed to resolve issues. The online Water Waster Report form can be found at this link www.malibucity.org/WaterWaster	Regional	Residential, Commercial	Water Conservation, Urban Runoff	# Reports/year # Reports which included runoff abated/year	September 2014	Ongoing implementation	City of Malibu	Staff Time

Existing Nonstructural Programs Within the ASBS 24 Area

Nonstructural Program	Program Subcategory	Name of Nonstructural Control	Project Descriptions for Existing Nonstructural Controls	Project Location	Target Source/ Target Audience	Targeted Water Quality Problem	Method of Measure	Program Start Date	Implementation Status/ Completion Date	Lead Agency	Approx. Cost ($/year)
Enforcement	Education, Inspections, Enforcement	Commercial & Industrial Inspection Program	The County and City have implemented protocols to identify commercial and industrial facilities located within the applicable ASBS 24 drainage area and currently perform inspections at these sites in accordance with the Special Protections requirements (commercial facilities twice during the rainy season and industrial facilities monthly during the rainy season) The goals of these inspections include compliance verification, enforcement as needed, and education regarding storm water and urban runoff issues, recycling, and environmental quality ordinances. The County has not identified commercial or industrial sites within the applicable unincorporated County. City Environmental Programs staff, Code Enforcement Officers, Public Works staff, and Building Safety staff are regularly trained to watch for storm water best management practice (BMP) infractions. Staff are authorized and directed to issue correction notices. Repeat offenses are subject to increased enforcement procedures ranging from cease and desist orders to administrative fines and traditional enforcement remedies (City of Malibu Ordinance 325). If commercial or industrial sites apply for permits within the applicable unincorporated County, the sites will be inspected at the required frequencies listed in the Special Protections. Additionally, an annual voluntary training is conducted for all City staff to learn about protecting water quality.	Regional	Commercial, "Industrial"	Bacteria Organics Oil/Grease Trash Urban Runoff	<u>Changes in Inspection Results for Facilities:)</u>	November 1997	Ongoing implementation	City of Malibu	$8,000
Enforcement/ PIPP	Education, Incentives, Inspections	Clean Bay Restaurant Certification Program	The program is implemented in partnership with the Bay Foundation (also known as the Santa Monica Bay Restoration Commission & Foundation) and other bay cities. The goal is to recognize restaurants and food facilities that go above and beyond the minimum required by law to prevent pollution. Facilities are inspected annually. Only businesses with an inspection score of 100% receive certification. The City implements the rescinding policy for the Clean Bay Restaurant Certificate program, whereby a business that has been certified is subject to having its Clean Bay status rescinded for failing to maintain all of the criteria.	Regional, City of Malibu	Commercial	Bacteria Organics Oil/Grease Trash Urban Runoff	# Certified facilities *Rate of certification has increased 30% between 2009 & 2013.*	April 2009	Ongoing implementation	City of Malibu	See Commercial & Industrial Inspection Program
Enforcement	City Planning	City of Malibu Local Coastal Program	The City of Malibu Local Coastal Program, as certified by the California Coastal Commission, includes the Land Use Plan (LUP) and Local Implementation Plan (LIP) that details many environmental quality and protection standards, objectives, and implementation measures for new development and redevelopment projects. Additionally, conditions are placed prohibiting the installation of any new drains to the ASBS.	City of Malibu	Construction	Trash, Sediments, Urban Runoff, Storm Water Runoff	See Construction Inspection Program	September 1998	Ongoing implementation	City of Malibu	See Commercial & Industrial Inspection Program

Existing Nonstructural Programs Within the ASBS 24 Area

Nonstructural Program	Program Subcategory	Name of Nonstructural Control	Project Descriptions for Existing Nonstructural Controls	Project Location	Target Source/ Target Audience	Targeted Water Quality Problem	Method of Measure	Program Start Date	Implementation Status/ Completion Date	Lead Agency	Approx. Cost ($/year)
Enforcement	Education, Inspections, Enforcement	City of Malibu Construction Inspection Program	The City has implemented protocols to identify existing and future construction sites located within the applicable ASBS 24 drainage area. Identified sites will be inspected in accordance with the Special Protections requirements (weekly during the rainy season). Grading within the City is limited to single lot development (see Ordinance No. 51U). The City engages with construction contractors throughout the construction process. At a pre-grading meeting, the contractor, deputy building official, and inspector(s) review the Storm Water Pollution Prevention Plan (SWPPP) and identify appropriate BMPs. The SWPPP is again discussed at commencement of construction, with a reminder of the repercussions (i.e., job site shut-down) of failing to comply. Project sites are visited regularly during the grading phase and construction phase. BMP implementation and maintenance is checked at each inspection.	Regional	Construction	Trash, Sediments, Urban Runoff	# of Grading Inspections # of Building Inspections	November 1997	Ongoing implementation	City of Malibu	See Commercial & Industrial Inspection Program
Enforcement	Education, Inspections, Enforcement	Los Angeles County Construction Inspection Program	The County has implemented protocols to identify existing and future construction sites located within the applicable ASBS 24 drainage area. Identified sites will be inspected in accordance with the Special Protections requirements (weekly during the rainy season). All construction permit applicants are required to prepare a Wet Weather Erosion Control Plan or Local SWPPP based on the Construction BMP Handbook. The County conducts inspections, follow-ups, and enforcement. A computer database is used to track all single-lot (non-tract) projects that are categorized by the disturbed/graded area (acres).	Regional	Construction	Trash, Sediments, Urban Runoff	Winter 10-11: 3,383 sites underwent wet weather inspections	November-1997	Program Enhancement August 2013	Los Angeles County	$11,000 *(Regional)*
Enforcement	Code Enforcement	Expanded Polystyrene Packaging Ban Inspections & Enforcement	Approximately 65 food facilities are inspected each year for compliance with Ordinance No. 286, M.M.C. Chapter 9.24, Ban on Expanded Polystyrene Food Packaging.	Regional	Commercial	Trash, Urban Runoff	Approximately 80 food facilities inspected/year	October 2005	Ongoing implementation	City of Malibu	See Commercial & Industrial Inspection Program
Enforcement	Code Enforcement	Smoking at Beaches Ban	The Los Angeles County Sheriff engages Beach Patrol for enforcement of Ordinance No. 265, M.M.C. Chapter 12.05.035, Ban on Smoking at Malibu Beaches.	Regional	Residential, Commercial	Trash, Urban Runoff	21 miles of beaches patrolled	May 2000	Ongoing implementation	City of Malibu	$482,983 (total Beach Patrol cost)
O&M	Street Maintenance	City of Malibu Curb & Gutter Cleaning & Repair Program	Contract for annual curb and gutter cleaning and repair. This service ensures proper functioning of drainage facilities.	City of Malibu	City Facilities	Trash, Metals, Sediments, Urban Runoff	# Facilities cleaned/year Pounds material removed/year	February 1987	Ongoing implementation	City of Malibu	$590,000 (FY 13-14, City Wide)

Existing Nonstructural Programs Within the ASBS 24 Area

Nonstructural Program	Program Subcategory	Name of Nonstructural Control	Project Descriptions for Existing Nonstructural Controls	Project Location	Target Source/ Target Audience	Targeted Water Quality Problem	Method of Measure	Program Start Date	Implementation Status/ Completion Date	Lead Agency	Approx. Cost ($/year)
O&M	Street Maintenance	City of Malibu Storm Drain/Culvert Facilities Maintenance	Contract for annual and post-storm inspection and cleaning of storm drain facilities. All storm drains are cleaned annually. Priority storm drains are cleaned at a minimum of twice annually. This program ensures that litter, debris, and pollutants are removed to prevent them getting into the local waterways and impacting beneficial uses.	Regional	City Facilities	Trash, Metals, Sediments, Urban Runoff	# facilities cleaned/year, by priority Pounds material removed/year	February 1987	Ongoing implementation	City of Malibu	$50,000 (FY 13-14, City Wide)
O&M	Street Maintenance	City of Malibu Street Sweeping Contract	Contract for sweeping for public streets in City by means of a mechanical-type street sweeper. Street sweeping is a requirement of the NPDES permit and is intended to remove litter, debris, and pollutants from the roadways, thus preventing them from getting into local waterways. City streets are swept monthly (90 miles total, ~60 miles within the ASBS). The Pacific Coast Highway is swept weekly (54 miles total, 16 miles within the ASBS).	Regional	Streets/Parking	Trash, Metals, Sediments, Urban Runoff	Broom miles swept/year Pounds removed/year	March 2002	Ongoing implementation	City of Malibu	$85,000 (FY 13-14, City Wide)
O&M	Street Maintenance	Los Angeles County Street Sweeping	The County sweeps parking lots along the coastal ASBS to remove litter, debris, and pollutants from the roadways, thus preventing them from getting into local waterways. Parking lots are swept with vacuum or regenerative air sweepers three times per week, based upon seasonal use rates. Sweeping occurs at: Zuma Beach (12 lots), Point Dume (1 lot), and Nicholas Canyon (1 lot).	County Beaches - Parking Lots	Streets/Parking	Trash, Metals, Sediments, Urban Runoff	Broom miles swept/year Pounds removed/year	November 1997	Ongoing implementation	Los Angeles County	$8.7 Million *(Regional)*
O&M	Waste Management	City of Malibu Trash Collection	The City performed a needs study and subsequent implementation of placing trash receptacles at bus stops and high-use areas along the Pacific Coast Highway and City streets. Additional animal-proof containers were placed in the ASBS watershed including along PCH and in the Point Dume area. The refuse is collected weekly to prevent littering and any additional debris from getting into local water ways and drains.	Regional	Residential, Commercial	Trash, Urban Runoff	Frequency of removal	August 2003	Ongoing implementation	City of Malibu	$50,000 (FY 13-14, City Wide)
O&M	Waste Management	County Beaches Trash Collection	County staff empty beach trash cans 7 days a week, as needed, to prevent littering and any additional debris from getting into local water ways and drains. Trash cans are donated by Adopt-A-Beach and broken cans are replaced quarterly, as needed.	County Beaches	Streets/Parking	Trash, Urban Runoff	Frequency of removal	November 1997	Ongoing implementation	Los Angeles County	$7.2 Million *(Regional)*
O&M	Waste Management	County Beaches - Sanitation Program	County staff “sanitizes" the beach 3 days a week, provided the sand is not wet. A tractor with rake and screen system is used to collect trash and turn over the beach sand. This process removes solids and debris and allows the sun to "sanitize" the sand during the day. Operations are between 5 am and 13:30 pm daily.	County Beaches	Residential	Trash	Daily pickup	-	Ongoing implementation	Los Angeles County	See County's Trash Collection Program

Existing Nonstructural Programs Within the ASBS 24 Area

Nonstructural Program	Program Subcategory	Name of Nonstructural Control	Project Descriptions for Existing Nonstructural Controls	Project Location	Target Source/ Target Audience	Targeted Water Quality Problem	Method of Measure	Program Start Date	Implementation Status/ Completion Date	Lead Agency	Approx. Cost ($/year)
O&M	Recycled Products Purchasing Policy	Environmentally Preferable Purchases and Practices Policy (EPPP), Recycled Products Purchasing Policy (RCP)	In accordance with Administrative Guideline No. 7.1.3 and M.M.C. 2.63.100, a policy was established to reduce waste by instituting new office practices that emphasize purchase of environmentally preferable products. The policy establishes the goal for all City employees to make waste diversion and reduction a routine part of the jobs, whenever feasible.	City of Malibu	City Facilities, City Staff	Trash, Urban Runoff	-	-	Ongoing implementation	City of Malibu	-
PIPP, O&M	Education, Waste Management	Solid Waste Management Program	Solid Waste Management Program was formed to comply with AB939 (California Integrated Waste Management Act of 1989) and implement source reduction of solid waste, including recycling, composting, environmentally safe transport, and land disposal. This includes City programs for safe disposal of household hazardous waste; used oil collection/recycling events; waste management education; solid waste hauler permitting; Christmas tree recycling; brush clearance/green waste recycling events; bulky item collection; construction and demolition debris recycling; electronic and universal waste disposal; and expanded polystyrene foam recycling program (i.e., Waste to Waves program). Program is in support of the CalRecycle goals to divert municipal waste from landfills.	Regional	Residential, Commercial	Trash, Urban Runoff	<u>Changes to Malibu's Annual Recycling Rate:</u> 57% (2000) to 68% (2012)	March 1997	Ongoing implementation	City of Malibu	$167,450
PIPP, O&M	Education, Waste Management	Rethink L.A.	Education and outreach program designed to encourage “rethinking” about waste management, including opportunities to implement reduction, recycling, and reuse. Program provides resources for buying recycled products and encourages carbon footprint BMPs, including a carbon footprint calculator, energy efficiency tips, and means of alternative transportation.	Regional	Residential, Commercial, Industrial	Trash, Urban Runoff	# Website visits # Workshops # Brochures # Attendees Regional Recycling Rate	-	Ongoing implementation	Los Angeles County	$200K *(Regional)*
PIPP, O&M	Education, Waste Management	Los Angeles County Materials Exchange (LACoMAX)	The goal of this program is to reduce waste transported to the landfill. The LACoMAX is an on-line service where the public may find, make available, or identify an entrepreneurial opportunity for discarding resource materials. The data platform includes 15 material classifications and six regions. It is also a location where garage sales may be advertised. The data platform provides information to other County waste management programs.	Regional	Residential, Commercial, Industrial, Construction	Trash, Urban Runoff	# Website visits # Workshops # Brochures # Attendees Regional Recycling Rate	-	Ongoing implementation	Los Angeles County	See Rethink L.A. program
PIPP	Education	Malibu Parks and Recreation Quarterly Newsletter	The Malibu Recreation Guide and Quarterly Newsletter is sent to residents and includes articles related to the Clean Water Program and Solid Waste Program. The City takes the opportunity to give reminders to the community about how to prevent pollution and reduce waste, as well as local event opportunities. The newsletters are also available at City Hall. ASBS articles have been regularly contributed since 2012.	City of Malibu	Residential	Urban Runoff	4 Issues/year # Newsletters mailed	December 1995	Ongoing implementation	City of Malibu	$33,000

Existing Nonstructural Programs Within the ASBS 24 Area

Nonstructural Program	Program Subcategory	Name of Nonstructural Control	Project Descriptions for Existing Nonstructural Controls	Project Location	Target Source/ Target Audience	Targeted Water Quality Problem	Method of Measure	Program Start Date	Implementation Status/ Completion Date	Lead Agency	Approx. Cost ($/year)
PIPP	Education	Malibu Chamber of Commerce Environmental Committee	The City is an active participant in the Malibu Chamber of Commerce Environmental Committee which aims to provide education and learning opportunities and recognition to local businesses and community through events, awards, workshops, and outreach campaigns.	Regional	Commercial, Residential,	Urban Runoff, Water Conservation, trash/recycling	# Workshops # Attendees # Brochures distributed	September 1999	Ongoing implementation	Malibu Chamber of Commerce	Not Applicable
PIPP	Education	Clean Water Act and Our Backyards Video	The Clean Water Act and Our Backyards video was produced locally in partnership with the Malibu Creek Watershed Council. It is regularly played on cable, and at local events and trainings. It gives an overview of how routine activities can affect water quality, BMPs to prevent pollution, and an explanation of TMDLs.	Regional	Residential	Urban Runoff	# Video presentations # Attendees/presentation	January 2002	Ongoing implementation	Malibu Creek Watershed Council	Not Applicable
PIPP	Education	*Living Lightly in Our Watersheds* Environmental Guide	The City and County collaborated with the Resource Conservation District of the Santa Monica Mountains in the revision and distribution of the *Living Lightly in Our Watersheds: A Guide for Residents of the Santa Monica Bay Watersheds* <www.malibuwatershed.org>. The guide was distributed to all Malibu residences and businesses. The City contributes to printing costs and distribution by mail and distributes materials at events. A new web-based and mobile platform is currently under development and is expected to launch by 2015. A new print edition of the guide is also expected in 2015.	Regional	Residential, Commercial	Urban Runoff	# Guides mailed # Visits to the website	July 2005	Ongoing implementation	Malibu Creek Watershed Council	$3,000 (City of Malibu) $20,000 (County of Los Angeles)
PIPP	Education	*Malibu Life* Environmental Newsletter	*Malibu Life* (formerly *Malibu Current*) Environmental Quarterly Newsletter is sent to all Malibu residences and businesses and distributed continuously to educate about ongoing environmental concerns and what the community can do to help, and provides updates on City environmental projects and programs. An ASBS article was published in Issue 2 Volume 1 in April 2007.	Regional	Residential	Urban Runoff, Water Conservation	# Articles # Newsletters mailed	April 2007	Implementation halted in 2010	City of Malibu	$2,000 (2010, printing & postage)
PIPP	Education	Wildlife and Marine Rescue Services	The City has had a contract with the California Wildlife Center since April 1996 to provide wildlife rescue services and was later amended to include marine mammal rescue services. In 2003, the City, in partnership with the California Wildlife Center, applied for and received a John H. Prescott Marine Mammal Rescue Assistance Grant. Wild Rescue is a secondary responder. Public outreach and education are also a part of the grant.	City of Malibu	Residential	Urban Runoff, Water Conservation	# Outreach events supported	March 1992	Ongoing implementation	City of Malibu, California Wildlife Center	$2,500 (FY 13-14) *($1,000-$2,500 historically)*

Existing Nonstructural Programs Within the ASBS 24 Area

Nonstructural Program	Program Subcategory	Name of Nonstructural Control	Project Descriptions for Existing Nonstructural Controls	Project Location	Target Source/ Target Audience	Targeted Water Quality Problem	Method of Measure	Program Start Date	Implementation Status/ Completion Date	Lead Agency	Approx. Cost ($/year)
PIPP	Education, Inspections, Incentives/ Enforcement	ASBS Focused Outreach Program Proposition 84 Project	This began as a Proposition 84 grant program, officially titled the Wildlife Road Treatment & ASBS Focused Outreach Program Proposition 84 Project. The temporary Coastal Preservation Specialist (CPS) position was created to perform outreach to the community. The CPS conducted field work throughout the ASBS area, including coastal and inland areas, to look for dry-weather runoff and other pollution threats. When individual properties were identified as being out of compliance with ASBS regulations, letters to "cease and desist" the discharge as well as educational materials were mailed. The City, via the CPS and/or other City staff worked with the property owners to help fix the problem. The property owner was required to submit a report detailing how the problem was fixed. The CPS and/or other City staff conducted site visits, continued monitoring the site, and performed other additional actions (case-specific). General letters, including Notices to Comply, were sent to neighborhoods and individuals of high priority that were considered more likely to impact the ASBS to inform them of ASBS discharge restrictions. A general ASBS letter was mailed to every parcel within the ASBS. A database with information on every case is maintained as issues arise in the ASBS watershed and includes all communications and photos. The project also included the installation of a structural BMP on Wildlife Road. The City plans to continue this program on a modified scale.	ASBS 24 (Area in Malibu city limits)	Residential, Commercial	Urban Runoff, Water Conservation	# ASBS letters mailed # Cease and Desist letters mailed # Follow-up 1-month reports submitted % Compliance with Orders to Cease and Desist Discharge # Notices to Comply letter mailed to high-priority addresses % Change in high-priority addresses. Photo documentation	November 2011	Ongoing implementation End of grant: July 2014 City Continuing Program	City of Malibu	$71,914 (grant)
PIPP	Education	Community Meetings and ASBS Presentations	Outreach presentations to home owner associations, property owner associations, and other community groups about the City's Clean Water Program, including protecting water quality and conserving water have been conducted. Recent outreach by the CPS was about urban runoff and the ASBS.	ASBS 24 (Area in Malibu city limits)	Residential	Urban Runoff	# Presentations	October 2007	Ongoing implementation End of grant: July 2014	City of Malibu	See ASBS Focused Outreach Program
PIPP	Education	Point Dume Marine Science School Assembly and Science Projects	The City has collaborated with the Point Dume Marine Science School on various programs since 2005. An assembly to grades K-5 was conducted including a presentation on the water cycle, urban runoff, and how to prevent pollution from reaching the ASBS. Each grade level then completed a science project related to some component of the assembly at the appropriate grade level. A video of the science day was filmed and posted on the City's YouTube channel. The assembly and project was implemented by the CPS as part of the ASBS Focused Outreach Program.	Point Dume Marine Science School	Students (Residents)	Urban Runoff	# Students # Science day projects # Video views/year	2005	Completed May 2012	City of Malibu	See ASBS Focused Outreach Program

Existing Nonstructural Programs Within the ASBS 24 Area

Nonstructural Program	Program Subcategory	Name of Nonstructural Control	Project Descriptions for Existing Nonstructural Controls	Project Location	Target Source/ Target Audience	Targeted Water Quality Problem	Method of Measure	Program Start Date	Implementation Status/ Completion Date	Lead Agency	Approx. Cost ($/year)
PIPP	Training	In-House ASBS Training	City staff has been trained about the ASBS. The most recent training in November 2012 discussed what to look for in the field, and how to work on ASBS cases. Binders with inspection report forms and educational handouts were created and placed in each City vehicle.	City of Malibu, City Hall	City Staff	Urban Runoff	# Staff trained	2007	Ongoing Implementation	City of Malibu	See ASBS Focused Outreach Program
PIPP	Education	ASBS Webpage	An ASBS section is on the City of Malibu website. The webpage provides interactive maps and information about ASBS, including many educational resources to help residents, businesses, and visitors understand and comply with ASBS regulations. Events, rebates, and other incentive programs are also posted. The web-page section can be viewed at this link www.malibucity.org/ASBS.	City of Malibu, Website	Residential, Commercial, Visitors	Urban Runoff, Water Conservation	# ASBS page views/year	May 2012	Ongoing implementation	City of Malibu	See ASBS Focused Outreach Program
PIPP	Education	Keep it Clean, Malibu Campaign	As part of the Proposition 84 State funding, an outreach campaign was developed (as an item in the CPS scope of work) to educate people about the issue and the result was Keep it Clean, Malibu – a multi-platform educational campaign designed to positively and proactively teach about the ASBS, and make people think about storm drains and what goes into them. The campaign contains five main elements: storm drain art murals and associated educational video, 4 public Service videos, a robust social media campaign, special events, and collateral materials giveaways that featured the campaign slogan and ASBS logo. The campaign can be viewed on this web-page www.malibucity.org/keepitclean.	City of Malibu, Website, Social Media	Residential, Commercial, Visitors	Urban Runoff, Water Conservation, Pollution Prevention	# of "likes" # of tags on social media # ASBS video views # of pledges signed/year	April 2014	Ongoing implementation	City of Malibu	See ASBS Focused Outreach Program
PIPP	Education	Malibu Green Room Webpage	This is an overview of City's sustainability practices, environmental projects, ordinances, and regulations, including coastal water protection and water drought response. Rebates and incentives provided by partner agencies are included on this web-page. The Green Room can be accessed from the Environmental Programs main page from this web-page www.malibucity.org/environmentalprograms.	Regional, City of Malibu, Website	Residential, Commercial	Urban Runoff, Water Conservation	# Malibu Green Room views/year	June 2012	Ongoing implementation	City of Malibu	Staff Time
PIPP	Education	City of Malibu Clean Water Program and Clean Water Team	The City's Clean Water Program and Team were formed with the ultimate goal of reducing or eliminating dry weather flow to the City's storm drains. It includes education of the businesses, residents, and visitors on water quality issues and BMPs and encourages participating in the team. It is the overlying program that manages regulatory compliance (e.g., NPDES, TMDLs), education, training, inspections and incidents response, and public agency activities. Outreach is provided on the City's website, at public speaking events, on local cable stations, at community events, and on distributed materials.	City of Malibu	Residential, Commercial	Urban Runoff, Storm Water Runoff	See other activities for defined metrics.	July 2002	Ongoing implementation	City of Malibu	Staff Time and Professional Services

Existing Nonstructural Programs Within the ASBS 24 Area

Nonstructural Program	Program Subcategory	Name of Nonstructural Control	Project Descriptions for Existing Nonstructural Controls	Project Location	Target Source/ Target Audience	Targeted Water Quality Problem	Method of Measure	Program Start Date	Implementation Status/ Completion Date	Lead Agency	Approx. Cost ($/year)
PIPP	Education, Incentives	Malibu Area Conservation Coalition	The Malibu Area Conservation Coalition (MACC) is a partnership of local government agencies, utilities, resource districts, and community stakeholders working within Malibu and the North Santa Monica Mountains that share the common goal of empowering local communities to conserve and protect natural and economic resources and habitat. Recognizing that watersheds, oceans, water, and power generation and delivery systems do not stop at jurisdictional boundaries, the coalition is dedicated to providing effective programs, environmental education, and outreach. MACC members work on joint projects and also cross-promote individual organizations' programs. Recent programs included Ocean Friendly Garden Program, Landscape Irrigation Efficiency Program, Cash for Grass, Earth Day festivals, and the Wild and Scenic Film Festival.	City of Malibu	Residential, Commercial	Trash, Urban Runoff, Water Conservation	# Participants # Events (certain programs will have more defined metrics)	August 2009	Ongoing implementation	City of Malibu	Staff Time
PIPP	Education, Incentives	Ocean Friendly Garden (OFG) Program	The OFG Program targets residences and businesses to promote water conservation and eliminate non-point source pollution from landscaping. It was implemented locally as a partnership of West Basin Municipal Water District and the Surfrider Foundation as part of a Proposition 50 Grant from the State. The program includes educational workshops, training events, irrigation controller rebates, and the design/build of demonstration gardens. The Bluffs Park OFG was redesigned and rebuilt (February-March 2013) into a demonstration garden. Outreach Events included: * Ribbon cutting ceremony (3/20/2013) * OFG Workshop (6/2013) * Urbanite Workshop * Chumash Day PowWow (4/13-14/2013) The overall OFG Program of the Surfrider Foundation offers additional resources.	Regional, Bluffs Park OFG	Residential, Commercial	Urban Runoff, Water conservation, Pollution prevention	# Events/year # Attendees/event # Demonstration gardens constructed	April 2009	Ongoing implementation	Surfrider, West Basin Municipal Water District, City of Malibu	See ASBS Focused Outreach Program for education. *OFG cost not included*
PIPP	Education, Incentives	CA Friendly Landscaping Program	The CA Friendly Landscaping Program targets residences and businesses to promote water conservation and eliminate non-point source pollution from landscaping. It is a reimagining of the OFG Program by the Metropolitan Water District in an attempt to engage a broader audience statewide. Similarly to the OFG Program, it is promoted by its local water Districts and agencies. The program includes educational workshops, training events, and incentives such as landscape water efficiency rebates. The City hosted two CA Friendly Landscaping Workshops from 2013-2014.	Regional	Residential, Commercial	Urban Runoff, Water conservation, Pollution prevention	# Events/year # Attendees/event # Participants/incentive program	2013	Ongoing implementation	West Basin Municipal Water District, Los Angeles County Waterworks District 29, City of Malibu	Staff Time

Existing Nonstructural Programs Within the ASBS 24 Area

Nonstructural Program	Program Subcategory	Name of Nonstructural Control	Project Descriptions for Existing Nonstructural Controls	Project Location	Target Source/ Target Audience	Targeted Water Quality Problem	Method of Measure	Program Start Date	Implementation Status/ Completion Date	Lead Agency	Approx. Cost ($/year)
PIPP	Education	Pepperdine Business School Sustainability Project	Pepperdine business students created urban runoff and ASBS outreach materials, including posters and videos (available in English and Spanish). Materials are available on the Protect the Coast section on the Malibu City website. The students also mapped the process to develop a potential OFG Program on campus, created a guide for a green business certification program, and researched compliance and opinion of a local water ordinance as part of a project management class.	Pepperdine University	Residential, Commercial	Urban Runoff	# Videos created (2) # Posters created Pepperdine OFG guide	January 2012	Completed March 2012	Pepperdine University, City of Malibu	See ASBS Focused Outreach Program
PIPP	Incentive	Water District #29 Tiered Water Rates Based on Increased Usage	Los Angeles County Water District 29 has implemented tiered water rates based on increased usage to encourage water conservation and reduce water waste to provide economic incentive to reduce landscape irrigation runoff.	City of Malibu	Residential, Commercial	Urban Runoff, Water Conservation	Regional change in water usage over time	February 2003	Ongoing implementation	Los Angeles County Water District #29	-
PIPP	Education	Water Conservation Program	This program is an education and incentive program promoting water conservation. Educational information on water conservation is provided on the website and distributed at workshops. An education program targeted at students (3rd-12th grade) has also been developed.	Regional	Residential, Commercial	Urban Runoff, Water Conservation	# Site visits # Workshops	April 2009	Ongoing implementation	Los Angeles County Waterworks	Regional Program Cost
PIPP	Education, Incentives	Water Conservation Program – Water Saving Devices Rebate Program	Rebates are offered for water saving devices, including high-efficiency washing machines, sprinkler nozzles, and irrigation controllers. Rebates of $25 to $100 per irrigation controller, depending upon Water District and property (capped at $235/applicant), are provided.	Regional	Residential, Commercial	Urban Runoff, Water Conservation	# Rebates obtained *Assumed up to 15% runoff reduction per site*	April 2009	Ongoing implementation	Los Angeles County Waterworks	Regional Program Cost
PIPP	Incentives	Cash for Grass (and other turf removal program iterations)	Through this program, residents are offered a rebate of $1 per square foot of grass replaced with water-efficient landscaping (i.e., native plants, mulch, un-grouted stepping stones, permeable hardscape, and crushed rock). The goal of this program is to encourage water conservation for outdoor landscaping methods, including native plantings, using mulch, and installing permeable pavers.	Regional	Residential, Commercial	Urban Runoff, Water Conservation	# Applications # Completed projects $ Rebates	April-09	Ongoing implementation	Los Angeles County Waterworks	Regional Program Cost
PIPP	Incentives	Landscape Irrigation Efficiency Program (LIEP) (and other water efficiency evaluation programs)	This grant funded program consisted of free water use surveys of properties by a certified landscape professional. The program also included free installation of efficient irrigation controllers (i.e., rotator sprinklers in place of conventional spray heads) for qualified sites. Programs of this type are ongoing and evolving as funding arises.	Regional	Residential, Commercial	Urban Runoff, Water Conservation	# Surveys # Sprinklers exchanged *Assumed up to 70% runoff reduction per site*	April 2009	Ongoing implementation as funding and resources allow	West Basin Municipal Water District	Regional Program Cost
PIPP	Education	Billboard Educational Campaign	This program was a countywide, 8-week billboard campaign designed to promote protective waste management practices. A used motor oil educational advertisement was displayed on 20 billboards throughout Los Angeles County.	Regional	Residential, Commercial	Bacteria, Oil, Urban Runoff	Route of advertisements # Impressions	February 13, 2012	Completed April 2012	District, Los Angeles County	-

Existing Nonstructural Programs Within the ASBS 24 Area

Nonstructural Program	Program Subcategory	Name of Nonstructural Control	Project Descriptions for Existing Nonstructural Controls	Project Location	Target Source/ Target Audience	Targeted Water Quality Problem	Method of Measure	Program Start Date	Implementation Status/ Completion Date	Lead Agency	Approx. Cost ($/year)
Compliance Monitoring	Compliance Monitoring	Santa Monica Bay Comprehensive Monitoring Program	The Santa Monica Bay Beaches Bacteria TMDL includes a coordinated shoreline monitoring program with regular monitoring of 9 sites within the City boundaries of the ASBS and 1 in the Unincorporated County (25 sample sites in North Santa Monica Bay total), and adoption of a wet Weather Implementation Plan to eliminate exceedances of bacteria above contact recreation standards in local waters, but specifically Santa Monica Bay beaches.	Santa Monica Bay	Water quality data	Recreational waters beneficial use	Annual compliance monitoring data	April 2000	Ongoing implementation	Los Angeles County, City of Malibu, Caltrans	County: $35K - $190K City: $112,000
Special Study	Compliance Monitoring/ Special Study	Assessment of Subtidal Rocky-Reef Resources in Santa Monica Bay	Assessment determined the status of algal, invertebrate, and fish communities in the Subtidal Rocky-Reef Resources in Santa Monica Bay, Malibu ASBS. The study provided baseline information on the condition of subtidal rocky reef habitats and established a monitoring program to track changes in the condition of subtidal rocky reef habitat over time, per the Santa Monica Bay Comprehensive Monitoring Program.	Santa Monica Bay	Biological assessments data	ASBS Assessment	Final Report	August 2003	Completed March 2005	SMBRC, SCCWRP	-
Special Study	Special Study	Marine Habitat Gaps in Santa Monica Bay	Compared existing data with the lists of key habitats and species of concern and identified information gaps and study needs.	Santa Monica Bay	Water quality data	ASBS Assessment	Final Report	January 2003	Completed July 2004	SCCWRP, SMBRC	-
Special Study	Special Study	Santa Monica Bay Marine Habitats and Living Resources Inventory	The Santa Monica Bay Marine Habitats and Living Resources Inventory was a literature review to identify gaps in existing studies of habitats and species in the region. Upon update of the inventory, data summary reports from the inventory by site location, habitat type, and taxa were generated.	Santa Monica Bay	Data assessment	ASBS Assessment	Final Report	July 2003	Completed February 2004	SCCWRP, SMBRC	-
Special Study	Database Management	Santa Monica Bay Spatial Database & Santa Monica Bay Data Evaluation	Data collected under existing monitoring protocols used throughout Santa Monica Bay were evaluated to determine their applicability in the Marine Life Protection Act (MLPA) process (complete January 2003-February 2004). A spatial database was developed to be compatible with the GIS database for the central coast marine-protected areas and has been populated with data for Santa Monica Bay (complete January 2003-July 2004).	Santa Monica Bay	Data assessment	ASBS Assessment	Database	July 2003	Completed July 2004	SCCWRP, SMBRC	-
Special Study	Special Study	Oceanographic Information for Trend Analysis in Santa Monica Bay	In collaboration with the Southern California Coastal Ocean Observing System (SCCOOS), collect and compile historical physical and biological oceanographic information for trend analysis in Santa Monica Bay.	Santa Monica Bay	Data assessment	ASBS Assessment	Final Report	October 2003	Completed July 2004	SCCWRP, SMBRC	-
Special Study	BIGHT '03; BIGH '08; BIGHT '13	Marine Habitat Study of Santa Monica Bay and ASBS	Collaboration with southern California Bight partners to identify key types of marine habitats and develop a master list of species of concern for Santa Monica Bay & the Southern California Bight. In 2008, the State Water Resources Control Board (SWRCB) worked with ASBS dischargers to collaboratively conduct a statewide ASBS regional monitoring program to provide better scientific information to the SWRCB for regulation of the ASBS	Santa Monica Bay & ASBS 24	Biological assessments data, Water quality data	Urban Runoff, Storm Water Runoff	Monitoring Data, Final Report	Jan. 2003, Nov. 2008, Sept. 2013	July 2004, April 2009, July 2014	SCCWRP, City of Malibu and Los Angeles County as partners	$35,000 (2003) $74,087 (2008) $74,087 (2013)

Existing Nonstructural Programs Within the ASBS 24 Area

Nonstructural Program	Program Subcategory	Name of Nonstructural Control	Project Descriptions for Existing Nonstructural Controls	Project Location	Target Source/ Target Audience	Targeted Water Quality Problem	Method of Measure	Program Start Date	Implementation Status/ Completion Date	Lead Agency	Approx. Cost ($/year)
			and in drafting the special protections for the ASBS. The City of Malibu and County contributed to scientific analysis of data for pre and post storm monitoring events in 2008 and 2013- 2014. The City will continue the wet weather monitoring program in 2014-2015 wet seasons in order to meet the obligations of the Special Protections.								
Special Study	Special Study	Malibu Creek Bacteria TMDL Reference Watershed Study	Monitoring of dry weather, dry winter weather, and wet weather for one year to develop representative numeric target for bacteria exceedance days. This study was conducted in Arroyo Sequit, a watershed which outlets at Leo Carillo State Beach in the ASBS.	Arroyo Sequit	Water quality data	Urban Runoff, Storm Water Runoff	Final Report	June 2006	Completed July 2007	SCCWRP	$1,594
Special Study	Special Study	Source ID Study of Ramirez and Escondido Creek	North Santa Monica Bay Bacteria Source Identification Study of Ramirez and Escondido Creeks conducted by the County of Los Angeles. The City was a participant and served on the technical advisory committee to develop a methodology to track sources of bacteria indicators. The County of Los Angeles halted this study in 2008 study due to low bacterial levels measured. Monitoring resumed in 2009. Study ended in 2011, after no exceedances were observed.	Ramirez and Escondido Creeks	Water quality data	Urban Runoff, Storm Water Runoff	Final Report	March 2007	Completed July 2011	Los Angeles County, SCCWRP	-
Special Study	Special Study	Low-Flow Diversion Task Force	The low-flow diversion task force recommended management actions that optimize operations for the District. The task force completed a pilot project in June 2010 to test new technologies for low-flow diversion monitoring that would be used to better operate the system and characterize the sources of dry weather flows. This pilot project was successful and the District is pursuing a project implement these improvements at all of its low-flow diversions.	Regional	Dry Weather Flow	Urban Runoff	Low-Flow Diversion Structure Improvement List	2009 (start pilot program) June 2010	June 2010 (end of pilot program) Ongoing task force efforts	District	Staff Time

APPENDIX C

Potential Enhanced Nonstructural Programs Table

Potential Nonstructural Program Enhancements to Achieve Additional Wet Weather Load Reductions

Nonstructural Program	Program Sub-Category	Name of Nonstructural Control	Project Descriptions for Enhanced Nonstructural Controls	Target Source/ Target Audience	Targeted Water Quality Problem	Method of Measure	Lead Agency	Implementation Cost (Approx.)
O&M	Street Maintenance	Infrastructure Priority Re-Evaluation Program	This activity is a review and re-evaluation of existing inspection/cleaning priorities assigned to the catch basins, street, parking lot and other systems located in the ASBS 24 watershed. Prioritization criteria are based on the NPDES permit and are typically based upon historic trash and debris loading to a given system. This prioritization does not take into account the watershed or receiving water body that may be impacted by a given piece of infrastructure. Increased cleaning may be appropriate to meet the requirements of the ASBS Special Protections and General Exception or to provide a streamlined, efficient and effective implementation program for ASBS 24.	Residential, Commercial	Trash/Debris, Sediment	Existing Catch Basin Program Assessment, Other Program Assessments, Inspection Data, Pounds Removed / year	City of Malibu, County	$10K, +$25K/Year, maintenance per existing program
PIPP	Education, Incentives	Enhanced Collaborative Environmentally Friendly Alternative Services Program	This program would look for opportunities to enhance existing environmentally friendly services programs. For example, the LACoMAX could include an ASBS-specific region search and/or the City of Malibu could provide a link to via the Malibu Green Room webpage, with information related to local exchanges, a list of consignment facilities, etc. Programs that may also be enhanced in the future include the Clean Bay Restaurant Certification Program, City of Malibu's EPPP and RCP, and Los Angeles County's Rethink LA Program.	Residential, Commercial	Urban Runoff, Trash	Program-specific metrics will be developed	Los Angeles County, City of Malibu, Malibu Chamber of Commerce	$5K / Year
PIPP	Education	ASBS Signage at Beaches	Educational placards describing the ASBS would be developed and installed along the board walk and/or main public beach accesses along the ASBS. This signage would describe unique features of the ASBS, as well as highlight recommended BMPs for trash management, sediment management, irrigation control, etc.	Residential, Public	Urban Runoff, Trash	# placards installed, # beach visits/year	Los Angeles County, State of California	$20K
O&M	Street Sweeping	Increased Sweeping Frequency	This program would involve a pilot project to adjust the frequency of sweeping on City streets located within the ASBS drainage area from once per month to more frequently, paired with a runoff study to determine pollutant loading. Increasing the sweeping frequency has been shown to increase the potential load reduction associated with metals, sediments, trash, and debris.	Residential, Commercial	Metals, Sediments, Trash	Pounds of debris removed per year % reduction in pollutant loading vs. cost	City of Malibu	$360,000
O&M	Street Sweeping	Equipment Upgrade	As of 2013, the City of Malibu sweeps city streets using motorized mechanical street sweeping equipment. This proposed nonstructural program enhancement would involve either: 1) replacing mechanical street sweepers with enhanced sweeping technologies during the standard end of the equipment life-cycle, or 2) requiring contractors responsible for local sweeping activities to only use vacuum or regenerative air sweeping technologies.	Residential, Commercial	Metals, Sediments, Trash	Increased efficiency and pollutant load reduction for machine operation.	City of Malibu	Additional cost of ~$25K per machine.
PIPP	Education, Incentives	Architectural Copper and Metal Building Material Mitigation Program	This program would offer rebates for architectural copper and zinc mitigation measures. Rebates would be offered for existing structures and could be modeled after the Grass for Cash program. Potential mitigation measures may include: application of sacrificial paint (e.g., copper and zinc oxidation protection paints), downspout diversions, rain barrels and cisterns. Information could be incorporated into existing educational materials and through the ASBS Focused Outreach program, etc.	Residential, Commercial	Metals	# rebates offered, # facilities mitigated	City of Malibu, Los Angeles County	$150K / Year

Potential Nonstructural Program Enhancements to Achieve Additional Wet Weather Load Reductions

Nonstructural Program	Program Sub-Category	Name of Nonstructural Control	Project Descriptions for Enhanced Nonstructural Controls	Target Source/ Target Audience	Targeted Water Quality Problem	Method of Measure	Lead Agency	Implementation Cost (Approx.)
PIPP / Enforcement	City Ordinance, Education, Enforcement	Architectural Copper Ban	Monitoring data of storm water wash off collected from metal building materials have been shown to be associated with elevated copper levels (City of San Diego, 2009 and 2010a). This ordinance would prohibit use of architectural copper for all new developments and re-development projects, especially for buildings and facilities along the ASBS and PCH. This ordinance would likely require significant education and outreach to engineers and architects, as well as residents and general public.	Residential, Commercial	Copper	# brochures distributed, # workshops, Ordinance/Policy, # facilities enforced	City of Malibu	$5K
PIPP / Enforcement	City Ordinance, Education, Enforcement	Zinc Alternative Building Material Ordinance	It is recognized that for maintenance and durability, building materials are often specified as galvanized zinc. Monitoring data collected of storm water wash off from metal building materials have been shown to be associated with elevated zinc levels. This project would evaluate the feasibility and implement a zinc building material policy which would eliminate, reduce, mitigate or control the use of zinc building materials, based upon the findings of a feasibility analysis and stakeholder engagement process.	Residential, Commercial	Zinc	Feasibility analysis, Ordinance/Policy	City of Malibu	$10K + $5K/Year *(outreach)*

APPENDIX D

Enhanced Nonstructural Programs

Quantification Calculations

- Aggressive Street Sweeping
- Building Material Management Program

AGGRESSIVE STREET SWEEPING

Aggressive street sweeping can be highly effective in reducing metals loading (City of San Diego, 2010; Seattle Public Utilities, 2009; City of Portland, 2006) and, to a lesser extent, bacteria (Skinner et al., 2010), while continuing to address trash, debris, and sediment pollution. The County has implemented an aggressive street sweeping program at County Beach parking lots (i.e., sweeping three times per week with enhanced sweeping equipment). Given that these parking lots experience a reduced traffic load compared to the PCH and City streets and have an aggressive sweeping schedule and program, the County's existing parking lot sweeping program is considered to be appropriate for protecting water quality of the ASBS 24 (i.e., program at a high level where adding enhancements may provide diminishing returns). The City currently implements a two-part street sweeping program, including weekly mechanical sweeping along PCH and monthly mechanical sweeping along City-maintained streets. This assessment focuses on quantifying the potential additional water quality benefits that could be realized through enhancements to the sweeping programs associated with City street sweeping programs. Data from the *City of San Diego Targeted Aggressive Street Sweeping Pilot Study Effectiveness Assessment*, which evaluated the effectiveness of three types of street sweepers at two aggressive sweeping frequencies, are used in this section to evaluate the potential load reduction associated with sweeping the PCH and City-maintained streets.

The referenced 2010 City of San Diego report uses debris removal, or collection rate as a metric to assess the relative pollutant load reduction associated with the various aggressive street sweeping programs evaluated. The fine sediments collected in special study bins were weighed, sampled, and analyzed for grain size, metals, pesticides, and other constituents of concern. Daily sweeping data were translated into pounds of debris removed per linear broom mile swept, and pollutant-specific load reduction rates were estimated (City of San Diego, 2010). This method of measure was used to compare the effectiveness of different types of street sweepers at twice-per-week and once-per-week sweeping frequencies.

The 2010 City of San Diego study included detailed analysis of various routes through different types of watersheds (hilly, flat, rural, and urban), including the urban areas of Chollas Creek. The average pounds of debris removal per broom mile for mechanical and vacuum sweepers, at both once and twice a week frequencies for this particular urban route, are presented on Table D-1. The broom mileage data used to produce these sediment removal rates were extracted from the 2010 City of San Diego study (City of San Diego, 2010), which is available on the Think Blue San Diego website. Note that the frequency of sweeping implemented under a few of the existing sweeping programs implemented by the County (3 times/week) and City (once/month) do not perfectly correspond with the available data. Removal rates for these frequencies were extrapolated using the best-fit curves presented on Table D-1 and in Figure D-1.

Table D-1. Sediment Load Reductions Associated with Mechanical and Vacuum Sweeping (City of San Diego, 2010)

Sweeper Technology	Sweeping Frequency	Average Sediment Removal Rate (lb/broom mile)
Mechanical	Once/week[1]	49.4
	Twice/week[1]	30.9
	Once/month[2]	63.3
	Twice/month[2]	58.7
Vacuum	Once/week[1]	80.0
	Twice/week[1]	83.3
	Once/month[2]	77.5
	Twice/month[2]	78.4

[1] Calculated debris removal rate from referenced special study (City of San Diego, 2010).
[2] Calculated using interpolated values.

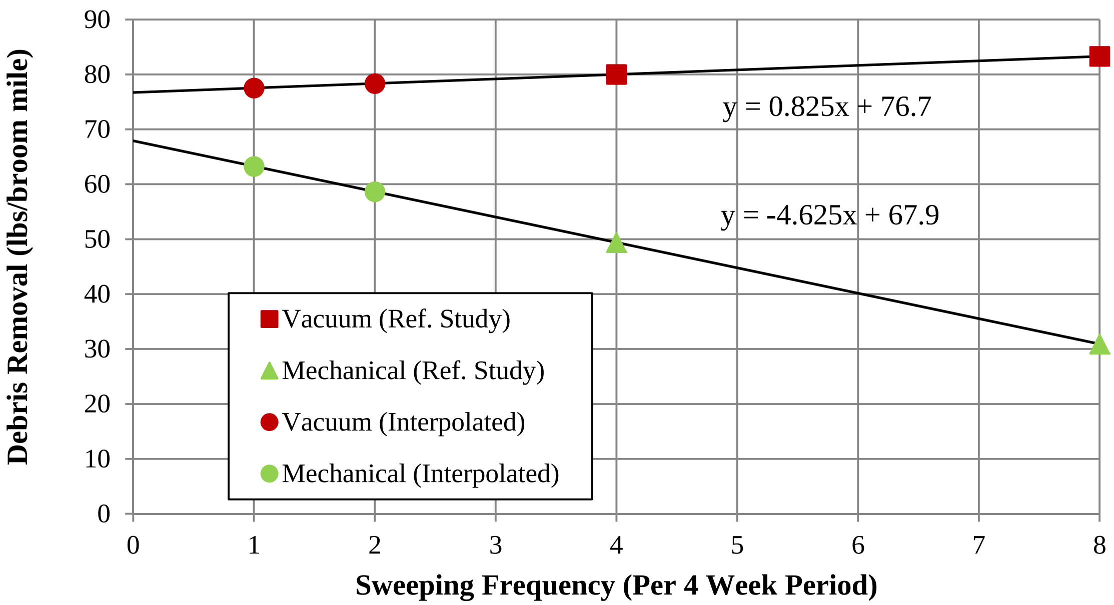


Figure D-1. Sediment Load Reductions Associated with Mechanical and Vacuum Sweeping (City of San Diego, 2010)

The potential debris reductions associated with street sweeping within ASBS 24 were calculated by determining the linear broom miles or path of travel and multiplying that length by the appropriate removal rate. The linear broom miles for each parking lot were determined using GIS information (aerial images, parcel layer, and land use data). Sweeping data for existing programs within the ASBS 24 are presented on Table D-2.

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Table D-2. Existing Street Sweeping Programs Within ASBS 24

Authority	Beach Name	Acres (acres)	Single Trip Broom Miles (miles)	Yearly Broom Miles at Once/month frequency (miles/year)	Yearly Broom Miles at Twice/Month Frequency (miles/year)	Yearly Broom Miles at Once/Week Frequency (miles/year)
City of Malibu	PCH	-	16	192	384	832
	City Streets	-	59	702	1,404	3,042

The potential debris removal for each sweeping option considered was estimated by multiplying the yearly linear broom mileage by the applicable debris removal rate and results of these calculations are provided on Table D-3.

Table D-3. Potential Debris Removal Summary for Each Sweeping Method

Authority	Machine	Location	Frequency	Broom Miles (miles/ year)	Debris Removal Rate (lb/ miles)	Debris Removal Rate (lb/year)	Debris Removal Rate (kg/year)
City of Malibu	Mechanical	PCH	Once/month	192	63.3	12,149	5,503
			Twice/month	384	58.7	22,541	10,211
			Once/week	832	49.4	41,101	18,619
		City Streets	Once/month	702	63.3	44,419	20,122
			Twice/month	1,404	58.7	8,2415	37,334
			Once/week	3,042	49.4	150,275	68,074
	Vacuum	PCH	Once/month	192	77.5	14,885	6,743
			Twice/month	384	78.4	30,106	13,638
			Once/week	832	80.0	66,560	30,152
		City Streets	Once/month	702	77.5	54,423	24,653
			Twice/month	1,404	78.4	110,074	49,863
			Once/week	3,042	80.0	243,360	110,242

Debris removal includes sediment, organics, and trash. The 2010 San Diego study did not directly correlate debris removal to TSS removal. The potential debris removal calculations for the different street sweeping scenarios are provided to show the comparison between different types of sweepers and sweeping frequencies.

The 2010 San Diego study included monitoring the water quality for three storm events at sites located within the Chollas watershed (Route 3J). For each monitored event, three different street segments were sampled representing sites that had been swept by either a vacuum or mechanical sweeper, once per week and for the three continuous weeks prior to the storm event and an "unswept" site that had been swept once every two months prior to the event (City of San Diego, 2010). A summary of the TSS results and calculated load reductions are provided on Table D-4. .

Table D-4. Summary of Street Sweeping Water Quality Results (City of San Diego, 2010)

Storm Event	Type of Sweeping	TSS (mg/L)	TSS Percent Reduction
Mean of Three Storms	Un-swept (Once/2 months)	927.0	N/A
	Mechanical (Once/week)	243.8	73.7%
	Vacuum (Once/week)	135.8	85.3%

The TSS removal efficiencies shown on Table D-4 can be used in combination with watershed model output data to estimate the transportation land use TSS pollutant load reductions associated with enhancing programs to perform sweeping at a once-per-week frequency with these types of machinery. The estimated TSS load reduction can also be compared to the total TSS load from watershed model data to estimate the overall pollutant load reductions from the street sweeping program.

The load reductions summarized on Table D-4 are based on the 2010 San Diego study and removal efficiencies of mechanical and vacuum sweeping at a once-a-week frequency (City of San Diego, 2010). As part of this study, storm event monitoring samples (wet weather) were not collected for comparison of un-swept sites to sites that were swept at a frequency of once per month or twice per month. However, based on the debris removal data collected in the referenced study and applied to the ASBS 24 watershed (see Table D-3), sweeping less frequently (e.g., once per month or twice per month) would provide less of a load reduction, even though a specific percentage is not provided by this quantification analysis. There is a correlation between TSS and metals in urban storm water runoff (LARWQCB, 2005), and the reductions in TSS load shown on Table D-4 also represent load reductions of metals.

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Simple Method Model to Estimate Copper Load Reduction Associated with Nonstructional BMP Program

Watershed Parameters			
Area	1	ac	
Rainfall	1	inch	
Percent of Resid that have cu	25%		
w/cu material factor	25	times std EMC	
Residential Cu EMS (w/cu)	432.5	ug/L	
Residential Cu EMC	17.3	ug/L	(LARWQCB, 2005)
Open Space Cu EMC	9.1	ug/L	(LARWQCB, 2005)
Transportation Cu EMC	51.9	ug/L	(LARWQCB, 2005)

Land Use	Coverage	Impervious %	**Rv Value**
Residential	50%	35%	0.365
Open Space	40%	3%	0.077
Transportation	10%	75%	0.725

Base Line (Exisiting Conditions No Program)

Calculations:

Land Use	Coverage	Impervious %	**Rv Value**	Cu EMC (ug/L)	Loading (kg/(1-in*1 ac)
Residential Cu EMS (w/cu)	12.5%	35%	0.365	432.5	0.0219
Residential Cu EMC	37.5%	35%	0.365	17.3	0.0026
Open Space Cu EMC	40.0%	3%	0.077	9.1	0.0003
Transportation Cu EMC	10.0%	75%	0.725	51.9	0.0042
Total	**100.0%**				**0.0290**

With Program - Lower End of Reductions Based on Stated Asssumptions

Assumptions:		Results	
Percent of Program Utilization	20.0%	Load Reduction =	6.0%
Load Reduction	40.0%		

Calculations:

Land Use	Coverage	Impervious %	**Rv Value**	Cu EMC (ug/L)	Loading (kg/(1-in*1 ac)
Residential Cu EMS (w/cu)	10.00%	35%	0.365	432.5	0.0175
Residential Cu EMS (w/cu) on Program	2.50%	35%	0.365	259.5	0.0026
Residential Cu EMC	37.5%	35%	0.365	17.3	0.0026
Open Space Cu EMC	40.0%	3%	0.077	9.1	0.0003
Transportation Cu EMC	10.0%	75%	0.725	51.9	0.0042
Total	**100.0%**				**0.0273**

With Program - Upper End of Reductions Based on Stated Asssumptions

Assumptions:		Results	
Percent of Program Utilization	20.0%	Load Reduction =	12.1%
Load Reduction	80.0%		

Calculations:

Land Use	Coverage	Impervious %	**Rv Value**	Cu EMC (ug/L)	Loading (kg/(1-in*1 ac)
Residential Cu EMS (w/cu)	10.00%	35%	0.365	432.5	0.0175
Residential Cu EMS (w/cu) on Program	2.50%	35%	0.365	86.5	0.0009
Residential Cu EMC	37.5%	35%	0.365	17.3	0.0026
Open Space Cu EMC	40.0%	3%	0.077	9.1	0.0003
Transportation Cu EMC	10.0%	75%	0.725	51.9	0.0042
Total	**100.0%**				**0.0255**

LARWQCB (Los Angeles Regional Water Quality Control Board). 2005. Total Maximum Daily Load for Toxic Pollutants in Marina del Rey. October 6, 2005. EMCs were estimated based on LADPW's stormwater data from 1994 to 2000.

APPENDIX E

Preliminary Design Report

Broad Beach Structural BMPs

Prepared for:

City of Malibu
23825 Stuart Ranch Road
Malibu, CA 90265-4861

Broad Beach Road Biofiltration Project

Preliminary Design Report

Prepared by:

Geosyntec consultants

engineers | scientists | innovators

3415 S. Sepulveda Blvd, Suite 500
Los Angeles, CA 90034

Project Number LA0245

April 2011

RB-AR 7532

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LIST OF ABBREVIATIONS AND ACRONYMS

BMP	Best Management Practice
CDP	Coastal Development Permit
CEQA	California Environmental Quality Act
ETWU	Estimated Total Water Usage
LACFD	Los Angeles County Fire Department
LCP	Local Coastal Program
LIP	Local Implementation Plan
MAWA	Maximum Applied Water Allowance
MEP	Maximum Extent Practicable
MS4	Municipal Separate Storm Sewer System
MSL	Mean Sea Level
NPDES	National Pollutant Discharge Elimination System
OWTS	Onsite Wastewater Treatment System
PAH	Polycyclic Aromatic Hydrocarbon
PCH	Pacific Coast Highway
PDR	Preliminary Design Report
POC	Pollutant of Concern
SWRCB	State Water Resources Control Board

The Broad Beach Road Biofiltration Project (Project) is funded in part by the City of Malibu (City) and in part by the State Water Resources Control Board (SWRCB) through a Proposition 84 Grant Agreement between the two parties. The contents of this document do not necessarily reflect the views and policies of the State Water Resources Control Board, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

1. INTRODUCTION

The purpose of this report is to present the design basis and the evaluation of design alternatives for the Broad Beach Road Biofiltration Project (Project). This Preliminary Design Report will form the basis for the critical evaluation and selection of the Project design approach.

The Preliminary Design Report (PDR) is intended to document all the relevant studies, evaluations, and calculations for the Broad Beach Road Biofiltration Project and to produce two conceptual design alternatives for the Project. The Project scope of work requires that the PDR include the following:

- Hydrology studies and soils report;
- Groundwater mounding analyses;
- Utility maps and identification of utility interferences;
- Development of two conceptual design alternatives presented at the 10 percent design level;
- Site plans showing proposed improvements, landscaping, and best management practices (BMPs);
- Performance and maintenance for the proposed alternatives;
- Construction cost estimate; and
- Final design recommendations.

This report is presented in 10 sections. Section 1 is this report and Project introduction. Section 2 reviews the existing Project site conditions, including topographic maps and utility maps. Section 3 reviews various regulations and approvals considered in the development of the Project conceptual design. Section 4 presents the results of the soil and groundwater investigation, including the infiltration study and groundwater mounding analysis. Section 5 introduces the Project hydrology evaluation, including a review of site drainage and development of the Project site design capture volume. Section 6 reviews the Project objectives, introduces the proposed BMPs and site improvements, and develops two stormwater improvement alternatives. Section 7 presents construction cost estimates for the two alternatives. Section 8 includes a discussion of the two alternatives, with recommendations. Section 9 defines the limitations on use of this report. Section 10 presents pertinent references cited in this report.

1.1 Project Description and Background

The city of Malibu was awarded a Proposition 84 grant by the State Water Resources Control Board (SWRCB) for the Broad Beach Road Biofiltration Project. The stated purpose of this grant is for "diverting dry-weather and some stormwater runoff from a series of eight (8) storm drains onto permeable surfaces and into a biofiltration system along a one (1) mile stretch of Broad Beach Road to prevent discharges to Broad Beach." [SWRCB, 2011]. The City of Malibu has contracted with Geosyntec Consultants to prepare studies, develop design documents, provide community outreach, and support the City during construction of this Project.

The Project includes various stormwater BMPs, landscape, and other improvements to eliminate or greatly reduce dry-weather flows, improve stormwater quality through treatment, reduce erosion and sediment tracking, and possibly capture and use stormwater. Overall, the Project will improve runoff quality and reduce wet weather and dry weather flows to Broad Beach.

1.2 Project Objectives

The Project objectives are:

- Eliminate dry weather flows to the storm drain;
- Reduce wet weather flows to storm drain (as feasible);
- Improve water quality of wet weather flows to storm drain (i.e., storm water treatment, pollutant reduction) to the maximum extent practicable (MEP);
- Reduce potable water use for irrigation (as feasible);
- Restore habitat above Broad Beach Road (as feasible);
- Reduce slope erosion (as feasible); and
- Preserve street and visitor parking.

1.3 Terms of Reference

This report was prepared for the City of Malibu (City) by Geosyntec Consultant Team (Geosyntec) in support of the Broad Beach Road Biofiltration Project in the City of Malibu, California. This work was authorized under Agreement executed on October 27, 2011; this report satisfies Task 1.11 of the scope of services. This report was written by Jan Coward and Patrick Galvin, PE, with senior review conducted by Ken Susilo, PE, in accordance with Geosyntec's quality review procedures.

The City project manager for the Project is senior civil engineer Rob DuBoux, Esq., PE.

The Project is funded in part by the City of Malibu and in part by the State Water Resources Control Board through a Proposition 84 Grant Agreement between the two parties.

2. EXISTING SITE CHARACTERISTICS

2.1 General Site Condition and Location

Broad Beach Road, situated between Broad Beach and Pacific Coast Highway (PCH) in Malibu, California, runs parallel to the coastline with a general orientation within the Project area of southeast to northwest. Broad Beach Road is a paved two-lane residential street providing residents access to their homes along the south side of the road and providing parking and beach access for residents and visitors. A mostly unpaved strip along the northern edge of Broad Beach Road varying in width from 10 to 20 feet provides public parking on the north side of the road. This parking strip is separated from PCH by a vegetated hillside which varies in slope from slightly steep to nearly vertical bluffs where the elevation difference between the two roadways is at its greatest. The Project area is located in the western end of Malibu approximately three miles northwest of Point Dume (see Vicinity Map, Figure 2-1).

The Project drainage area encompasses approximately 4,500 linear feet of Broad Beach Road between PCH and Victoria Point Road and extends for the most part from the center line of Broad Beach Road to the top of the hillside between Broad Beach Road and PCH. The total Project drainage area is 12.3 acres.

The Project area is located at the mouth of Trancas Canyon (see Figure 2-2). Trancas Canyon Creek, which drains the 6,233 acre Trancas Canyon watershed, runs to the east of the Project area culminating in a small disturbed coastal lagoon adjacent to the commercial center at the intersection of Trancas Canyon Road and Pacific Coast Highway. The area north of the Project area and west of Trancas Canyon Road drains to Caltrans-owned catch basins along the northern edge of PCH. The Trancas Canyon watershed drainage is not addressed by this Project. With the exception of one area located on PCH, the drainage from PCH is not addressed by this Project.

2.2 Site Topography

The site topography is fairly consistent along the length of Broad Beach Road varying mainly in the elevation difference between Broad Beach Road and PCH and the steepness of the hillside. The Project area, corresponding to the drainage area, encompasses 12.3 acres, approximately 1.6 acres of which is asphalt and concrete paved roadway and parking area. A topographic survey was performed for the Project. The topographic maps are presented in Appendix A.

Broad Beach Road is paved with asphalt and has two lanes, each lane approximately 10 feet wide. The road is crowned at the center line with a lateral slope of roughly two percent. Thus, storm water runoff that lands on the south side of the road flows toward the private residence drains and storm water from the north side of the road flows to the city-owned catch basins. The roadway undulates but is relatively flat except for the western end which reaches a slope of up to five percent. The stretch of road within the Project area has four low points and the roadway elevation varies from 18 to 64 feet above mean sea level measured at roadway center line.

A shoulder area varying in width from roughly 10 to 20 feet lies on the north side of the road along the entire stretch, separating it from the hillside –this area is used for parking by visitors and residents. This area is mostly unpaved, covered by varying materials including gravel, decomposed granite, compacted dirt, sand, and patches of asphalt and concrete. The parking strip follows the same undulating gradient as the roadway in the longitudinal direction and slopes slightly from the toe of the hillside toward the edge of the roadway pavement.

The hillside that separates the parking area and the shoulder along the south side of PCH is relatively steep and in certain areas nearly vertical. The elevation difference from the top of the hillside to the bottom of the hillside varies between 20 and 60 feet. The vertical bluff sections coincide with where the shoulder along PCH is widened to allow for roadside parking.

The entrances to the properties along the south side of Broad Beach Road generally lie at the same elevation as the roadway, or lower.

Existing drainage patterns are described in *Section 5 Hydrology* .

2.3 Utilities

The major utilities within the Project area consist of storm drains, sanitary sewer, potable water, electricity, communication, and natural gas. In support of the development of this preliminary design, the Geosyntec team performed utility research and located existing utilities in the Project area. This work was done using available utility maps and by requesting utility owners to mark their utilities at the Project site. No independent field verification of utilities was conducted. The utility maps are presented in Appendix B.

2.4 Biology

In support of the development of this preliminary design, the Geosyntec team performed a preliminary Biological Assessment of the Project area. The intention of the Biological Assessment was to provide an objective preliminary evaluation of potential impacts of the Project on existing biological resources. The information presented below is a summary of the conclusions and recommendations from this assessment. The preliminary draft of the Biological Assessment report is presented in its entirety in Appendix C.

Based on review of historic vegetation maps, the site is significantly degraded from its historic condition prior to development of Broad Beach. Field surveys found that the vegetation was heavily invaded by naturalized and planted exotic species. The vegetation classifications described below were determined to best characterize the assessment area.

- *Coastal Bluff Scrub (3.1 acres)* - Coastal bluff scrub consists primarily of native plant species, although exotic invasives are present throughout. This vegetation occurs on the upper, steeper bluff slopes between Pacific Coast Highway and the lower landscaped zone along Broad Beach Road.

- *Ornamental Landscaping (4.2 acres)* - Ornamental landscaping consists primarily of exotic vegetation that has been planted and irrigated, including pines, junipers, eucalyptus, bamboo, bougainvilla, and invasive species such as pampas grass. This vegetation dominates the lower slope of the assessment area along Broad Beach Road.

- *Ornamental Landscaping/Coastal Bluff Scrub (1.1 acre)* - This classification represents an integration of native and planted vegetation, with invasive exotics such as iceplant also present throughout.

- *Ornamental Landscaping (Planted Sycamores) (0.2 acre)* - Planted and irrigated sycamores occupy a localized, small area between Broad Beach Road and artificial terraces upslope. These trees may fall under the protection of the City's Native Tree Protection Ordinance because they are native to California.

In general, the area has relatively few wildlife species present or expected to occur, due to its condition as fragmented habitat surrounded by high-traffic roads, frequent human disturbance, construction noise, and dominance of exotic vegetation. The exotic vegetation provides cover and limited nesting habitat for birds, but few food resources for native wildlife. Certain wildlife species, especially goldfinches and crows, were frequently observed moving between the assessment area and landscaping on residential properties to the south. After the Project design is further advanced, an additional biological assessment will be conducted to specifically address the proposed activities and their potential biological impact on the final Project areas.

2.5 Climate

The climate characteristics of the site reflect the general Mediterranean climate of central coastal regions of California. This climate regime is characterized by cool, wet winters and warm, dry summers with occasional periods of fog. Although infrequent, Malibu is periodically subjected to intense coastal storms.

The average daytime summer temperatures in the area are usually in the 70s to 80s (Fahrenheit). Nighttime low temperatures during the summer are typically in the high 50s to low 60s, while the winter high temperature tends to be in the 60s. Characteristic of Malibu’s marine microclimate, the winter low temperatures are in the low 50s. The annual average rainfall in Malibu is about 20 inches. Winter months tend to be wetter than summer months. The wettest month of the year is January with an average rainfall of about 5 inches.

2.6 Hardscape and Landscape

Many Broad Beach Road residents have created gardens across from their residences on city property. These gardens include many non-native invasive or ornamental plants and shrubs. On several parcels, numerous potted plants are also stored along the roadway. Although this property is owned by the city, many homeowners have installed private irrigation systems plumbed back to their residential water services. Irrigation piping runs under the road and was also observed within existing storm drain pipe. The private irrigation of gardens creates uncontrolled and unmanageable dry-weather flows which have been observed during recent site visits.

Residents have also constructed several garden and retaining walls along the hillside. These walls are constructed of a myriad of materials including cobbles, broken concrete, masonry brick, and cast-in-place concrete. Some walls appear to have served as a means of disposal of waste broken concrete from driveway replacements. The parcel-specific variable hardscape and landscape elements have created an inconsistent environmental theme for the neighborhood.

Examples of existing hardscape, landscape, and irrigation systems are presented in Figures 2-3 through 2-9.

3. REGULATORY REQUIREMENTS

3.1 Water Quality

The City storm drains within the Project area ultimately discharge through private drains to private beaches. After passing through a wave wash mixing zone in the Pacific Ocean, flows reach the Pacific Ocean and a designated Area of Special Biological Significance (ASBS 24). The California Ocean Plan [SWRCB, 2009] defines water quality objectives for ocean waters including all ASBS. Since compliance with Ocean Plan's stringent objectives is not always economically feasible nor in the public interest, the Ocean Plan allows the State Water Board to grant exceptions to its provisions as long as the public interest will be served and beneficial uses are protected.

As part of an application for a general exception to Ocean Plan requirements, Special Protections [SWRCB, 2012] have been proposed to fulfill the state mandate for protection of water quality in ASBS and to address the requirements identified in the Ocean Plan. On March 20, 2012 these Special Protections were recommended by the State Water Board as part of an Ocean Plan Exception. According to these Special Protections, the design storm for treatment control BMPs is defined as follows:

> "Design storm – For purposes of these Special Protections, a design storm is defined as the volume of runoff produced from one inch of precipitation per day or, if this definition is inconsistent with the discharger's applicable storm water permit, then the design storm shall be the definition included in the discharger's applicable storm water permit."

The applicable storm water permit in this case is the Los Angeles County National Pollutant Discharge Elimination System (NPDES) Municipal Storm Sewer Systems (MS4) Permit. Since under this permit the Broad Beach project is not considered a new development or a redevelopment, the permit requires that pollutants in stormwater discharge be reduced to the maximum extent practicable (MEP). In Los Angeles County the 0.75 inch design storm event is generally accepted as equivalent to MEP per the MS4 permit. This is also in compliance with the design storm requirements in the proposed revised MS4 Permit [LA RWQCB, 2012]. Since the one inch event is inconsistent with the applicable permit, the conclusion of this study is that the Broad Beach treatment control BMPs should be designed for the 0.75 inch design storm event.

3.2 Environmental Review

The Project is subject to the requirements of the California Environmental Quality Act (CEQA). CEQA requires that all projects be reviewed and that their environmental impacts be evaluated. The lead agency for the Project is the city of Malibu. On behalf of the city of Malibu, Geosyntec will prepare an Initial Study for the project.

This Project is an environmental improvement project (stormwater quality improvement) and the new constructed facilities will likely be hardscape and landscape improvements and natural water quality treatment facilities such as vegetated swales and biofilters. It is expected that the Initial Study will result in a finding of no impact or no significant impact with mitigation, qualifying the Project for a Negative Declaration or a Mitigated Negative Declaration.

As part of the CEQA process, a Frequently Asked Questions sheet will be published and distributed to the community to inform them of the Project. A public notice will be filed in the local newspaper and a public meeting will be conducted to provide the interested public with the opportunity to comment on the Project plans.

3.3 Coastal Development Permit

The California Coastal Act of 1976 (Div. 20 CA Public Resources Code Sections 30000 et. seq.) was adopted by the California Legislature in 1976 and became effective January 1, 1977. The Coastal Act provides a comprehensive regulatory framework for all new proposed non-exempt “development” (See PRC Sec. 30106 and 30610) within the Coastal Zone of the state of California. Pursuant to Sec. 30500 et. seq. of the Coastal Act each local government is responsible for preparing and adopting a Local Coastal Program (LCP) so as to implement the policies and provisions of the Act within its jurisdictional boundaries. Prior to Certification of an LCP the California Coastal Commission generally retains jurisdiction for the processing of Coastal Development Permits (CDPs) consistent with the Act; following certification of an LCP it becomes the primary responsibility of the Local government to review and approve all new proposed development within the Coastal Zone consistent with the provisions contained within its LCP.

In 2002 the City of Malibu’s Local Coastal Program was approved by the California Legislature and became law. Any new non-exempt development proposed within the City of Malibu must apply for and receive a Coastal Development Permit prior to commencement of development (See 13.3 of the Malibu Local Implementation Plan—“LIP”). The LIP and the Malibu Municipal Code provide the primary regulatory framework for review of new development.

The Project is located within the Coastal Zone in the City of Malibu and does propose new development therein; therefore the Project is governed by the City's Certified Local Coastal Program and is required to obtain a Coastal Development Permit prior to Project commencement in addition to other requisite Project entitlements.

3.4 Water Use Guidelines

The Los Angeles County Department of Public Health has established guidelines [Los Angeles County, 2011] for harvesting of rainwater, stormwater, and urban runoff for outdoor non-potable uses such as irrigation. The guidelines have categorized rainwater harvesting systems into four classes, Tier I – IV, depending on the potential water sources, and provide requirements for minimum water quality standard and treatment processes.

- Tier I – On-site collection of rainwater in rain barrels for on-site use in gravity flow systems.
- Tier II - On-site collection of rainwater in cisterns for on-site use.
- Tier III - On-site or off-site collection of rainwater, stormwater, and urban runoff in cisterns for on-site or off-site use. (Excludes water collected from locations zoned for high use transportation corridors, industrial, agricultural or manufacturing uses).
- Tier IV - On-site or off-site collection of rainwater, stormwater, and urban runoff in cisterns for on-site or off-site use. (Includes water collected from locations zoned for high use transportation corridors, industrial, agricultural or manufacturing uses).

Any rainwater harvesting systems based on storage of runoff from Broad Beach Road in underground cisterns would most likely be regulated under Tier III, due to the presence of urban (dry-weather) runoff generated from irrigation of the hillside.

For Tier III systems, if captured runoff is to be used for spray irrigation, irrigation water must be disinfected by chlorination or an equivalent technology. For drip or sub-surface irrigation, Tier III systems require only pre-screening (sediment filtration) of irrigation water. Project biofilters are anticipated to satisfy pre-screening requirements.

4. GEOTECHNICAL AND GROUNDWATER INVESTIGATIONS

4.1 General

To support the development of the preliminary design, Geosyntec performed geotechnical and groundwater investigations for the Project area. The information presented below is a summary of the investigations and the conclusions and recommendations from the Geotechnical and Groundwater Studies Report [Geosyntec, 2012]. The report in its entirety is included on a CD in Appendix D.

4.2 Purpose and Objectives

The Geotechnical and Groundwater investigations focused on the evaluation of subgrade soils along the Project alignment for the purpose of providing design input. This included assessment of groundwater conditions and infiltration potential. Geosyntec's scope of work consisted primarily of the following tasks:

- Gathering available geotechnical and geologic information;
- Performing a geotechnical field investigation consisting of six hollow-stem auger borings and six Geoprobe soundings;
- Performing a constant head infiltration test in the vadose zone and in saturated zones at the locations of the six Geoprobe soundings;
- Constructing temporary piezometers and monitoring groundwater elevations at select Geoprobe locations;
- Conducting laboratory testing of selected soil samples obtained from the borings and analytical testing of groundwater samples; and
- Conducting geotechnical engineering analysis.

4.3 Summary of Existing Conditions

4.3.1 Surface and Subsurface Conditions

To the north, the site is bounded by a predominantly vegetated bluff slope that extends up to the relict marine terraced platform on which Pacific Coast Highway is located. However, localized portions of the adjacent slope are devoid of vegetation and expose the rilled granular material of the marine terrace bluff. Exploratory borings encountered artificial fill, Quaternary Terrace deposits, and the Tertiary age Trancas Formation at depth.

Artificial fill deposits were encountered in five of the six explorations along Broad Beach Road. In general, the fill deposits consist of brown sands with varying amounts of gravel and clay. Within the limits of the explorations, artificial fills extended from the ground surface to maximum depths of four feet.

Quaternary-age terrace deposits were encountered within all of the 12 explorations performed for the investigation at the ground surface or underlying the artificial fill. The terrace deposits generally range in composition from brown to reddish brown, clayey to gravelly sand, to light brown to tan, silty sand. Within the older, upper terrace bluff (Qt), densities generally increase with depth from medium dense to very dense.

Along the terrace surface underlying Broad Beach Road, the densities generally ranged from medium dense to dense. A subset of these terrace deposits, identified as the “Beach Sands” or Qb is present at a number of the investigation locations along Broad Beach Road. This deposit identified separately from other terrace deposits due to its characteristic fine sand and relatively low fines content (20 percent).

At the location of Broad Beach Road, the beach sand is typically less than approximately 10 feet thick. Based on information from other investigations between Broad Beach Road and the ocean this thickness increases to 10-15 feet typically.

The Tertiary age Trancas Formation underlies the entire site at depth and was encountered in nine of the explorations –this formation generally consists of a hard, gray fat claystone. Along Broad Beach Road, the Trancas Formation was encountered beneath the terrace deposits at an elevation of +18 feet mean seal level (MSL) at the west end of the Project area and slopes down to an elevation of -5 feet MSL at the east end. It is anticipated that the erosional unconformity between the overlying terrace deposits and the Trancas Formation slopes up to the north beneath Pacific Coast Highway and slopes down towards the beach on the south.

Dozens of single family residences are present along the south side of Broad Beach Road along the Project alignment. Review of numerous foundation reports for these structures indicates that while some are founded on the Trancas formation using deep foundations other structures and appurtenances may be founded on the beach sands using shallow foundations.

4.3.2 Groundwater

The investigations performed by Geosyntec indicate that the groundwater gradient in the Beach Sands is typically from north to south (i.e., toward the ocean). It is expected that water that infiltrates at the surface along Broad Beach Road will flow within the Beach Sands toward the ocean along the sloping unconformity between the Trancas formation and Beach Sand. Additional flow infiltrated by this Project may raise groundwater elevations within the Beach Sand.

The measured static groundwater elevation varied along the alignment of Broad Beach Road from approximately 7.0 to approximately 20.5 ft above MSL. In general, the observed groundwater elevations are assumed to represent a dry-weather condition although "wet year" and "wet-weather" conditions are assumed to be within a few feet of these conditions as indicated by observations. The groundwater elevations recorded remained fairly constant over the monitoring period, suggesting that there is no significant tidal influence at these locations.

In conversations with Broad Beach residents, concerns were expressed regarding making changes that potentially increase infiltration and consequentially raise groundwater levels. Some homes have basements and at least one homeowner has observed water, presumably groundwater, leaking into the basement.

4.3.3 Onsite Wastewater Treatment Systems

Onsite wastewater treatment systems (OWTS), such as septic systems, for the residences along the south side of Broad Beach discharge to leach fields that are in some areas located in the backyards between the homes and the dunes, in the courtyard area between the garage and the house, or between the house and Broad Beach Road. Based on analysis of groundwater samples carried out for this Project, it appears that the locations sampled are generally unaffected by the operation of the OWTS's.

4.4 <u>Findings</u>

The California Department of Transportation (Caltrans) Stormwater Quality Handbook: Project Planning and Design Guide [Caltrans, 2007] and the Los Angeles County Department of Public Works Stormwater Best Management Practice Design and Maintenance Manual [LADPW, 2009] both present guidelines related to the siting of infiltration BMPs. The criterion for selection of an appropriate site for infiltration trenches contained in these documents were used as primary screening criteria for selection of appropriate locations for Project infiltration features.

Based on the results of the investigations and evaluations, from a geotechnical viewpoint, the proposed stormwater best management practices and streetscape improvements are feasible as long as direct infiltration is not included as a Project feature. While infiltration rates in some areas are within the acceptable ranges, the following design criteria restrict the use of infiltration:

- The shallow groundwater and a shallow confining layer will impose significant constraints on the geometry of infiltration facilities.

- Typically the invert of infiltration features would be approximately five feet below grade, which in areas of shallow groundwater would violate the criteria of a 10-foot separation from groundwater provided in Caltrans [2007] and CASQA [2003].

- Dozens of OWTS are potentially present within 50 feet of the proposed infiltration facilities. Operation of infiltration facilities within 100 feet of septic system or a leach field violates the Caltrans [2007] criteria.

- Structural foundations are present within 100 feet down gradient of the location of the proposed features. This violates the Caltrans [2007] criteria. Infiltration will produce an increase in groundwater elevations (however minor or temporary) in the beach sand unit where some unknown number of these foundations is located. Evaluations indicate that, for some areas, there is potential for liquefaction in the current groundwater configuration and an increased risk for liquefaction under mounded groundwater conditions. This is of particular concern for foundations within the beach sand. The impact on individual structures is difficult to assess given that they are so numerous and have such a variety of foundation systems and soil conditions.

The following proposed Project components are feasible from a geotechnical perspective:

- Biofiltration with underdrains and impermeable geo-membranes;

- Permeable pavements with no infiltration to subgrade; and

- Vegetated swales.

The following proposed Project components are not feasible from a geotechnical perspective:

- Biofiltration including infiltration; and
- Permeable pavements with infiltration to subgrade.

Limited equilibrium slope stability analyses indicate that existing slopes are stable under current conditions and are not a constraint on Project design in their current configuration.

With the stated limitations on infiltration and given the presence of only minimally liquefiable deposits along the alignment of the proposed BMPs, liquefaction of subgrade soils is not a constraint on the design of proposed drainage features and appurtenant structures.

4.5 Design and Construction Recommendations

The Geotechnical and Groundwater Studies Report includes geotechnical recommendations for proposed construction in the following areas:

(1) Drainage features, including biofiltration features and permeable pavements;
(2) Foundation design; and
(3) Earthwork.

A copy of the Geotechnical and Groundwater Studies Report is included as Appendix D.

5. HYDROLOGY

5.1 General

This section presents an analysis of the existing Project area hydrologic conditions and is intended to:

- Describe the existing hydrologic conditions including drainage infrastructure, catchment boundaries, soils, climate, and flow pattern; and

- Present the hydrologic basis for proposed stormwater BMPs.

5.2 Existing Hydrologic Conditions

5.2.1 General

The watershed associated with the Project site is roughly bounded on the north by the top of the hillside along the south side of PCH and on the south by the center line of Broad Beach Road, and has a total area of 12.3 acres. The watershed encompasses approximately 4,500 feet of Broad Beach Road. The total impervious area is estimated to be 1.5 acres consisting mainly of the asphalt pavement on Broad Beach Road area and PCH; however, there are also patches of concrete and asphalt along the roadside parking strip. There are eight catchment areas and ten City catch basins within the Project area. Drainage maps showing the catchment boundaries, drainage infrastructure, flow patterns, and pervious and impervious areas are presented in Appendix E.

5.2.2 Drainage Infrastructure and Flow Patterns

Broad Beach Road has local depressions and is crowned so that runoff from the northern half of the roadway flows toward the hillside, and runoff from the southern half flows toward the homes where it is typically collected in trench drains at the top or bottom of each resident's driveway. Hillside runoff (in which gullies and surface erosion were observed) and roadway runoff comingle on the mostly unpaved roadside parking strip to the north. The parking area is typically at its lowest elevation closest to the roadway. This directs the surface runoff along the road edge towards the catch basins.

The catch basins for Catchments 1 to 7 are located along the north side of Broad Beach Road are recessed into the hillside with a local depression in the area immediately in front of the inlet. Catchment 8 drains to a storm drain inlet, and although technically not a catch basin, it is referred to such in this report (see Appendix E).

As shown in Appendix E, within the vicinity of the low point of Catchment 5A there are three City catch basins; CB5A, CB5B, and CB5C. The outfalls from all three catch basins feed to the same storm drain. CB5A drains Catchment 5A. CB5B receives only flow from a non-City-owned storm drains that run down the hillside and no direct runoff from the Project area. CB5C drains only an area of a few hundred square feet of the southern half of Broad Beach Road.

The catch basin curb inlets typically have approximately 17 inch openings with varying widths. The distance from inlet invert to catch basin bottom varies from 2 to 4 feet.

Runoff from PCH and adjacent roadside areas flows toward slope drain inlets on both sides of PCH. With one exception, slope drains along the southern side of PCH drop directly into the catch basins along the northern side of Broad Beach Road. These flows are conveyed in Caltrans-owned buried pipes (slope drains) to the below-grade catch basins. As this is not part of the City MS4, it is not addressed by this Project. From the catch basins, water flows through storm drain pipes that cross under Broad Beach Road and tie into private storm drains at the residential property lines prior to discharge to the outfall points on the ocean side of the homes.

The exception to the description above is one slope drain in the western end of the Project area that drains 0.6 acres of PCH, including the road shoulder. This drain daylights at the bottom of the embankment slope; runoff from PCH comingles with surface runoff from Broad Beach Road prior to entering the catch basin.

Delineation of the eight catchment boundaries was carried out based on the following information:

- Topographic maps based on a survey performed for the Project;
- Topographic data (GIS) and aerial photos from Los Angeles County; and
- Field observations and measurements.

5.3 Stormwater Quality Design Volume

5.3.1 Technical Approach

The stormwater quality design volume per catchment was calculated using the methodology described in the Los Angeles County Department of Public Works' *Development Planning for Stormwater Management, A Manual for the Standard Urban Stormwater Mitigation Plan, Appendix A, Volume and Flow Rate Calculations*, issued on September 2002. The design storm event is the 0.75 inch 24-hour storm event which complies with the sizing requirements in the Los Angeles County NPDES MS4 Permit for structural and treatment control BMPs for new development and redevelopment projects. This is consistent with the recommendations in the *City of Malibu Local Coastal Program Local Implementation Plan* and in the Special Protections of the proposed General Exception to the Ocean Plan. Although the Project is a storm water quality improvement project and does not formally qualify as new development or redevelopment, this design criterion was selected for the Project.

The catchments correspond to the tributary areas for the catch basins.

The runoff coefficient curve for the pervious surfaces within the tributary area was selected based on soil maps from Los Angeles County Department of Public Works Water Resources Division. The soils in the Malibu area are identified as soil ID No. 038 [Los Angeles County GIS Data Portal, 2011].

5.3.2 Stormwater Quality Design Volume Calculation

Stormwater Quality Design Volume (SWQDv) was calculated using the following equation:

$$SWQDv\ (ft^3) = (2{,}722.5\ ft/acre) * [(A_I)(0.9) + (A_P + A_U)(C_U)]$$

Where:

A_C = Catchment Total Area (acres) = $A_I + A_P$

A_I = Impervious Area (acres)

A_P = Pervious Area (acres)

A_U = Contributing Undeveloped Upstream Area (acres)

C_U = Undeveloped Runoff Coefficient (-)

Values for A_I, and A_P were determined using the available topographic maps and aerial photos. A_I includes all paved area and A_P includes the remaining area. A_U was determined to be zero for all catchments. C_U was assigned the value of 0.1 based on the runoff coefficient curve for soil no. 038 [LADPW, 2006]. The calculated design volumes are presented in Table 5-1.

6. CONCEPTUAL DESIGN ALTERNATIVES

This section begins with a review of the Project objectives and a discussion of how those objectives are satisfied. Following this, each proposed stormwater BMP or improvement is presented. Finally, two stormwater alternatives are developed and described in detail.

6.1 Project Objectives and Stormwater Alternatives Development

As stated in Section 1, the goals for the Project are to:

1. Eliminate dry-weather flows to the storm drain;
2. Reduce wet weather flows to storm drain (as feasible);
3. Improve water quality of wet weather flows to storm drain (i.e., storm water treatment, pollutant reduction) to the maximum extent practicable (MEP);
4. Reduce potable water use for irrigation (as feasible);
5. Restore habitat above Broad Beach Road (as feasible);
6. Reduce slope erosion (as feasible); and
7. Preserve street and visitor parking.

In addition, feedback from the residents has indicated a preference that the constructed project should not create or perpetuate the existing condition of highly variable parking and landscape/hardscape elements. The Project should be consistent with the rustic natural environment that currently exists along portions of Broad Beach Road. Therefore, we have created an additional objective (new Objective 8) which is to ensure that proposed improvements are consistent with the neighborhood landscape theme of a rustic natural environment.

To address these objectives, Geosyntec developed two stormwater management alternatives. A discussion of each objective and how it is satisfied by the alternatives is provided below.

Objective 1: Eliminate dry-weather flows to the storm drain. It is assumed that the primary dry-weather flows that occur within the Project area are related to irrigation runoff. All the residences are located on the south side of Broad Beach Road and any residential runoff from irrigation, pavement cleaning, car washing, etc. is captured by private drains owned by each residence. Many residents have installed separate private irrigation systems on the north side of the street, on city of Malibu property and within the Project area. To eliminate dry-weather flows, these irrigation systems will be removed and city-operated water-efficient irrigation will be installed in place of these private systems. High-water-use ornamental and exotic plants will be removed and replaced with drought-tolerant native species, reducing the need for frequent irrigation during the dry season.

Objective 2: Reduce wet-weather flows to storm drain (as feasible). This objective is focused on water storage, use, and/or infiltration as a means of reducing discharge to the storm drains. Alternative 2 includes a water use option to reduce wet-weather flow. The soil and groundwater investigation specifically recommended <u>no</u> infiltration for this project, primarily due to the proximity to OWTS, low depth to groundwater, and concern for water intrusion in basements; therefore, infiltration is <u>not</u> considered an option for wet-weather flow reduction.

Objective 3: Improve water quality of wet-weather flows to storm drain (i.e., storm water treatment, pollutant reduction) to the MEP. This objective is met by several proposed Project elements. First, the roadway parking strip is proposed to be paved using concrete interlocking pavers. The construction of these pavers will not enhance stormwater infiltration (see Objective 2 above) but will reduce tracking of sediment from the currently soil/gravel parking strip to the proposed paved parking strip. Second, the parking strip area between the road and the toe of the embankment would be regraded to direct stormwater sheet flow away from the road and to vegetated swales located at the toe of the embankment. Vegetated swales will provide stormwater quality improvement. Third, garden walls (slough walls) and retaining walls are planned for various areas along the toe of the embankment, reducing erosion from the hillside and improving stormwater quality. Fourth, biofilters are proposed to treat wet-weather flows prior to discharge to the existing catch basins. Fifth, for Alternative 2, stormwater capture, storage, and use for irrigation are proposed. This provides a viable use option for a portion of the Project stormwater, if site conditions warrant use for irrigation. If site conditions do not support irrigation, the water will be discharged to and treated by the proposed biofilters, improving stormwater quality prior to discharge.

Objective 4: Reduce potable water use for irrigation (as feasible). This objective is satisfied by the removal of the numerous privately-owned irrigation systems on city property and installing a city-managed low water use irrigation system. The removal of non-native exotic plant species and replacement with native drought tolerant species also reduces potable water use for irrigation. Finally, for Alternative 2, captured stormwater is proposed to be used to replace potable water, for a portion of the Project area irrigation needs.

Objective 5: Restore habitat above Broad Beach Road (as feasible). The Project budget will support removal of invasive and non-native exotic species for portions of the Project area and planting of native species in areas disturbed by construction. These plantings will provide partial habitat restoration of the areas above Broad Beach Road, reducing water usage and reducing hillside erosion.

Objective 6: Reduce slope erosion (as feasible). As stated under Objective 5 above, the partial habitat restoration included in the Project will reduce slope erosion. The proposed garden walls and retaining walls will further reduce slope erosion.

Objective 7: Preserve street and visitor parking. Currently, the only visitor parking available for beach-goers or residential visitors is along the north side of Broad Beach Road. The proposed storm water improvements (i.e., swales and biofilters) have been set back from the road such that the parallel parking opportunities along the full stretch of Broad Beach Road are unchanged.

Objective 8: Proposed Project improvements should preserve and enhance the rustic landscape/hardscape theme for the neighborhood. This objective is met by the proposed landscape and hardscape elements. The landscape architect has developed a rural neighborhood theme which is carried through all the proposed stormwater improvements including pavers, garden and retaining walls, vegetated swales, biofilters, and plantings.

6.2 BMPs and Stormwater Improvements

6.2.1 General

This section provides descriptions of the proposed stormwater BMPs and stormwater improvements and identifies how they would function to meet the Project objectives. An overview of proposed BMPs and improvements to be included in each alternative is presented in Table 6-1.

6.2.2 Biofiltration

Biofiltration systems will be used as the primary treatment control BMP for treatment of stormwater and dry-weather runoff from the Project area. Biofiltration systems, sometimes referred to as bioretention systems, are landscaped shallow depressions that capture and filter stormwater and dry-weather runoff. These facilities function as soil-and plant-based filtration devices that remove pollutants through a variety of physical, biological, and chemical treatment processes. Biofilters typically consist of a surface ponding area, mulch layer, planting soils, and plantings. As water flows across the plantings and passes down through the organic-rich planting soil, pollutants are filtered, adsorbed, and biodegraded by the soil and plants. These systems provide a fairly high level of treatment. Because infiltration is unacceptable for this Project, biofilters will be designed with a lower impermeable membrane and a perforated underdrain to collect the treated water. The underdrain will connect to a collector pipe which will convey the treated water to a nearby catch basin. The outlet of the collector pipe in the catch basin will be located to facilitate sampling of biofilter effluent. Alternatively, an access point will be installed along the collector pipe to allow for effluent sampling. Typical cross-sections and details for the biofilters proposed for Broad Beach are shown in Figure 6-1.

Where sediment, trash and debris is expected in site runoff and a vegetated swale is not provided for water pretreatment, a pretreatment forebay will be included upstream of the biofilters. A forebay will reduce the rate of clogging of the biofilter and facilitate maintenance.

For this Project, the biofilters will not be designed to retain and infiltrate water - most water will flow through the filters and be discharged. However, low flows (i.e., dry-weather flows) may be partially or fully retained in the filter media. These relatively small water volumes are expected to be ultimately reduced by evapotranspiration.

The Project biofilters are designed to capture and treat the design capture volume during a storm event. A description of the biofilter sizing methodology for this Project is included in Appendix F. The calculated values for the required biofilter media surface area (A_{media}) for the two alternatives described later in this section are presented in Table 6-1.

6.2.3 Vegetated Swales

At present, stormwater flows off the embankment and towards a low elevation flow line between the street and the parking strip. The area between the edge of road pavement and the toe of the embankment will be graded to cause stormwater to flow off the road and off the parking strip to the embankment toe. A vegetated swale will be installed along the embankment toe, parallel to the road and will convey stormwater to storage or biofilter treatment facilities. Vegetated swales are an effective stormwater pretreatment BMP to filter out trash, debris, and coarse sediments - they also provide aesthetic enhancement for the area. The installation of vegetated swales will reduce pollutant loading and clogging on the downstream biofilters, extending the biofilter media life.

Vegetated swales are sloped and are not designed to pond water. Therefore, infiltration of water through vegetated swales is insignificant and it should not be necessary to install impermeable liners under the swales.

6.2.4 Water Collection, Storage, and Use or Treatment

Stormwater runoff can be collected in below-ground enclosed storage facilities (cisterns) and used for landscape irrigation, as required. Runoff would be conveyed in swales and gravity drain into systems of vaults, tanks, or pipes to store the water until needed. When needed, the water can be pumped from the underground storage and conveyed in pressurized pipes for use in drip irrigation. Drip irrigation is selected as the most viable use option. This site would be classified as a Tier III system under Los Angeles County requirements for rainwater and stormwater harvesting systems. Drip irrigation requires only sediment filtration prior to water use. Spray irrigation requires water disinfection, which adds an unattractive level of complexity to this stormwater use application.

If stored water cannot be used for landscape irrigation due to lack of irrigation water demand, the water would be pumped and discharged to biofilters after the storm peak had passed and the surface stormwater had been filtered and discharged. In this way, the biofilters can be used to filter stored water during times when the filters are otherwise not in use.

Local residents have expressed concern regarding underground storage of stormwater and the potential for leakage and infiltration of this water, possibly exacerbating a high groundwater condition in the neighborhood. Should stormwater storage be implemented, various technologies such as impermeable lining systems could be employed to provide additional assurance against leakage of stored water.

6.2.5 Concrete Pavers

The majority of the parking strip that runs parallel to Broad Beach Road is unpaved – the existing surface varies, including sand, soil, decomposed granite, and various types of gravel. This parking strip is commonly used for parking by residential visitors, workers, and beachgoers. Surface erosion of the unpaved parking surfaces can reduce stormwater quality. Sediment tracking from parking areas to the roadway mobilizes sediment and can reduce stormwater quality. This condition is exacerbated by muddy and wet conditions during storm events. The installation of pavers from the edge of road to form an approximately 10 foot wide parking strip is proposed. Pavers would provide a uniform surface for parking and greatly reduce erosion and sediment tracking. Paver selection and design will be made to reduce stormwater infiltration to the extent possible. In any event, the minor infiltration through paver system is expected to be significantly less than the existing condition where stormwater infiltrates through unpaved ground.

6.2.6 Retaining and Garden Walls

Retaining walls (structural walls) and garden walls (non-structural slough walls) are proposed for various locations along the hillside. The walls fulfill three purposes. First, installation of walls in designated locations will allow for the embankment to be cut back, opening up needed areas for biofilter installation. Second, the walls reduce soil erosion and sloughing from the hillside, which is a key contributor to sediment in stormwater. Third, the installation of walls creates a uniform hardscape theme across the neighborhood. Existing retaining walls are not engineered, are often ineffective for erosion reduction, and are constructed of a myriad of materials including cobbles, broken concrete, masonry brick, and cast-in-place concrete.

6.2.7 Irrigation System Removal/Replacement

A key element to reducing or eliminating dry-weather flows is the removal of privately-owned irrigation systems on the north side of the road. Although this property is owned by the city, homeowners have installed private irrigation systems plumbed back to their water services and have created private gardens and landscapes on city property. The private irrigation of gardens creates uncontrolled and unmanageable dry-weather flows which have been observed during recent site visits. Private systems would be removed and replaced with water-efficient low-volume irrigation controlled by city-controlled, automated evapotranspiration controllers. Water would be provided by the city and water use would be managed by the city. We recognize the communication efforts that will be required to implement the removal of these private irrigation systems. An estimate of annual water use for Broad Beach Road irrigation is provided in Appendix G.

6.2.8 Habitat Restoration

As mentioned above, many Broad Beach Road residents have created gardens across from their residences on city property. These gardens include many non-native invasive or ornamental plants and shrubs, most which require frequent irrigation. To reduce irrigation requirements and reduce the erosion potential, high water-demand ornamental plants and shrubs within 20 feet of the toe of embankment slope would be removed and replaced with more drought-tolerant, native species plants and shrubs. This will allow the city to manage irrigation (and reduce or eliminate dry-weather flows) and reduce potable water use on the hillside. Areas disturbed by construction will be revegetated with appropriate species. Other ornamental or exotic species will be removed, depending on proximity to the roadway and the plant-specific water consumption requirements. The creation of a more uniform native species plant/shrub environment furthers the objective of creating a more uniform landscape theme for the neighborhood. Again, we recognize the communication efforts that will be required to implement the removal of nonnative species that were planted by residents.

6.3 Stormwater Alternative 1

Stormwater Alternative 1 is comprised of a combination of BMPs and improvements including stormwater conveyance and treatment BMPs, retaining and garden walls, parking strip pavers, irrigation, and landscape improvements. Alternative 1 is differentiated from Alternative 2 in that Alternative 1 contains no stormwater storage or use options – in Alternative 1, all stormwater up to the design storm event is captured, treated, and discharged. A flow diagram illustrating the stormwater management principles for Alternative 1 is presented in Figure 6-2. In the subsections below, the specific application of these BMPs and improvements are addressed, as are issues related to parking, utilities, and operation and maintenance. The general layout and features of Alternative 1 are shown on Figures 6-4 through 6-14.

6.3.1 Stormwater Management Improvements

For Catchments 2 to 7 runoff will be collected from the road, parking strip and embankment and transported in vegetated swales that drain to biofilters located upstream of the catch basins. The swales will provide pretreatment while primary treatment will occur in the biofilters.

The swales will run along the toe of the hillside slope intercepting hillside runoff. The parking area will be regraded such that both the road and the parking area drain toward the swales. The swales will serve to channelize flow to the biofilters and will widen at the biofilters entrance to create sheet flow into the biofilter.

Biofilters will be located between the toe of the slope and the paved parking area. In some cases cuts will be made into the hillside to create more available filter area. Filtered water will be collected in underdrains that connect to collector pipes, discharging to the existing catch basins, or to the storm drains if more feasible. When the ponding capacity of the biofilters is exceeded, overflow will occur over a weir located at the end of the biofilter closest to the catch basin and then surface flow to the catch basin inlet. The top of weir elevation will be the same as the water surface elevation corresponding to the biofilter design ponding depth.

Locating adequately sized biofilters in Catchment 1 and the eastern part (east of CB8) of Catchment 8 was not deemed feasible due to lack of area and other logistical constraints such as utilities, parking, and steep slopes. For these two catchments, runoff is diverted to other areas where adequate area for treatment is available.

Runoff from Catchment 1 is diverted via gravity flow from catch basin CB1 to a biofilter in Catchment 2. The diversion structure will be designed to divert low flows while during high runoff events (in excess of design storm) water will overflow to catch basin CB1.

Runoff from Catchment 8 will be captured in a new wet sump adjacent to storm drain inlet CB8 and pumped to a biofilter in the western end of Catchment 8. The wet sump will be designed to receive and pump flows up to the design storm – events in excess of the design storm will overflow to CB8. A submersible pump can be used for this application. Noise levels outside of the sump are expected to be imperceptible to residents.

In general, the biofilters are sized for the design capture volume generated in their immediate tributary area. However, the biofilters in Catchment 2 and 8 are sized for both direct catchment runoff as well as the diverted runoff from other areas.

The proposed stormwater system improvements do not significantly alter the existing drainage patterns. Hillside and roadway runoff patterns are generally unchanged; however, regrading of the Broad Beach Road parking strip will concentrate flow along the toe of the slope instead of along the road pavement edge. Biofilters and swales are sited in order to maintain flood paths to existing catch basins.

6.3.2 Landscape, Hardscape, and Irrigation

Alternative 1 includes construction of garden and retaining walls and parking strip pavers, removal/modification of some of the existing garden and retaining walls, removal of all private irrigation systems and replacement with city-controlled, water-efficient irrigation systems, and replacement of exotic, ornamental, and invasive plant species. This alternative also includes replanting in areas disturbed by construction. The general plan indicating the Project areas where hardscape, irrigation, and planting improvements will be made is shown on Figures 6-4 through 6-14.

Selective plant material will be removed from the Project area to help create consistent landscape theme, reduce irrigation water use, and facilitate Coastal Bluff Scrub Habitat Restoration. The specific criteria applied to each area to determine which existing ornamental, exotic, or invasive plant species should be replaced are as follows:

- Invasive plant species will be removed from the first 20 feet of the Project slopes and parkway to the extent practical;

- Vegetation will be removed from existing utility setbacks;

- Vegetation will be removed from Project improvement areas including biofilter areas, vegetated swales, retaining walls, garden walls, parking areas, and concrete swales and gutters;

- Vegetation will be removed in locations where conflicts occur with the proposed slope irrigation improvements and proper system operations;

- Native vegetation that constitutes a high fire risk per Los Angeles County Fire Department Fuel Modification Plan will be removed;

- Trees with invasive roots will be removed that are located within 10 feet of proposed Project retaining walls, garden walls, and biofiltration areas; and

- Selective ornamental vegetation that is high water use will be removed.

The proposed irrigation system for the Project will be a low water use system featuring a smart weather based controller combined with low volume drip, bubbler and overhead rotary stream spray heads. The smart controller will allow for daily automatic adjustments to the watering schedule based on real time weather data. Flow sensing devices allow for system shut-down and delays in response to rain events and system failures. Low volume point to point irrigation using drip and bubbler systems provide for maximum water use efficiency. Rotary stream heads provide additional water savings with 30% increased efficiency over traditional spray heads. The estimated total water usage (ETWU) for the Project is approximately 740,000 gallons per year. This represents about 50% of the maximum applied water allowance (MAWA) for the proposed design.

Feedback from a conversation with one of the Broad Beach homeowners indicates that some of the existing irrigation systems may have been installed to serve as fire protection. This has not been confirmed but the need for fire protection will be evaluated during the design phase and more information will be solicited from the Broad Beach homeowners. The final design will comply with existing code and fuel modification requirements including the following:

- All proposed landscape and irrigation improvements will be implemented per the Los Angeles County Fire Department (LACFD) Fuel Modification Plan

Guidelines [LACFD, 2011] to create the desired defensible space around all combustible structures in a fire environment.

- All proposed landscape improvement plant species are subject to LACFD approval and will be inherently fire resistant and spaced appropriately.
- Existing native vegetation and ornamental plantings within the project fuel modification zones will be modified by thinning and removal of species constituting a high fire risk (refer to the LACFD Undesirable Plant List).
- Routine fuel modification maintenance will be regularly performed in all zones. Maintenance includes irrigation, pruning, thinning and annual removal of weeds, dead materials and other undesirable flammable vegetation required to keep the area in a fire safe condition. (Refer to the LACFD Fuel Modification Plan Maintenance and Long Term Maintenance sections)

The proposed planting for the Project will consist of native and drought tolerant grass species for the biofilter areas and vegetated swales. This vegetation provides water quality improvements for Project runoff and creates a distinct theme for the Project parkway. The slope planting will consist of a combination of drought-tolerant shrubs to enhance the existing plant material to create a more consistent landscape theme combined with Coastal Bluff Scrub species to facilitate native slope habitat restoration.

The proposed hardscape improvements for the project will include an interlocking concrete paver parking area, concrete veneer retaining walls and dry stacked boulder garden/slough walls. These elements will be installed throughout the project construction limits creating a consistent rural neighborhood theme and materials palette for the project. Miscellaneous existing garden/slough walls will be removed and either omitted or replaced with project theme walls as needed to construct the proposed biofiltration areas and vegetated swales. Existing retaining walls that are required due to existing grade and are structurally sound will remain and be enhanced with the project theme veneer so that all walls are consistent.

A plant palette exhibit and a materials exhibit for pavers and wall veneers are included in Appendix H. The exhibits present several different options.

6.3.3 Parking Considerations

The proposed improvements will allow for parallel parking along the entire stretch of roadway within the Project boundaries, similar to the current-day parking locations.

The installation of pavers will improve parking conditions in several areas where the surface is uneven due to ditches and erosion.

6.3.4 Utility Considerations

Existing utilities have been identified both by review of historical maps and by marking on Broad Beach Road by the utility owners. The preliminary design of BMPs and improvements has been developed in consideration of all known utilities and no significant utility conflicts are known. Prior to construction of the Project, the city of Malibu's contractor will be required to mark and locate all utilities within the Project area and to field verify locations of utilities that could be threatened by the work.

Los Angeles County owns a sewer line that runs along Broad Beach Road, between the road edge and the embankment. A sewage pumping station is located in Catchment 1. In some areas, this sewer line will be located under the proposed location of parking strip pavers. The depth of this utility will need to be verified to ensure it is protected during grading and subgrade improvement work.

The Gas Company owns a gas line that also runs parallel to the road between the sewer line and the road. Similar to the sewer line, this gas line will be under the parking strip where pavers are proposed. The depth of this utility will also need to be field verified to ensure it is protected during construction.

There are electrical transformers owned by Southern California Edison located along the north side of Broad Beach Road within the Project area. Electrical laterals traverse the parking area. We have not identified any significant conflicts between the electrical lines and the proposed construction. Locations and depths can be verified prior to construction. Vegetation will need to be removed around the existing transformers.

Charter Communications owns communications lines that primarily run along the south side of the road, outside of the Project area. We have identified several communications lines that cross the road to roadside amplifier boxes. These crossings are within the Project area but do not pose a conflict for the proposed work.

The Los Angeles County Waterworks owns a water main that is located near the road centerline and provides water to residents and to two hydrants located along the north side of the road within the Project area. These water supply lines are marked and do not pose a conflict for the proposed work. During design, coordination with the local fire department will be required to identify parking restrictions in front of fire hydrants. Currently, there are no posted parking restrictions in this area; however, we expect that the fire department may impose parking prohibitions in certain areas to ensure emergency hydrant access.

No telephone utilities were identified in the Project area.

6.3.5 Performance

The proposed configuration of treatment control BMPs and improvements will be designed to treat 100% of the runoff generated within the Project tributary area for storm events equal to or less than the design storm. Using vegetated swales and biofilters, pollutant removal treatment effectiveness is predicted to be medium to high. It is our expectation that, barring an unforeseen water line break, all dry-weather runoff will be treated by the biofilter system. Dry-weather runoff should be substantially reduced or even eliminated by the removal of private irrigation systems and the installation of new water efficient irrigation with smart controllers. Other than irrigation runoff, there are no other known sources of dry-weather runoff within the Project area.

Retaining walls, garden walls, and parking strip pavers will all reduce erosion and sediment transport in runoff. Pavers will also reduce sediment tracking from the parking strip to the roadway. New plantings of native species will also reduce erosion.

Potable water use will be reduced by elimination of the numerous private irrigation systems and installation of new water-efficient irrigation and smart irrigation controllers.

6.3.6 Operation and Maintenance

The following is a description of anticipated operation and maintenance requirements for the proposed BMPs and improvements.

Vegetated swales will require periodic removal of accumulated trash and debris. Removal of accumulated sediment and revegetation may also be required. Weed removal, trimming, and pruning are also necessary. Vegetated swales will require some minimal irrigation during dry months.

Biofilters will require periodic removal of accumulated trash and debris. If sediment removal is required, replacement of mulch and vegetation may also be necessary. Occasional pruning of shrubs and cleanup of leaves and organic waste may be required. Periodic replacement or addition of planting material and mulch will be needed to sustain the biofilter's treatment effectiveness. Minimal biofilter irrigation will be needed, especially during dry months. Irrigation needs will significantly diminish after plants become established.

Irrigation system maintenance will include periodic inspections of system performance and verification that dry weather flows are eliminated. Damaged sprinkler piping, sprinkler heads, and drip emitters will require replacement. Verification of proper operation of irrigation controllers will be required. The total water usage for the first year is estimated at 740,000 gallons. The yearly cost for this water usage is roughly $5,500 based on current water rates (see water usage and cost calculations in Appendix G). Water usage, and consequentially water costs, can be reduced after plants are established.

Areas that have been revegetated due to replacement of inappropriate species or in areas disturbed by construction will require inspection and landscape maintenance to ensure that plants are properly established and the plant health is sustained.

The wet sump in Catchment 8 and the pumping system will require periodic inspection and verification of proper operation. Pump maintenance will be minimal. Electricity to run this pump represents a trivial expense.

6.4 Stormwater Alternative 2

Stormwater Alternative 2 has many common elements to Alternative 1. The primary difference between the alternatives is that Alternative 2 includes collection and storage of runoff in underground cisterns. The collected water from the two proposed cisterns can be pumped for irrigation use or pumped to biofilters for treatment after the storm peak has passed. This storage and off-peak treatment permits more efficient use of the biofilters and results in a smaller Project biofilters footprint. In the subsections below, the proposed BMPs and improvements are presented. A flow diagram illustrating the stormwater management principles for Alternative 2 is presented in Figure 6-3. The general layout and features of Alternative 2 are shown on Figures 6-4 through 6-14.

6.4.1 Stormwater Management Improvements

As previously stated, stormwater management BMPs and improvements for Alternative 2 are similar to Alternative 1. However, Alternative 2 collects surface runoff from Catchment 1, part of Catchment 2, and Catchment 8 and stores this water in two underground stormwater cisterns. The cisterns are proposed to be constructed of a system of buried pipe that functions like a storage tank and is specifically manufactured for underground water storage. One cistern is located within Catchment 8 – all the runoff from Catchment 8 drains to swales, flows to a drain inlet, and is conveyed to the cistern. The total storage for the Catchment 8 cistern is 520 cubic feet. When storage capacity is exceeded, runoff will overflow to the existing storm drain inlet. Refer to Figure 6-5 for the proposed location of the storage system.

Stormwater in Catchment 1 and the western portion of Catchment 2 is captured in swales and gutters and flows to two drain inlets that are routed to a cistern located in Catchment 2, for storage. The total storage for this cistern is 2,080 cubic feet. Refer to Figures 6-11 and 6-12 for the proposed location of the storage system. When storage capacity is exceeded, runoff will overflow to the existing storm drain outfall from catch basins CB1 and CB2.

Residents have expressed concern that underground water storage facilities could leak, causing groundwater mounding and potentially exacerbating a high water table condition under their homes. If the manufactured cistern system is not determined to be sufficiently reliable for water storage, a system of synthetic liners can be considered to provide additional assurance that the water storage systems do not leak and infiltrate water to the subsurface.

Each of the two cisterns will be constructed with a wet sump to evacuate the stored water. Stored water can either be directed to biofilters located in Catchments 2 and 7 or water can be used for landscape irrigation. Each wet sump would be fitted with two pumps, one for landscape (a higher pressure, higher flow application) and one for water transfer to the biofilters (a lower pressure, lower flow application). Submersible pump noise is expected to be imperceptible to residents. Pumps would be controlled by a smart stormwater controller that assesses the volume of water in the cisterns, evaluates current climatic conditions and the forecast for future storms, assesses the need for irrigation based on evapotranspiration data, and controls each pump appropriately.

For portions of Catchment 2 and Catchments 3-7, the BMPs and improvements proposed are the same as Alternative 1. Refer to Figures 6-4 through 6-14 for details.

The Project benefits of stormwater storage are that there is approximately 2,600 cubic feet (approximately 19,500 gallons) of stored water available for irrigation. If irrigation is not needed, which is often the case in the winter, the water can be stored and discharged to the biofilters after the storm peak as passed, allowing the biofilters to be used more efficiently and resulting in a reduced area footprint for the biofilters. The reduced biofilter area for Alternative 2 is nearly 1,900 square feet (refer to Table 6-1) less than Alternative 1. The layout of Alternative 2 increases vegetated swale length by approximately 300 linear feet.

6.4.2 Landscape, Hardscape, and Irrigation

Landscape elements are similar between Alternatives 1 and 2. Hardscape elements are similar between the Alternatives with the exception that Alternative 2 has a smaller Catchment 2 retaining wall, due to the smaller biofilter area required. Alternative 2 has the same irrigation plan as Alternative 1 supplemented by an additional parallel drip irrigation system to support the use of stored stormwater. To avoid cross connection concerns, it is necessary to have completely independent irrigation systems supplied by potable water and supplied by stormwater.

6.4.3 Parking Considerations

There is no difference between Alternative 1 and Alternative 2 with regard to parking on Broad Beach Road.

6.4.4 Utility Considerations

The utility considerations unique to Alternative 2 are related to the underground storage of stormwater. Stormwater from Catchment 1 and a portion of Catchment 2 will be stored in a large diameter buried pipe located in Catchment 2. The pipe will require an excavation of up to approximately eight feet in depth. We have considered the need for shoring during this installation. The pipe location should not conflict with any existing utilities. For Catchment 8, the underground storage pipe installation will require an excavation to a depth of approximately six feet. This will likely require shoring, careful location of the adjacent sewer line, and ultimately replacement of the toe-of-slope swale.

6.4.5 Performance

Stored stormwater that is used for irrigation represents a net reduction in discharge to the ocean. That is consistent with the Project objectives. Furthermore, the stored water used for irrigation replaces potable water. The proposed storage systems have a capacity to store roughly one-third of the total design capture volume for the Project area. The performance of vegetated swales, biofilters, and landscape and hardscape elements is similar to Alternative 1.

6.4.6 Operation and Maintenance

The operation and maintenance items for Alternative 2 are similar to Alternative 1 with a few minor exceptions. The parallel drip irrigation system for stormwater irrigation use would require periodic maintenance. The submersible pumps found in the cisterns would require periodic inspection and occasional maintenance. The cost of electricity for pumping is considered trivial.

The total water usage for the first year is estimated at 715,000 gallons: 625,000 gallons for slope vegetation and 90,000 gallons for biofilter and swale vegetation.

Potable water use would be reduced for Alternative 2, due to use of stored water for irrigation. The cisterns will store approximately 2,600 cubic feet with equates to approximately 19,500 gallons. Water from the cisterns will be used to irrigate the biofilters and the vegetated swales. Although difficult to predict how much stormwater will substitute for potable water, we believe it is reasonable to expect that stormwater use for irrigation may replace between 5 and 10 percent of potable water use.

The yearly average cost for water usage is estimated to vary between $4,400 and $5,200 based on current water rates (see water usage and cost calculations in Appendix G). Assuming that 50% of the irrigation demand for the biofilters and vegetated swales is supplied by cistern water, the yearly average cost is estimated to be $4,800, roughly $700/yr less than Alternative 1. The amount of irrigation water for biofilters and vegetated swales supplied by cistern water can potentially reach 100%; however, this is unlikely since the demand will be greatest during dry periods when supply is low. These costs represent water usage for the first year. Water usage, and consequentially water costs, can be reduced after plants are established.

7. CONSTRUCTION COST ESTIMATE

Cost estimates were developed for the two proposed design alternatives for this 10 percent design level. The estimates represent solely contractor costs and do not include oversight, independent testing, construction management, or documentation. A 20 percent contingency was applied to each estimate. For this conceptual design, the costs were not escalated to spring of 2013, the predicted construction start date.

The following is a list of the various cost resources used in the development of the cost estimates:

- The Geosyntec team's experience on similar projects;
- Cost data for two recent, similar projects constructed in Malibu;
- Vendor quotes; and
- RS Means cost guide.

Through an iterative process the scope of construction was modified (reduced) in order to generally meet the Grant construction budget which is $1,675,836. Estimated construction costs correspond only to the improvements in the Project area that fall within the limits of construction on Figures 6-6 and 6-11, unless otherwise noted on the figures.

The estimate of construction costs for the two alternatives are:

Alternative 1 - $1,625,000

Alternative 2 - $1,688,000

A summary table of the primary cost items is presented in Table 7-1. Detailed cost estimates are presented in Appendix I.

8. DISCUSSION AND RECOMMENDATION

Alternatives 1 and 2 both generally satisfy the Project objectives. Each alternative eliminates or at least substantially reduces dry-weather flows. Both alternatives reduce erosion and sediment tracking through hardscape and landscape improvements. Both alternatives provide stormwater treatment and associated improvements in water quality for water discharged to Broad Beach. Both alternatives provide habitat restoration and reductions in potable water use related to planting of drought tolerant species. Both alternatives include consistent hardscape and landscape themes and carry these themes throughout the Project area.

The stormwater management elements that are different between the two alternatives are:

1. Reduction of potable water for irrigation; and

2. Volume of water discharged to Broad Beach.

Alternative 2 is a partial capture and treat alternative. Alternative 2 provides storage for approximately one-third of the design capture volume of runoff and either uses that water for irrigation or treats the stored water after the storm has passed, allowing for more efficient use of biofilters. This capture and use strategy reduces potable water needed for irrigation and reduces the volume of treated water discharged to Broad Beach. The capture and use strategy is progressive and demonstrates leadership and innovation by the city of Malibu.

The challenges related to Alternative 2 are that water storage and use adds additional cost, as compared to Alternative 1. The need for pumping systems increases the Project complexity and maintenance costs are also slightly higher (primarily related to maintaining a separate irrigation system). Finally, there may be a perception by the local residents that there is a risk of stormwater leakage from the cisterns, potentially causing undesirable infiltration.

Geosyntec believes both Alternatives are viable and attractive stormwater management approaches for Broad Beach Road. However, Geosyntec believes that Alternative 2 goes further to meet the goals of the grant by promoting a greater reduction of wet weather flow to the storm drain and by reducing potable water use for irrigation; Geosyntec therefore recommends Alternative 2.

9. LIMITATIONS

This Preliminary Design Report was developed in accordance with the scope of work, purpose, terms, and conditions described in the Terms of Reference, described in Section 1.

The conclusions contained in this investigation are based on the conditions as observed by Geosyntec personnel and as reported by relevant agencies and other named sources at the time the investigation was performed.

No warranty, expressed or implied, is made regarding the professional opinions expressed in this report or concerning the completeness of the data presented to us. If actual conditions are found to differ from those described in the report, or if new information regarding the site is obtained, Geosyntec should be notified and additional recommendations, if required, will be provided.

Geosyntec is not liable for any use of the information contained in this report by persons other than the City of Malibu as intended for the subject Project.

10. REFERENCES

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Caltrans [2007], "Stormwater Quality Handbook: Project Planning and Design Guide", California Department of Transportation.

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TABLES

Table 5-1. Areas and Stormwater Quality Design Volume per Catchment

Catchment No.	Catchment Section	A_C (ac)	A_I (ac)	A_P (ac)	A_U (ac)	C_U (-)	SWQDv (ft^3)
1		2.34	0.53	1.81	0	0.1	1788
2	west	0.57	0.05	0.53	0	0.1	254
	east	1.61	0.15	1.46	0	0.1	766
3		0.75	0.09	0.66	0	0.1	395
4		1.48	0.11	1.37	0	0.1	644
5A	west	0.85	0.10	0.75	0	0.1	457
	east	1.70	0.13	1.57	0	0.1	734
6		1.08	0.11	0.96	0	0.1	534
7	west	0.76	0.09	0.67	0	0.1	406
	east	0.31	0.03	0.28	0	0.1	145
8		0.82	0.13	0.69	0	0.1	514
Total		**12.27**	**1.51**	**10.75**			**6637**

Table 6-1. Proposed BMPs and Improvements for each Alternative per Catchment

Catchment No.	Biofilters	Vegetated Swales (incl. grading)	Water Storage and Use or Treatment	Concrete Pavers	Retaining and Garden Walls	Irrigation System Removal/ Replacement	Habitat Restoration
1			Alt. 2	Both Alt.	Both Alt.[1]	Both Alt.	Both Alt.
2	Both Alt.	Both Alt.	Alt. 2	Both Alt.	Both Alt.	Both Alt.	Both Alt.
3	Both Alt.	Both Alt.		Both Alt.	Both Alt.	Both Alt.	Both Alt.
4	Both Alt.	Both Alt.		Both Alt.	Both Alt.	Both Alt.	Both Alt.
5A	Both Alt.	Both Alt.		Both Alt.	Both Alt.	Both Alt.	Both Alt.
6	Both Alt.	Both Alt.		Both Alt.	Both Alt.	Both Alt.	Both Alt.
7	Both Alt.	Both Alt.		Both Alt.	Both Alt.	Both Alt.	Both Alt.
8	Alt. 1	Alt. 2	Alt. 2	Both Alt.	Both Alt.	Both Alt.	Both Alt.

[1] Walls are not proposed for Catchment 1. However, a concrete swale along the slope will function as a slough wall.

Table 6-2. Design Biofilter Volume (Bv) and Biofilter Media Surface Area (A_{media}) for Alternatives 1 and 2

Catchment No.	Catchment Section	Alternative 1		Alternative 2	
		Bv (ft^3)	**A_{media} (ft^2)**	**Bv (ft^3)**	**A_{media} (ft^2)**
1					
2	west	3063	1541		
	east	1149	541	1149	541
3		593	326	593	326
4		966	448	966	448
5A	west	685	334	685	334
	east	1101	560	1101	560
6		801	365	801	365
7	west	608	268	608	268
	east	218	107	218	107
8	west	771	350		
Total		**9956**	**4840**	**6122**	**2949**

Table 7-1. Summary of Construction Cost Estimates for Alternatives 1 and 2

Total Construction Costs	Alt. 1	Alt. 2	Notes
Biofilters	$159,000	$96,000	
Vegetated Swale	$31,000	$34,000	
Planting of Slope	$38,000	$38,000	
Irrigation	$150,000	$156,000	
Walls (new and existing)	$169,000	$116,000	
Concrete Interlocking Pavers	$528,000	$527,000	
Diversion and Storage Structures - Catchment 2	$3,000	$124,000	Alt. 1 does not include storage
Diversion and Storage Structures - Catchment 8	$43,000	$77,000	Alt. 1 does not include storage
Maintenance of planting and irrigation	$8,000	$8,000	3 month maintenance period
Demolition of hardscape/landscape	$34,000	$34,000	
SUBTOTAL 1	*$1,163,000*	*$1,210,000*	
Mobilization & Demobilization	$116,000	$121,000	10% of Subtotal 1
Bonds	$35,000	$36,000	3% of Subtotal 1
Traffic Control	$20,000	$20,000	
SWPPP	$20,000	$20,000	
SUBTOTAL 2	*$1,354,000*	*$1,407,000*	
Contingency	$271,000	$281,000	20% of Subtotal 2
Total Construction Cost	**$1,625,000**	**$1,688,000**	

FIGURES

Figure 2-1. Vicinity map of Project area

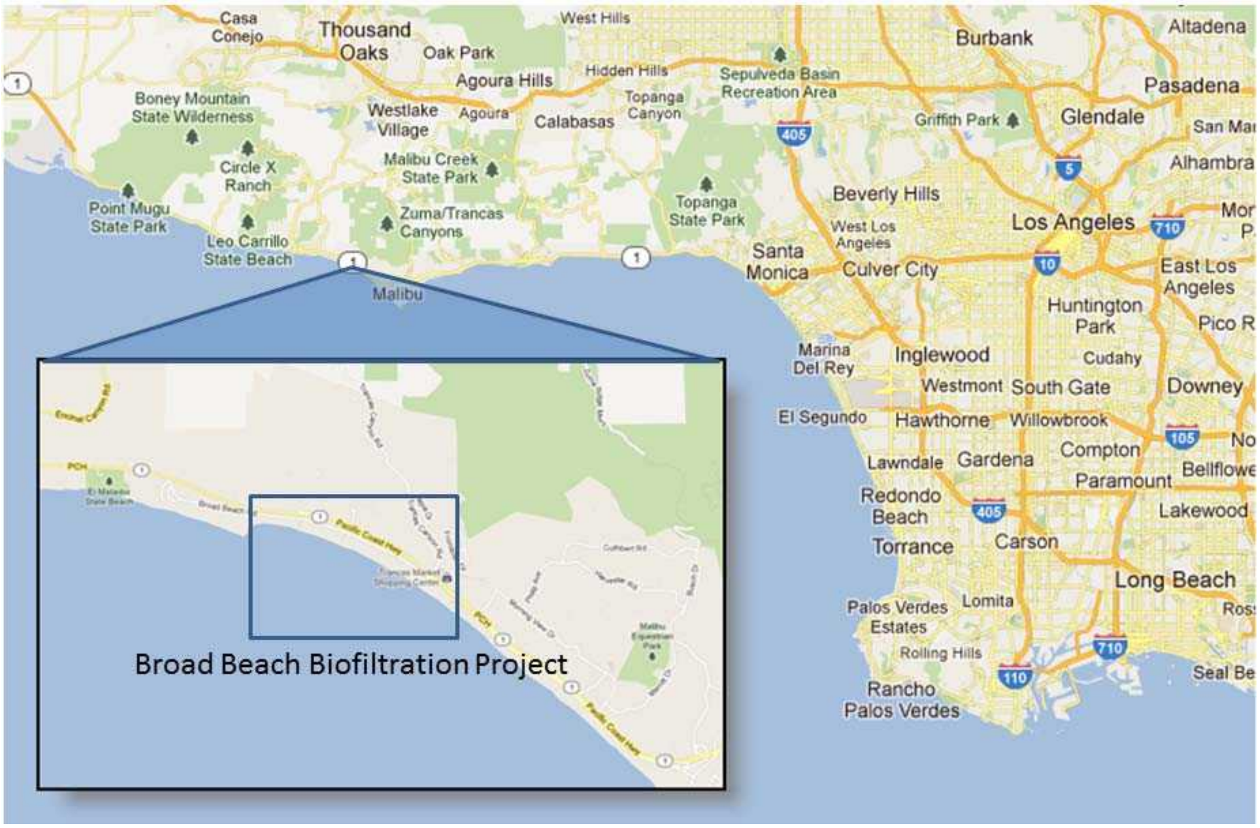


Figure 2-2. Location map of Project area

RB-AR 7586

Figure 2-3. Private irrigation system contributing to dry-weather runoff

Figure 2-4. Private irrigation piping in storm drain

Figure 2-5. Unpaved parking strip with potted plants

Figure 2-6. Cast in place concrete retaining wall with parking apron

Figure 2-7. Privately constructed waste concrete hardscape

Figure 2-8. Brick retaining wall

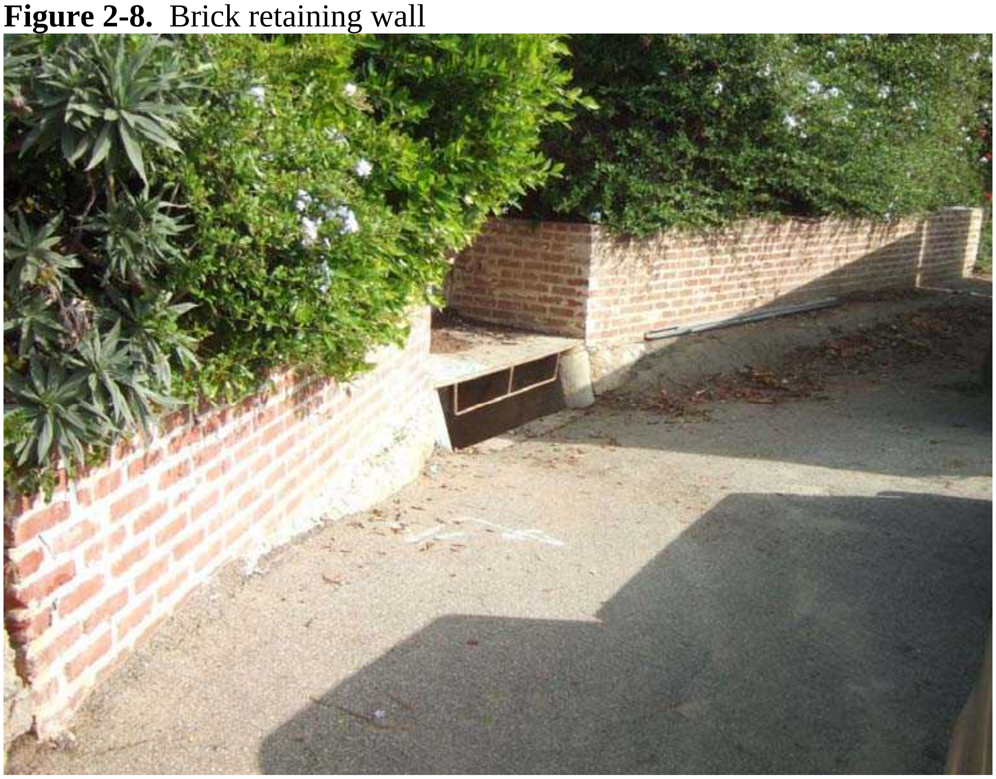
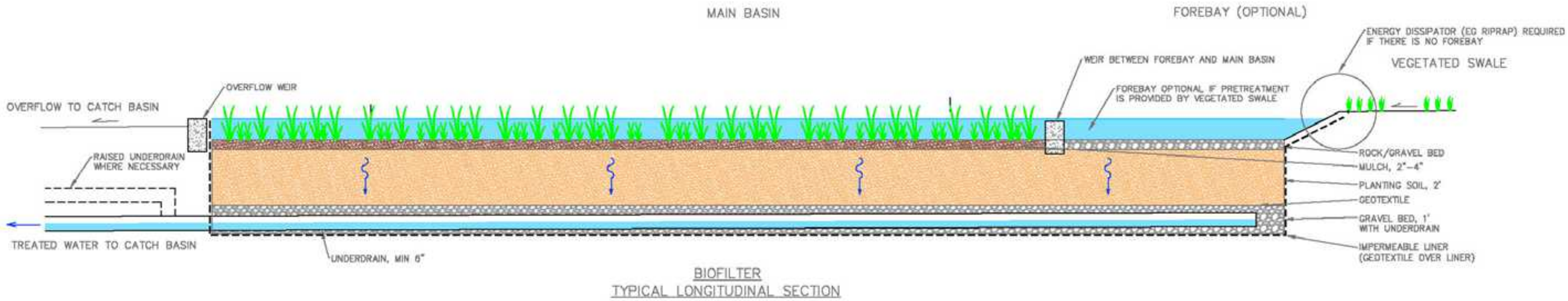
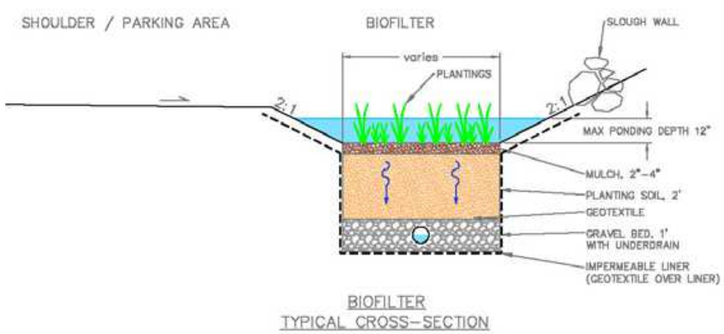


Figure 2-9. Treated wood retaining wall

Figure 6-1. Typical biofilter cross-sections and details





DETAILS ARE NOT TO SCALE

Figure 6-2. Flow diagram for Alternative 1

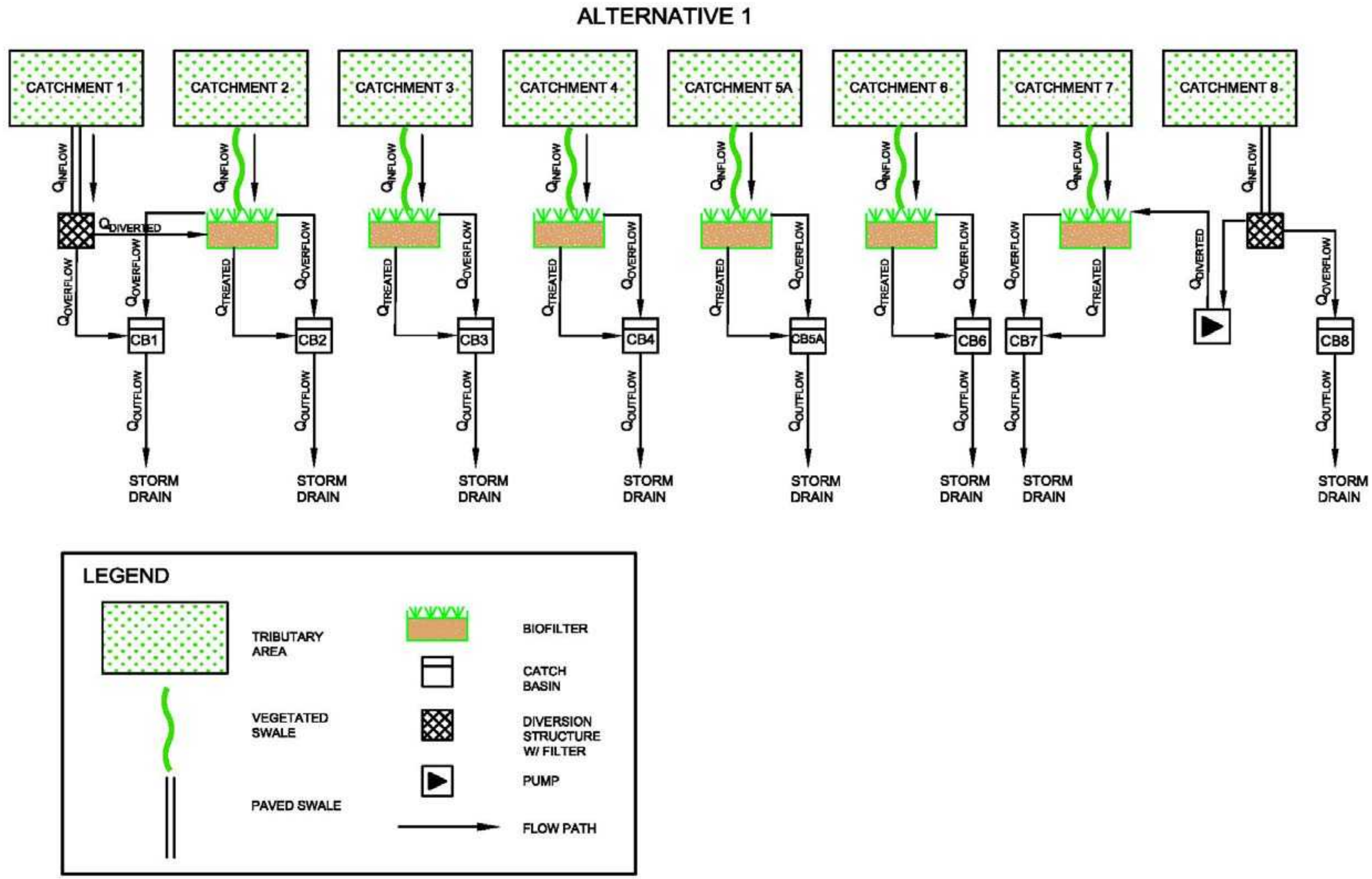
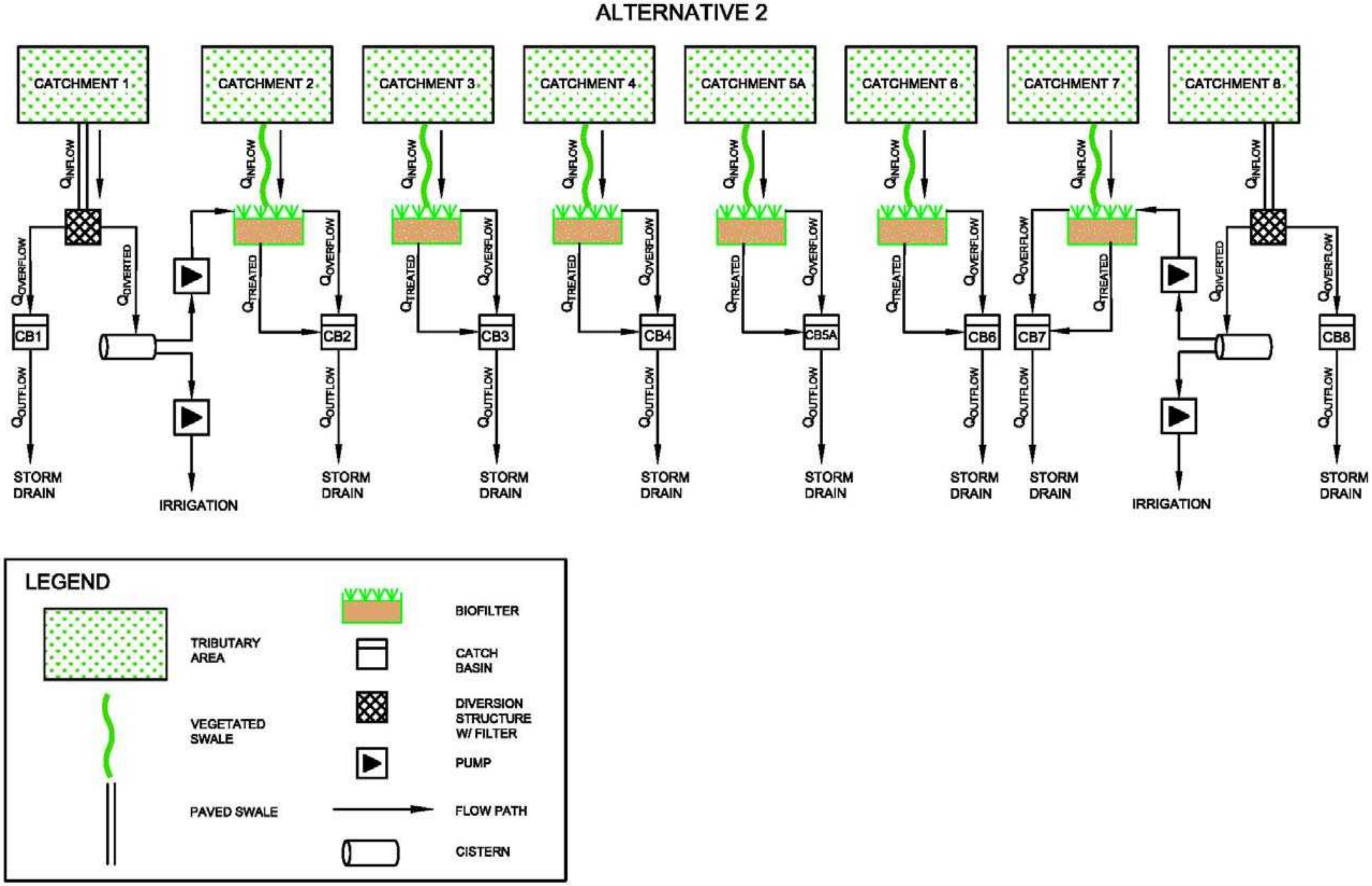
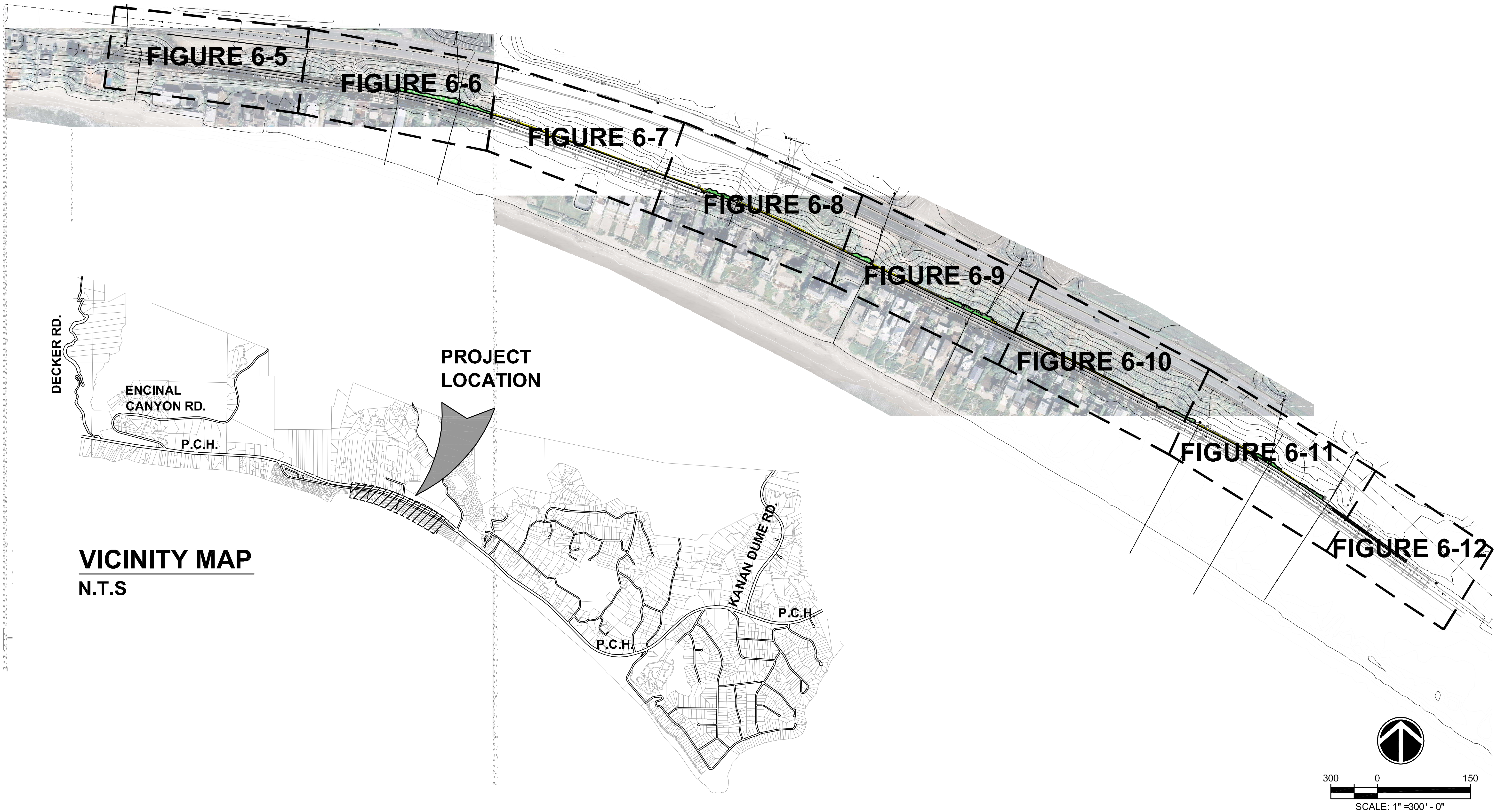


Figure 6-3. Flow diagram for Alternative 2





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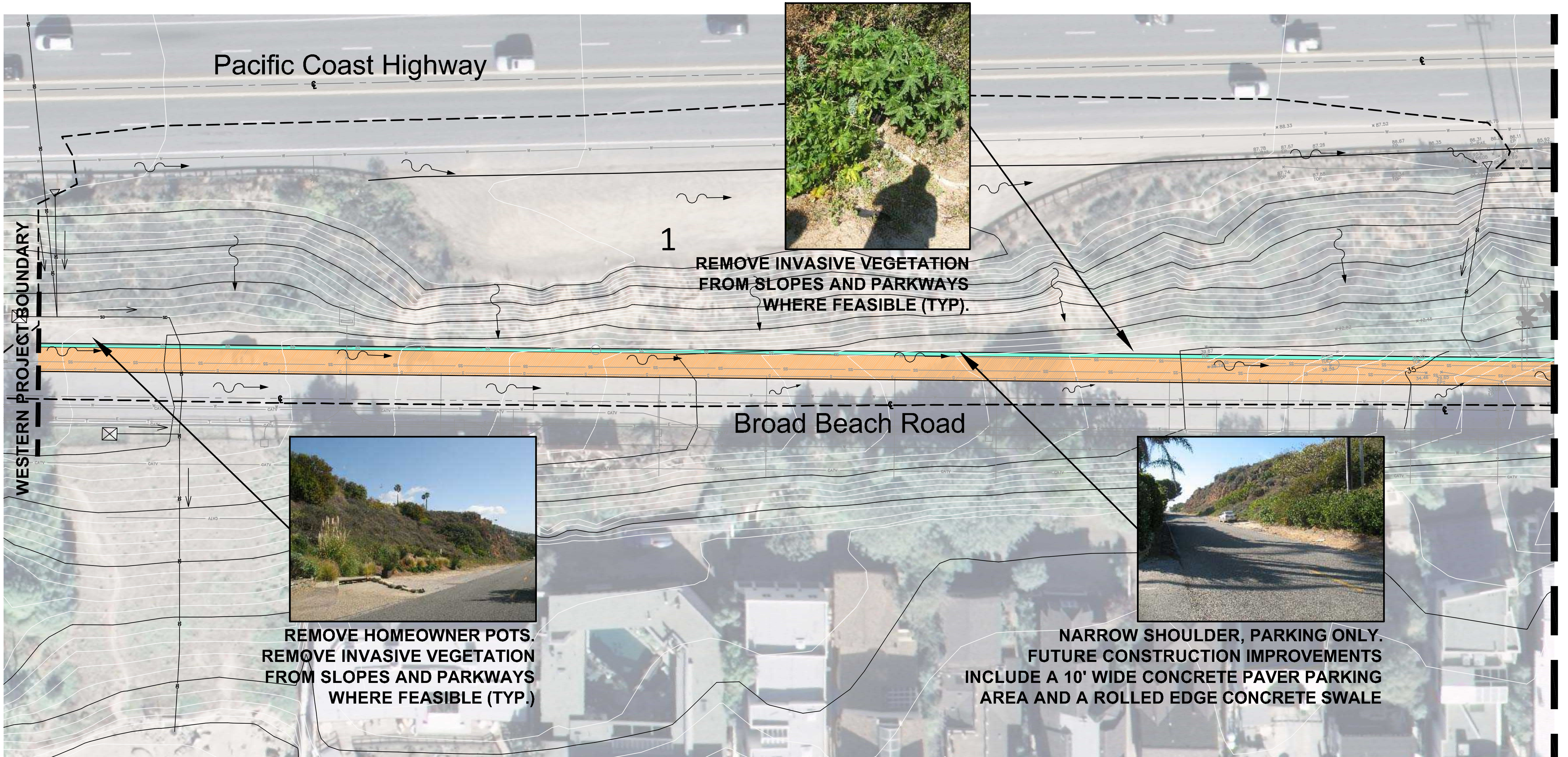
Broad Beach Road Biofiltration Project

Preliminary Landscape & Biofilter Plan

Preliminary Design - Not for Construction

RB-AR 7594

Figure 6-4



FUTURE CONSTRUCTION IMPROVEMENTS

(These areas are to be completed under separate funding at a later date)

- 10' Wide Concrete Paver Parking Area
- Rolled Edge Concrete Swale
- Concrete Swale

NOTE: Selective vegetation removal and site clean-up shall occur within the entire project boundary as part of this construction scope-of-work and budget.

20 0 40

SCALE: 1" = 40' - 0"

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Figure 6-5

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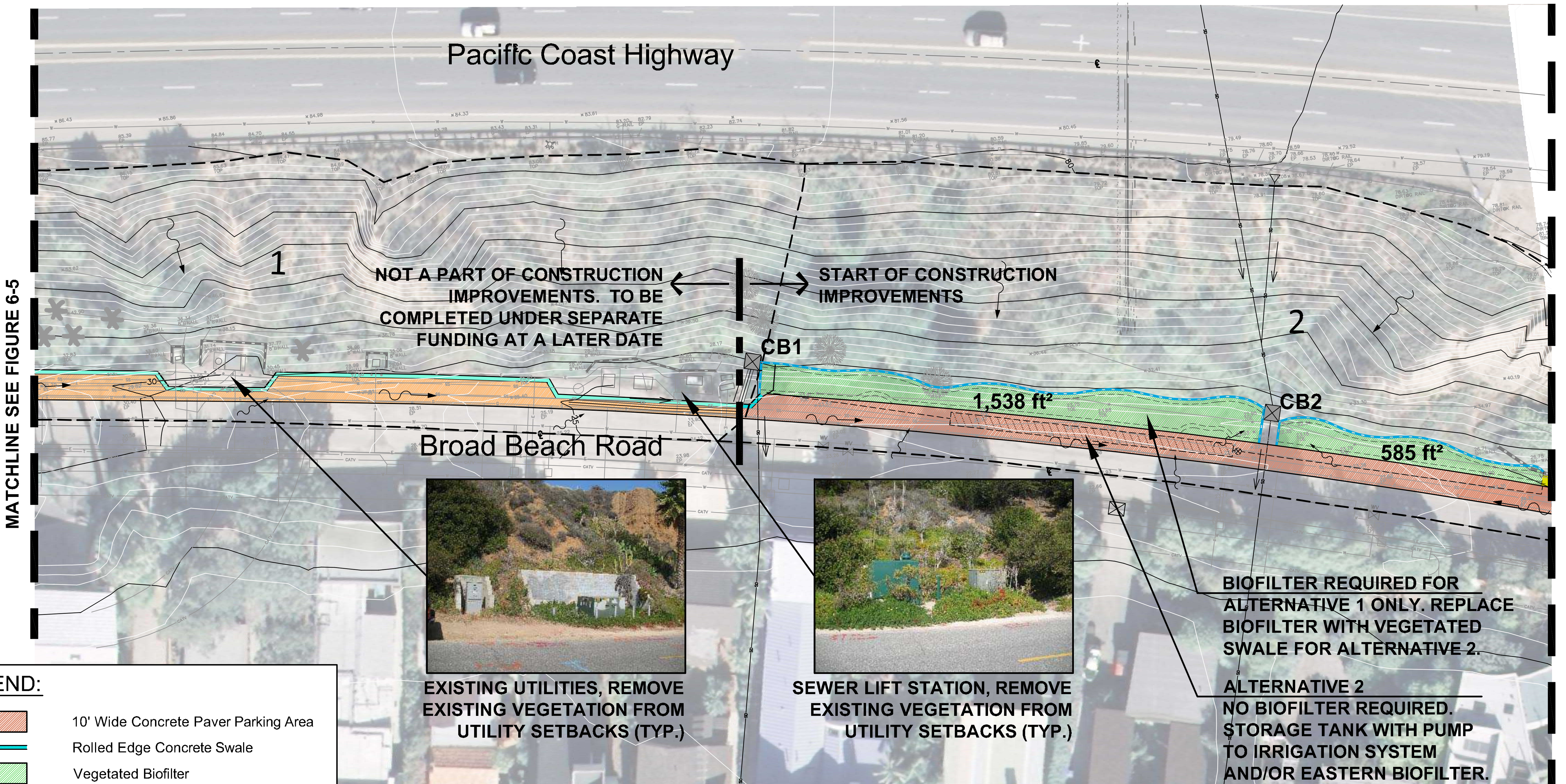

LEGEND:

- 10' Wide Concrete Paver Parking Area
- Rolled Edge Concrete Swale
- Vegetated Biofilter
- Vegetated Swale
- Alternative 2 Storage Tank
- Wall
- Catchment Area Boundary
- Existing Catch Basin

FUTURE CONSTRUCTION IMPROVEMENTS

(These areas are to be completed under separate funding at a later date)

- 10' Wide Concrete Paver Parking Area
- Rolled Edge Concrete Swale
- Concrete Swale

NOTE: Selective vegetation removal and site clean-up shall occur within the entire project boundary as part of this construction scope-of-work and budget.

20 0 40
SCALE: 1" = 40' - 0"

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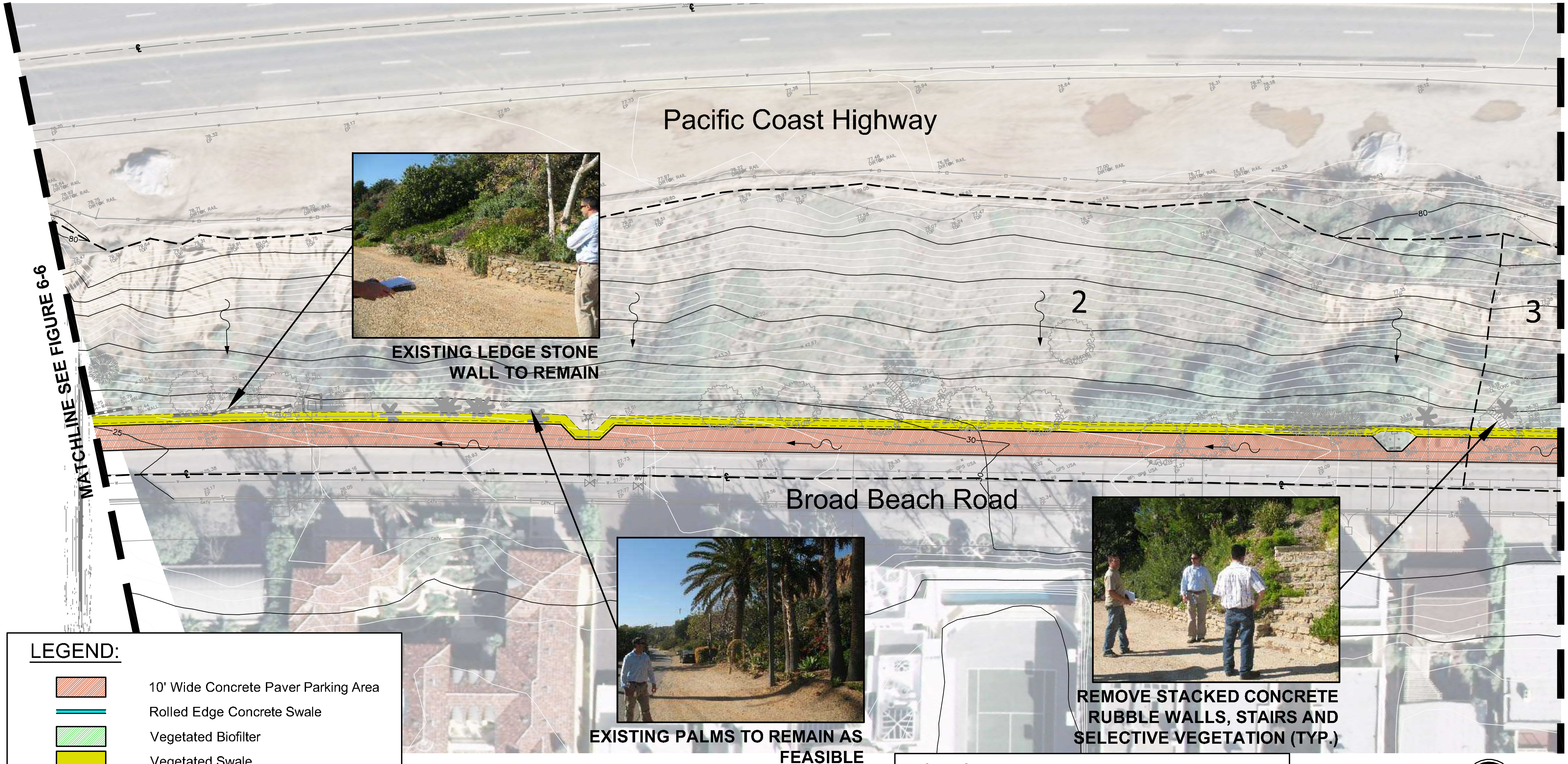
Figure 6-6

RB-AR 7596



NOTE: Selective vegetation removal and site clean-up shall occur within the entire project boundary as part of this construction scope-of-work and budget.

20 0 40
SCALE: 1" = 40' - 0"

LEGEND:

	10' Wide Concrete Paver Parking Area
	Rolled Edge Concrete Swale
	Vegetated Biofilter
	Vegetated Swale
	Alternative 2 Storage Tank
	Wall
	Catchment Area Boundary
	Existing Catch Basin

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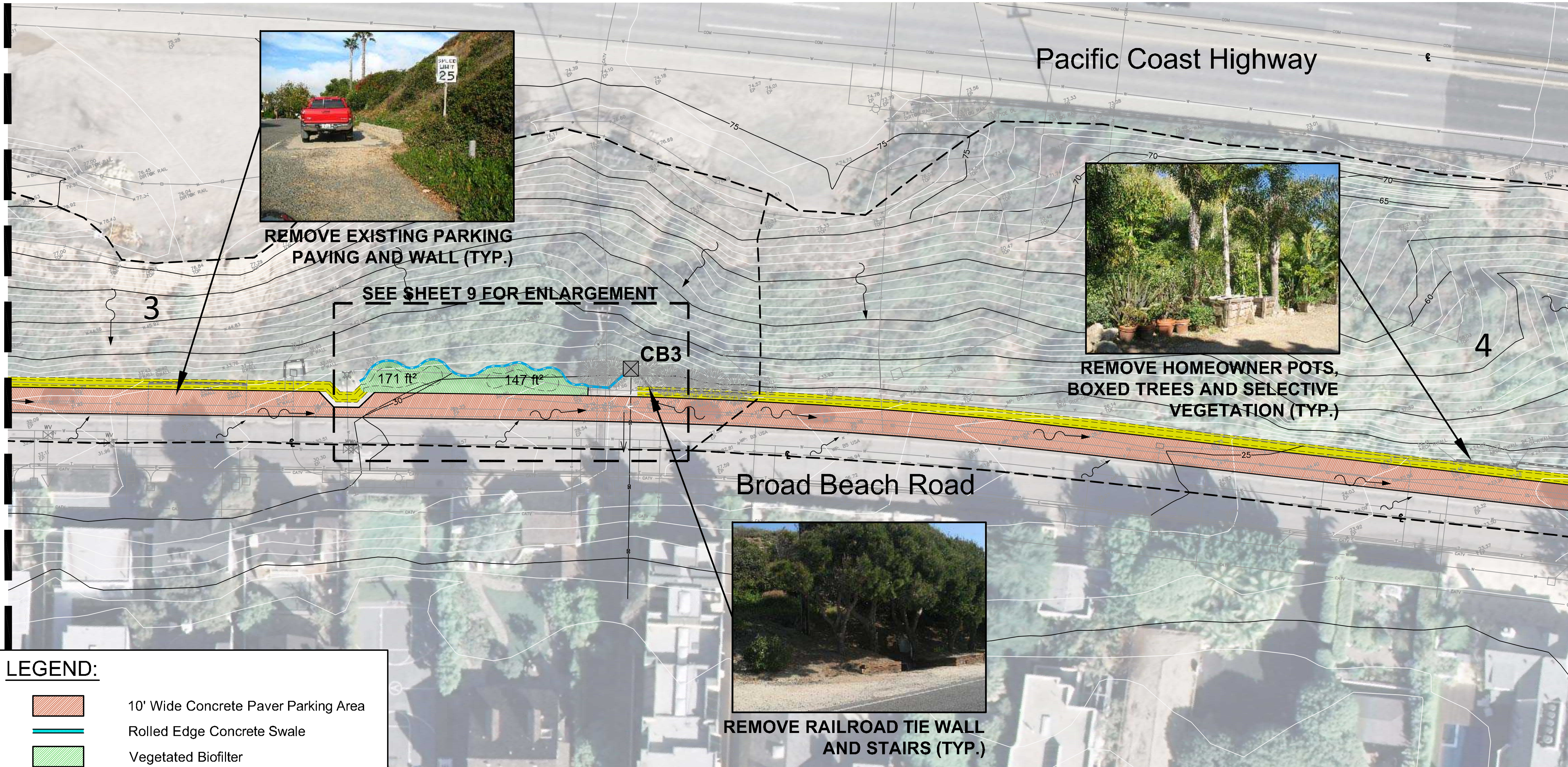
Figure 6-7



LEGEND:

	10' Wide Concrete Paver Parking Area
	Rolled Edge Concrete Swale
	Vegetated Biofilter
	Vegetated Swale
	Alternative 2 Storage Tank
	Wall
	Catchment Area Boundary
	Existing Catch Basin

NOTE: Selective vegetation removal and site clean-up shall occur within the entire project boundary as part of this construction scope-of-work and budget.

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SCALE: 1" = 40' - 0"

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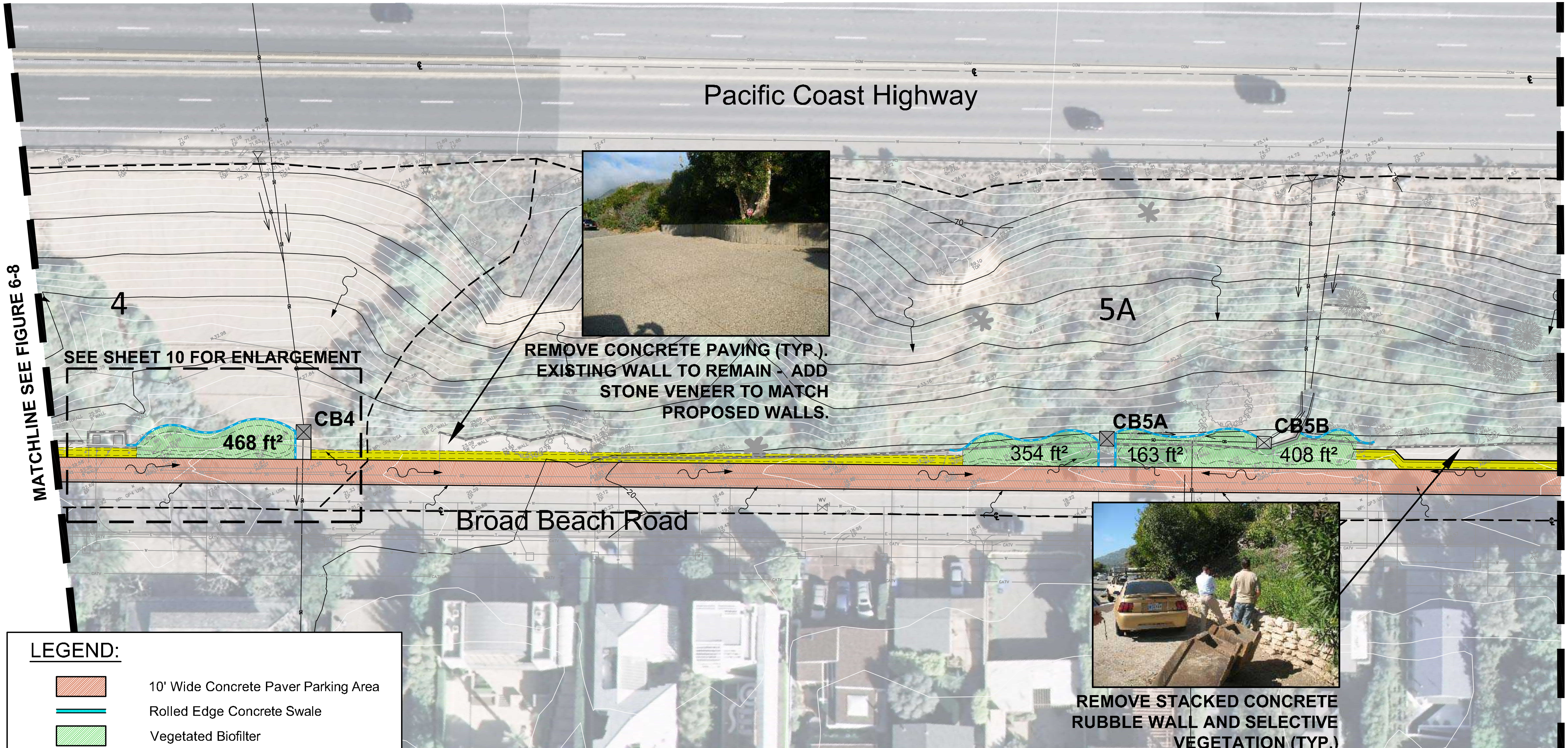
Figure 6-8



LEGEND:

(red hatch)	10' Wide Concrete Paver Parking Area
(cyan line)	Rolled Edge Concrete Swale
(green hatch)	Vegetated Biofilter
(yellow fill)	Vegetated Swale
(diagonal hatch)	Alternative 2 Storage Tank
(dashed blue line)	Wall
(dashed black line)	Catchment Area Boundary
(boxed X)	Existing Catch Basin

NOTE: Selective vegetation removal and site clean-up shall occur within the entire project boundary as part of this construction scope-of-work and budget.

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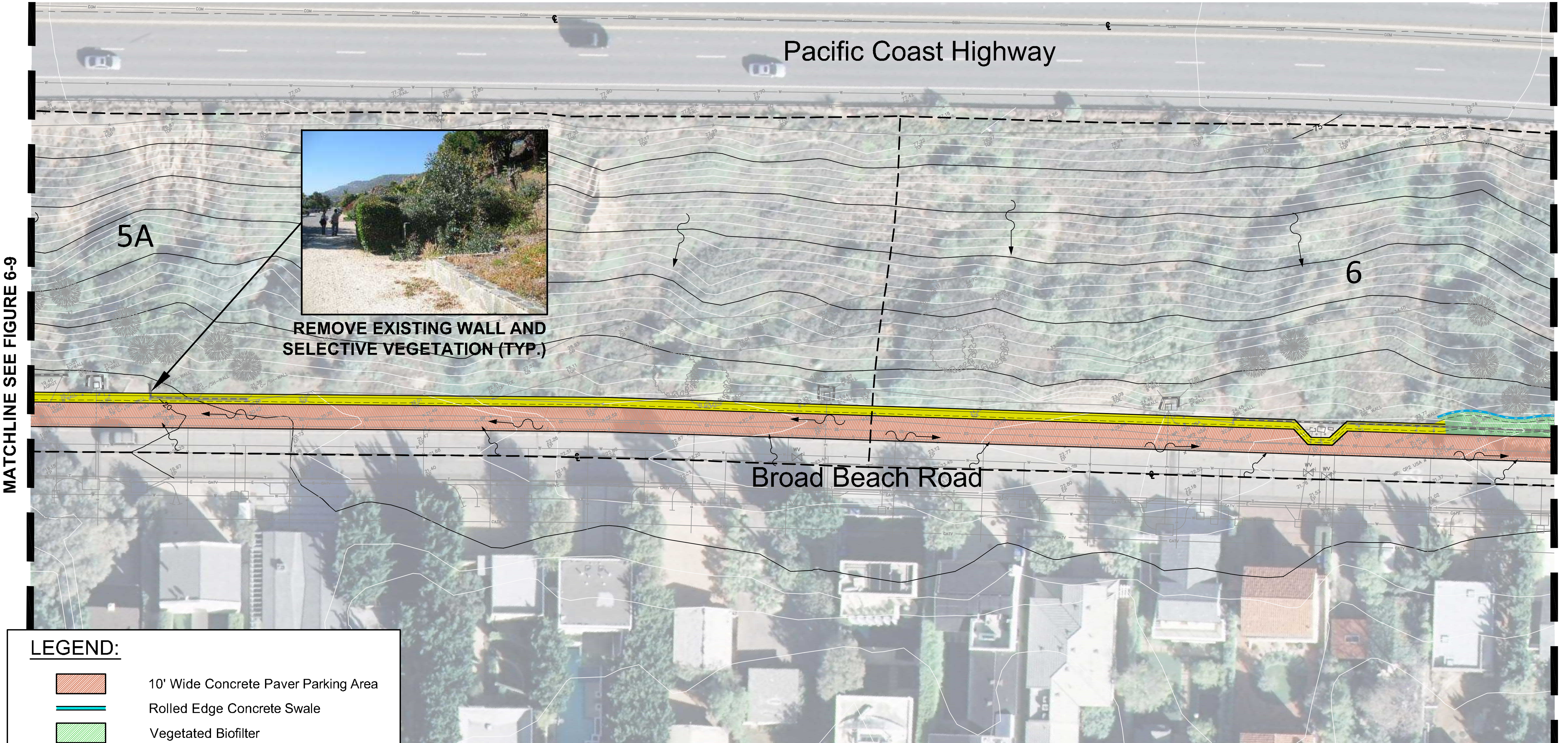
Figure 6-9



LEGEND:

- 10' Wide Concrete Paver Parking Area
- Rolled Edge Concrete Swale
- Vegetated Biofilter
- Vegetated Swale
- Alternative 2 Storage Tank
- Wall
- Catchment Area Boundary
- Existing Catch Basin

NOTE: Selective vegetation removal and site clean-up shall occur within the entire project boundary as part of this construction scope-of-work and budget.

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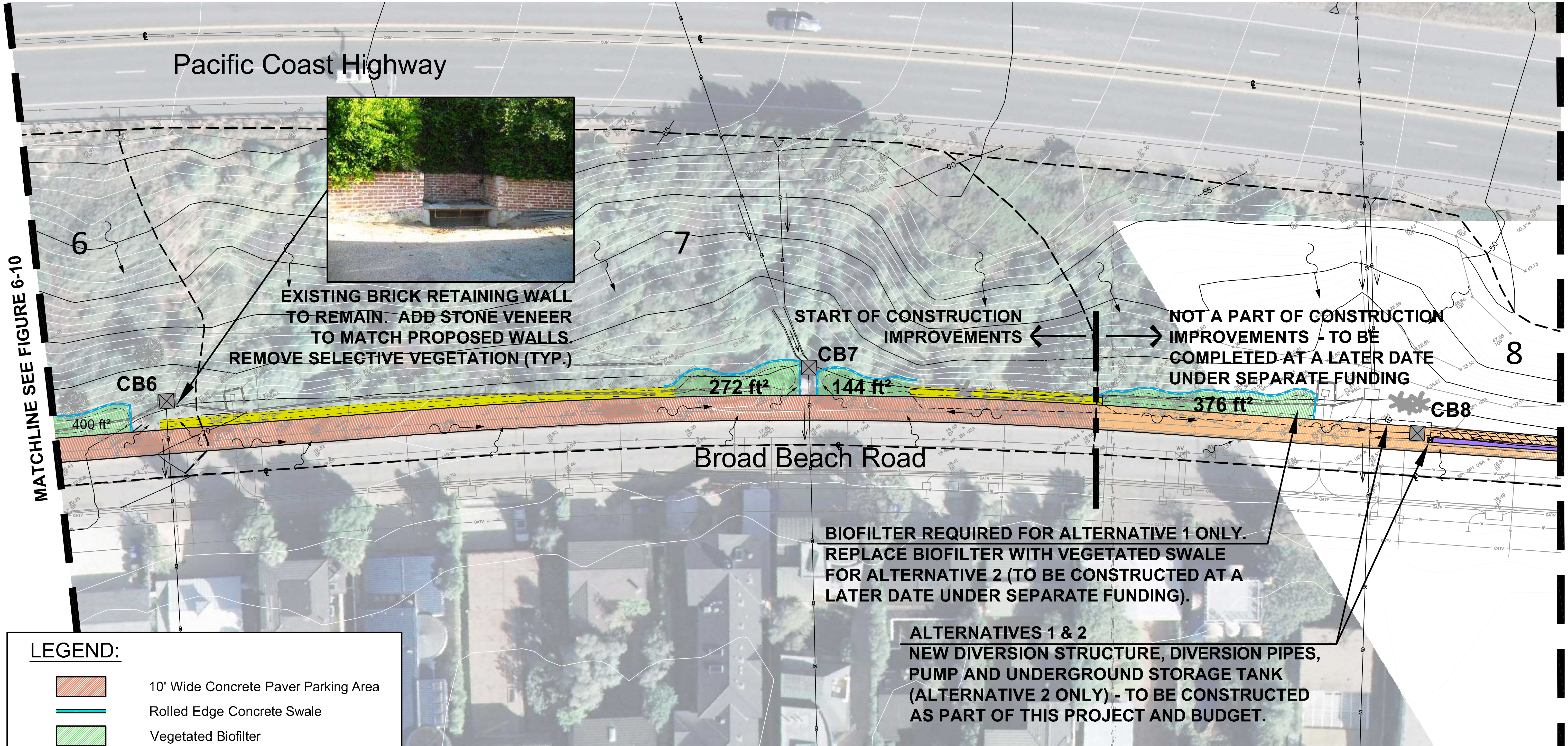
Figure 6-10



LEGEND:

- 10' Wide Concrete Paver Parking Area
- Rolled Edge Concrete Swale
- Vegetated Biofilter
- Vegetated Swale
- Alternative 2 Storage Tank
- Wall
- Catchment Area Boundary
- Existing Catch Basin

FUTURE CONSTRUCTION IMPROVEMENTS

(These areas are to be completed under separate funding at a later date)

- 10' Wide Concrete Paver Parking Area
- Rolled Edge Concrete Swale
- Concrete Swale

NOTE: Selective vegetation removal and site clean-up shall occur within the entire project boundary as part of this construction scope-of-work and budget.

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Preliminary Landscape & Biofilter Plan

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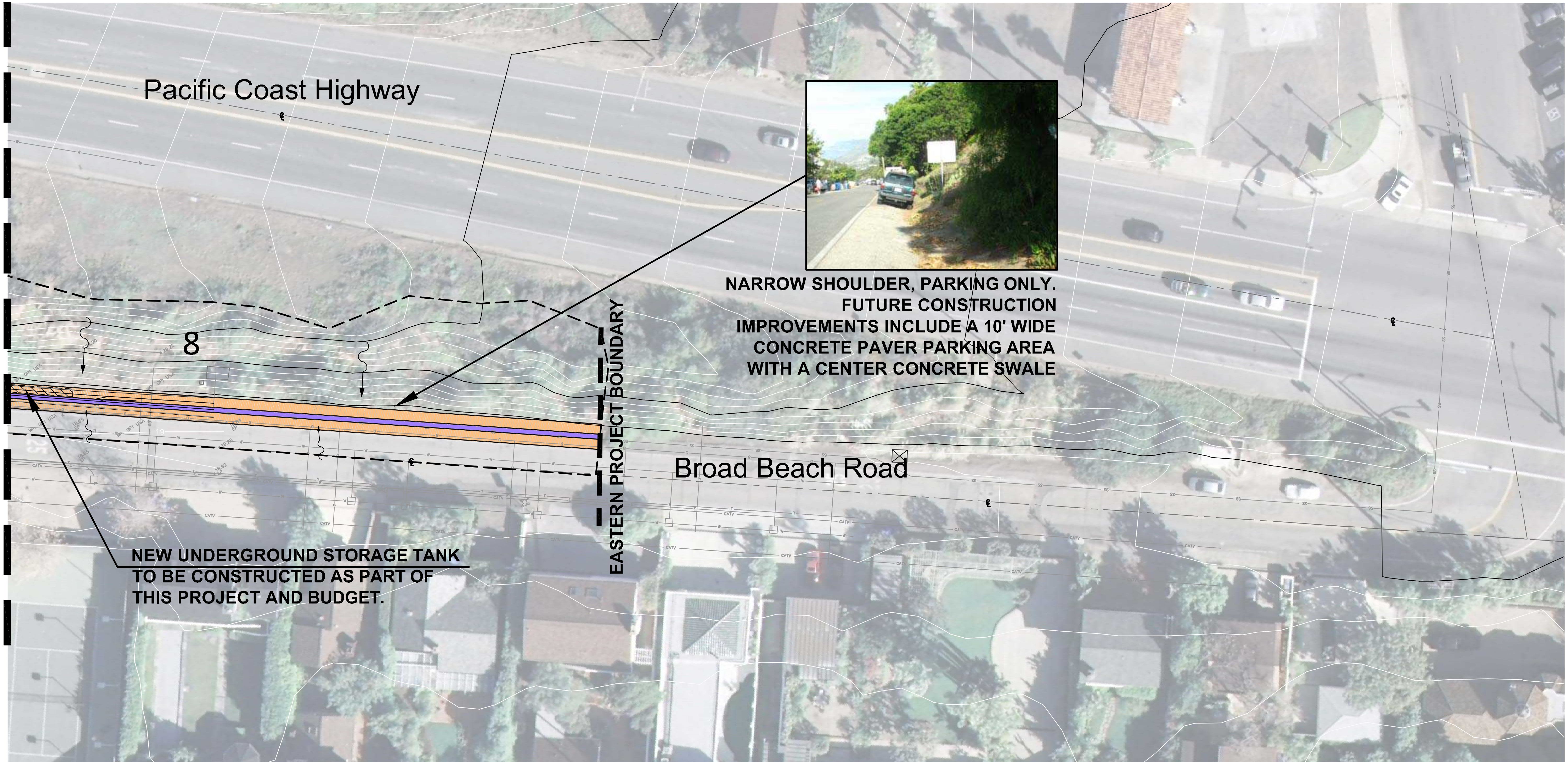
Figure 6-11



FUTURE CONSTRUCTION IMPROVEMENTS

(These areas are to be completed under separate funding at a later date)

- 10' Wide Concrete Paver Parking Area
- Rolled Edge Concrete Swale
- Concrete Swale

NOTE: Selective vegetation removal and site clean-up shall occur within the entire project boundary as part of this construction scope-of-work and budget.

20 0 40

SCALE: 1" = 40' - 0"

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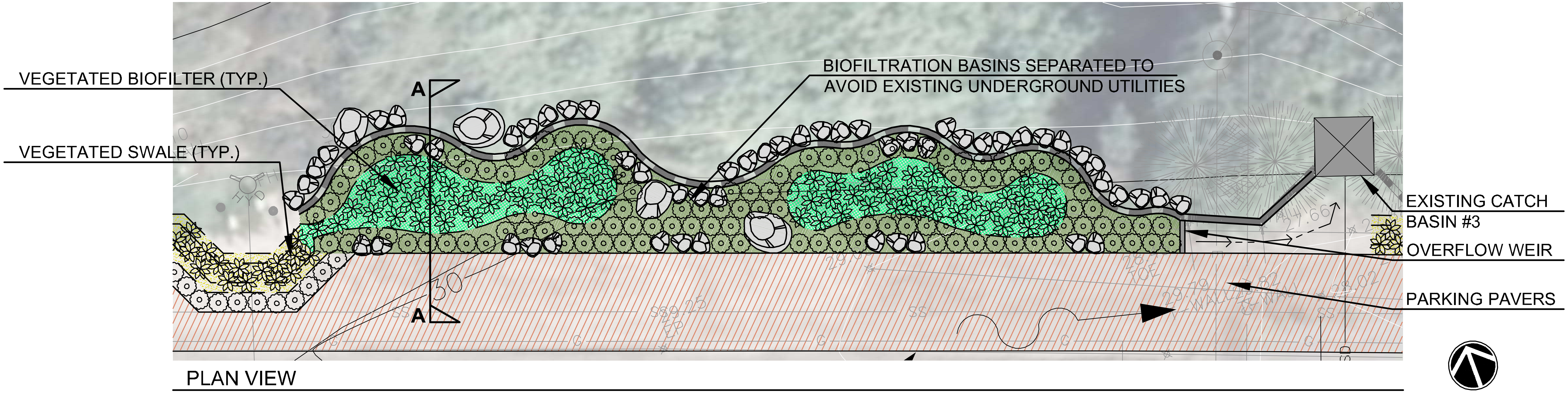
Preliminary Landscape & Biofilter Plan

Preliminary Design - Not for Construction

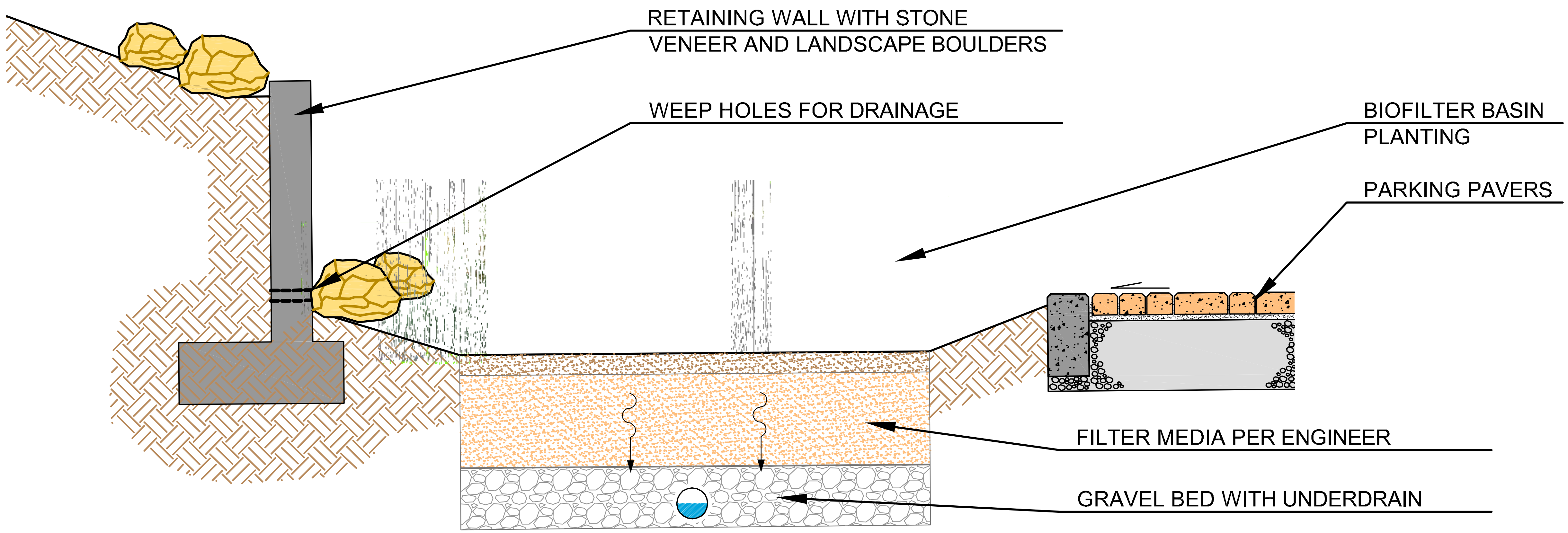
Figure 6-12

RB-AR 7602



PLAN VIEW

SCALE: 1" = 10'-0"



SECTION A-A

1/2" = 1'-0"

L. Newman Design Group, Inc.

LNDG JOB # 2341-01

Geosyntec consultants

engineers | scientists | innovators

Client:

City of Malibu

DEPARTMENT OF PUBLIC WORKS
23825 STUART RANCH ROAD
MALIBU, CA 90265
PHONE: 310.456.2489

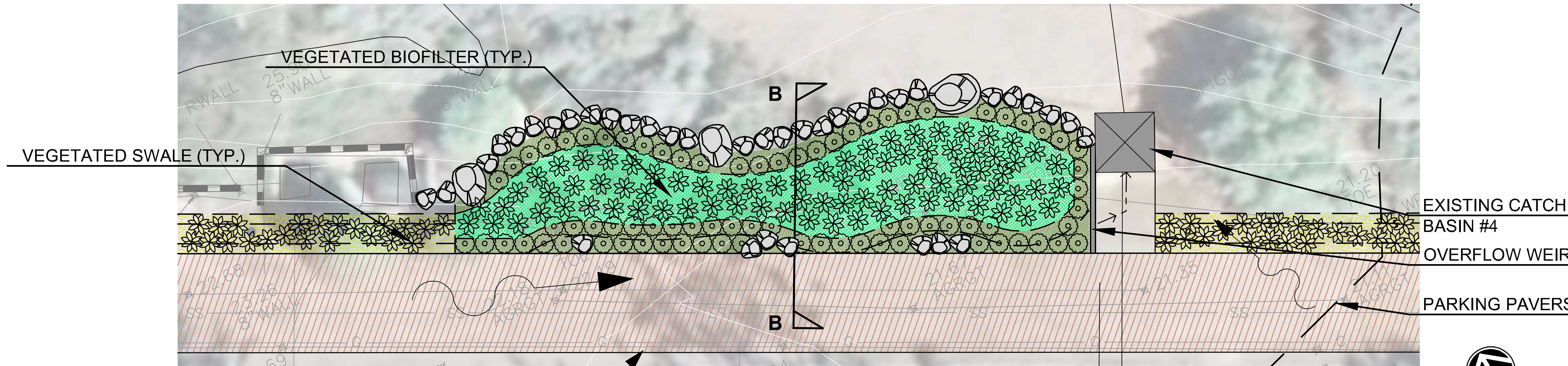
Broad Beach Road Biofiltration Project

Preliminary Landscape & Biofilter Plan

Preliminary Design - Not for Construction

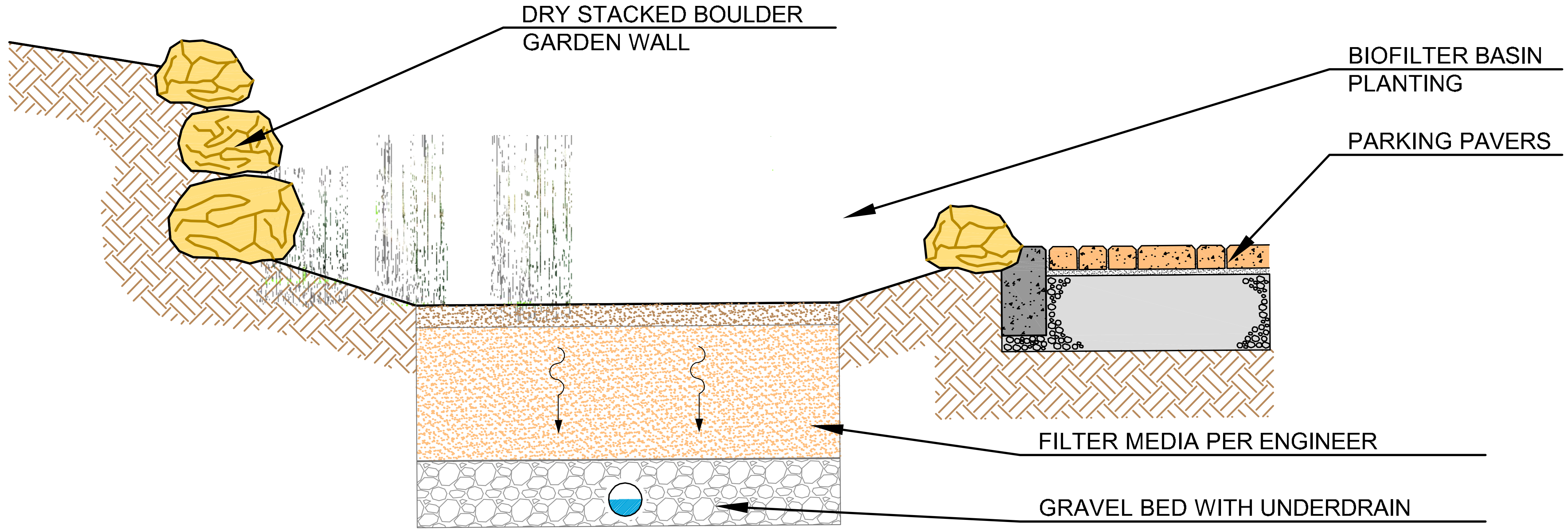
Figure 6-13

RB-AR 7603



PLAN VIEW

SCALE: 1" = 10'-0"



SECTION B-B

1/2" = 1'-0"

L. Newman Design Group, Inc.

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Broad Beach Road Biofiltration Project

Preliminary Landscape & Biofilter Plan

Preliminary Design - Not for Construction

Figure 6-14

RB-AR 7604

Santa Monica Bay Beaches Wet-Weather Bacteria Total Maximum Daily Load Implementation Plan Jurisdictional Groups 1 and 4

Submitted by

County of Los Angeles: Lead Agency, Jurisdiction 1
City of Malibu: Lead Agency, Jurisdiction 4
California Department of Transportation

August 31, 2005

NSMBJ1/4
Bacteria TMDL Implementation Plan

RB-AR 7605

Santa Monica Bay Beaches Wet-Weather Bacteria Total Maximum Daily Load Implementation Plan Jurisdictional Groups 1 and 4

Submitted by

County of Los Angeles: Lead Agency, Jurisdiction 1
City of Malibu: Lead Agency, Jurisdiction 4
California Department of Transportation

August 31, 2005

Prepared by

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GeoSyntec Project LA0101 Phase 1

NSMBJ1/4
Bacteria TMDL Implementation Plan

RB-AR 7606

Table of Contents

Executive Summary

ES.1. TMDL Summary

The North Santa Monica Bay Jurisdictional Groups 1 and 4 Wet-Weather Bacteria Total Maximum Daily Load (TMDL) Implementation Plan (Implementation Plan) has been prepared in response to Resolution No. 2002-022 of the California Regional Water Quality Control Board—Los Angeles Region (Regional Board) amending the Water Quality Control Plan for the Los Angeles Region to incorporate Implementation Provisions for the Region's Bacteria Objectives and to incorporate a Wet-Weather TMDL for Bacteria at Santa Monica Bay Beaches.

The TMDL features a reference system/anti-degradation approach, utilizing as its reference watershed the Arroyo Sequit subwatershed. The purpose of utilizing this approach is to ensure that bacteriological water quality is at least as good as that of a reference site and that no degradation of existing bacteriological water quality is permitted where existing bacteriological water quality is better than that of a reference site.

Jurisdictional Group 1 (J1) area is primarily comprised of the County of Los Angeles (the County), City of Malibu, and California Department of Transportation (Caltrans). Other agencies encompassed by the jurisdictional boundaries include the County of Ventura, the Cities of Calabasas and Los Angeles, and the State of California Department of Parks and Recreation. The County is the primary jurisdictional agency for J1. Jurisdictional Group 4 (J4) includes the City of Malibu (primary jurisdiction), County of Los Angeles, and Caltrans, and consists only of Nicholas subwatershed. Subwatersheds comprising Jurisdictional Groups 1 and 4 (J1/4) are shown in Figure ES.1.

Compliance measures include a number of activities that in combination would result in reducing the number of days in which water quality objectives are exceeded to less than or equal to that of the reference watershed. The TMDL stipulated a threshold number of exceedance days based on daily monitoring activities. In J1 the number of exceedance days is seventeen; in J4, the number of exceedance days is fifteen. It is recognized, however, that while the TMDL (and many of the related analyses) are based on daily criteria, because the Coordinated Shoreline Monitoring Plan (CSMP) describes many locations where weekly monitoring will occur, the number of exceedances will be pro-rated accordingly.

Non exceedance is defined as meeting water quality objectives. These objectives are, for rolling 30-day Geometric Mean Limits[1].

a. Total coliform density < 1,000/100 ml.
b. Fecal coliform density < 200/100 ml.
c. Enterococcus density < 35/100 ml.

1) The calculation of the 30-day geometric mean utilizing weekly sampling will require further discussion, should exceptions to the definitions described in section 1.1.4 be considered. It is assumed that this calculation will be reported as part of the Coordinated Shoreline Monitoring Plan Implementation.

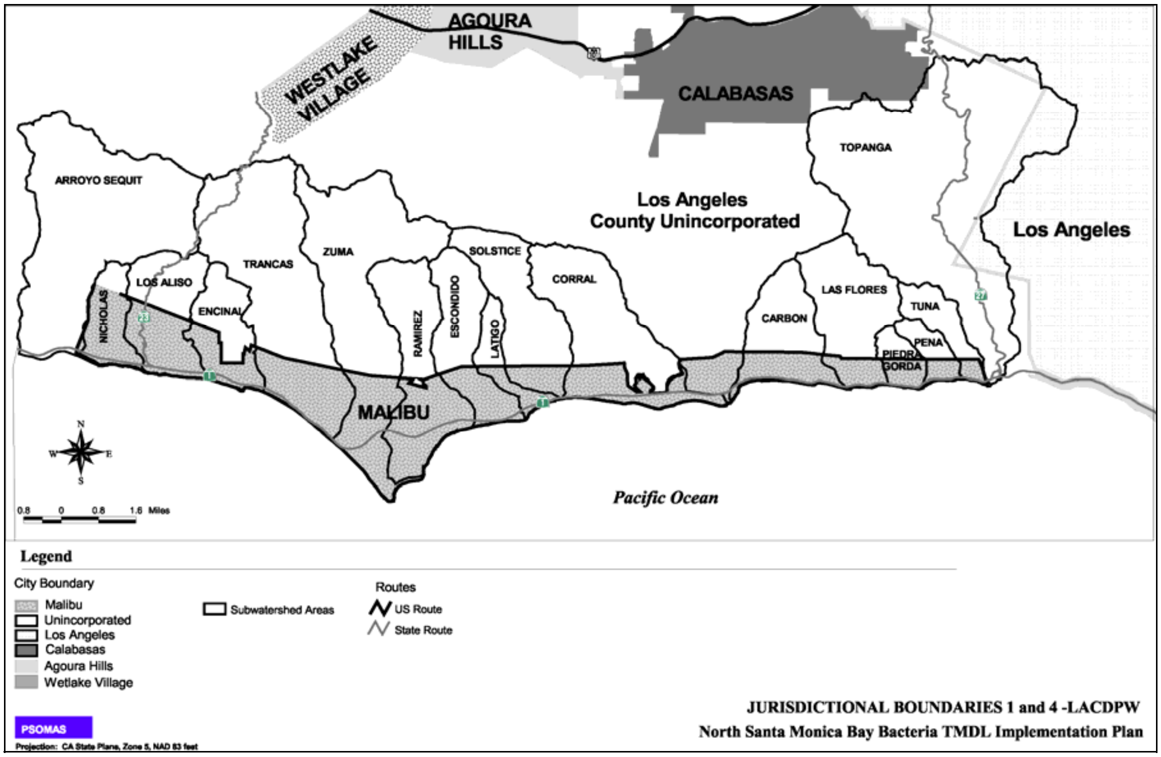


Figure ES.1 Jurisdictional Areas

For Single Sample Limits:

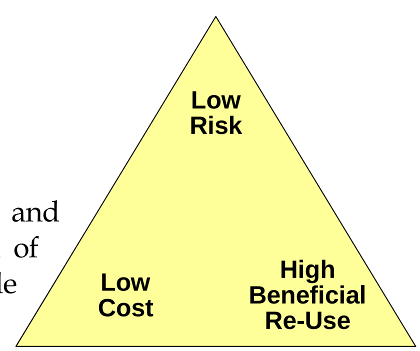
a. Total coliform density < 10,000/100 ml.
b. Fecal coliform density < 400/100 ml.
c. Enterococcus density < 104/100 ml.
d. Total coliform density < 1,000/100 ml, if the ratio of fecal-to-total coliform exceeds 0.1.

Given the proposed integrated approach presented in this plan, the schedule and target deadlines for meeting these compliance criteria are:

- Final Implementation Plan July 2005
- Re-evaluation: 2007
- 10% reduction (6 years): 2010
- 25% reduction (10 years): 2013
- 50% reduction (15 years): 2017
- Final targets (18 years): 2021

ES.2. Philosophical Approach

The Implementation Plan presents an iterative, adaptive, and integrated approach. This approach requires consideration of multiple beneficial uses and the targeting of multiple pollutants. Philosophically, an implementation compliance triangle was developed to illustrate the balance of low risk,



"Compliance Triangle"

low cost, and high beneficial reuse to determine site specific implementation.

The following activities were conducted during the development of the Implementation Plan:

- Estimating and Establishing Baseline Conditions
- Developing a Menu of Potential Activities
- Identifying Implementation Considerations
- Selecting and Prioritizing
- Planning and Implementation during the next 18 Years

ES.3. Baseline Conditions

Baseline conditions were established and estimated based on a number of evaluations, which included the following:

ES.3.1 Source Prioritization

This effort consisted of reviewing available monitoring data, land uses, soil conditions, slopes, studies and technical reports in order to target potential activities for this plan. Conclusions of this effort were that:

- There was no "smoking gun," and it is difficult to pinpoint specific sources;
- High loads/exceedances are linked to urbanization and proximity to shoreline, and
- Final subwatershed prioritization should consider beach use.

ES.3.2 Hydrogeology and Aquifers

The objective was to establish infiltration and groundwater recharge potential and the scale at which this was appropriate. Some key findings were:

- A review of geology and aquifers found no groundwater basins for recharge potential
- Soils were generally poorly draining and poorly suited for large scale infiltration
- Groundwater levels in those areas where soils were not poorly draining were high, and
- Opportunities tended to be local (on site) and less feasible on a large, regional scale.

ES.3.3 Surface Water Hydrology

A hydrologic analysis was conducted to support the potential incorporation of structural measures in TMDL implementation[2]. The purpose of the analyses was to estimate, on a macro-scale, preliminary potential volumes of water (within each subwatershed) that

2) The TMDL stipulated a threshold number of exceedance days based on daily monitoring activities. In Jurisdiction 1 the number of days is 17; in Jurisdiction 4, the number of days is 15. It is recognized however, that while the TMDL (and many of the related analyses) are based on daily criteria, because the Coordinated Shoreline Monitoring Plan describes many locations where weekly monitoring will occur, the number of exceedances will be pro-rated accordingly.

would theoretically need to be captured and treated to meet TMDL requirements. This planning-level analysis successfully resolved the discontinuity between exceedance-day TMDL criteria and conventional design-storm analytical techniques using a methodology that examined daily rainfall volumes over the historical period of record. This methodology involved 1) ranking daily rainfall volumes per year, 2) establishing the "critical" rainfall day each year, and 3) establishing a 90th percentile that corresponded to the TMDL criteria based on a review of the period of record. It should be noted that because daily precipitation values were used and because the TMDL stipulated a 17 -day exceedance criteria, the hydrologic analyses considered daily flow rates. For implementation purposes, the actual criteria will need to be adjusted to correspond to compliance monitoring frequencies.

Rainfall data sets were then converted to runoff volume estimates for each subwatershed using precipitation values, zoned land uses (and percentages of the subwatersheds that are impervious), soil types, and runoff coefficients developed by the County. To address the potential range of volumes, the analysis considered reduction factors (established in adjacent watersheds for similar conditions) in estimating ranges of target treatment volumes[3].

ES.3.4 Water Supply, Reuse, and Recreational Opportunities

Water supply and reuse was evaluated on a regional basis. Potential demand was based on land use and likely water consumption activities. Regional groundwater recharge potential was reevaluated, and potential recreational uses were identified. It was established that local measures such as on-site cisterns and on-site infiltration would be more appropriate. Reuse opportunities on recreational land were reviewed by examining open lands, trails, and municipal parks. Proximity to potential reuse sources and slope stability issues related to infiltration potential were also considered.

ES.4. Potential Activities

The suite of potential activities was categorized into non-structural (often called institutional or programmatic) measures and structural (often called treatment) measures.

ES.4.1 Non-Structural

Many of the nonstructural programs built upon existing Municipal Permit programs. In particular, bacteria-specific activities were identified for these efforts and included:

- Public Information and Participation
- Industrial/Commercial
- Development Planning

3) The proposed method is restricted to development of this Plan and reductions will be confirmed and developed further with future studies conducted as part of this Plan.

- Development Construction
- Public Agency Activities

ES.4.2 Structural

Structural measures included on-site and regional solutions. These solutions stipulated bacteria-specific treatment requirements, which often require pretreatment, as well as alternative wastewater treatment.

On-site structural solutions included:

- Residential cisterns
- On-site storage and reuse
- Small scale infiltration
- Porous pavements
- Grass/gravel pavers
- Retention grading
- Bioretention
- On-site wastewater alternatives

Regional (and subregional) solutions all require pre-treatment, and, as such, address multiple pollutants. Structural options included:

- Traditional wastewater treatment for stormwater
- Small packaged system
- Filtration
- Advanced oxidation
- Peracetic Acids
- Subsurface Flow Constructed Wetlands

ES.4.3 Other Implementation Considerations

Other considerations for implementation included site availability and permitting requirements associated with treatment. The ideal candidate sites were determined as publicly owned facilities, particularly given the cost of land in the J1/4 area. Regional solutions require more land for operational storage, especially where natural treatments are proposed.

Regulatory considerations include local regulations such as planning and zoning (including the City of Malibu Local Coastal Program (LCP)), Building Code, Plumbing Codes Fire Prevention, Urban Runoff/Stormwater Management. State and Federal regulations may also be important depending on the facility. These can be location specific (e.g., U.S. Army Corps of Engineers, California Department of Fish and Game, Regional Board permits and certifications), Coastal Zone Requirements (LCP), Resource Protection Agencies (U.S. Fish and Wildlife Service, National Marine Fisheries), National Pollutant Discharge Elimination System (NPDES) Waste Discharge Requirements, Department of Health Services (particularly for reuse activities) and Ocean Plan/Areas of Special Biological Significance(ASBS) considerations.

ES.5. Selecting and Prioritizing

The general methodology for development, evaluation, and prioritization of activities was developed in response to the following questions:

- Where do we have the most significant problems?
- What is our tolerance for uncertainty and does this tolerance depend on location?
- Where can we leverage solutions to achieve multiple benefits?
- Where do we have a higher probability of success?
- What do we want to do now versus waiting until better information and technologies become available?

In order to balance uncertainty, potential costs, and potential benefits in a manner consistent with an integrated approach, the "compliance triangle" model was developed. This philosophical model is an evaluation tool that helps balance costs, risks, and beneficial reuses. The following table delineates typical activities for non-structural, on-site, and regional options.

Table ES.1 Alternatives Comparison

Alternative	Non-Structural Options	On-Site Options	Regional Options
Low Cost	Implement existing and new programs (commit + pilot)	Pilot-scale implementation of the following: • Cisterns • On-site storage and reuse • Small-scale capture and infiltration	Not included
Low Risk	Implement existing and new programs (commit + pilot)	Not included	Capture, store, treat and discharge
Beneficial Reuse	Implement existing and new programs (commit + pilot)	Full-scale implementation of the following: • Cisterns • On-site storage and reuse • Small-scale capture and infiltration	Capture, store, treat, and beneficially reuse

In order to intelligently implement activities, different levels of commitment were established for this plan. These levels were:

- "commit"—the Agencies commit to this activity

- "pilot"—the Agencies are willing to commit to a pilot study to determine whether the proposed activity the preliminary design parameters are appropriate.

- "consider" – the Agencies will consider this effort, depending on the results of committed activities.

The following table describes the implementation levels of commitment based on ease of implementation and potential effectiveness.

Table ES.2 Commit-Pilot-Consider Model

		Implementation Requirements Rating		
		Difficult	**Moderate**	**Easy**
Potential Effectiveness Rating	**High**	Pilot	Commit	Commit
	Medium	Consider	Commit	Commit
	Low	Consider	Consider	Consider

In order to prioritize subwatersheds, results of the source prioritization effort were combined with monitoring data from the TMDL-defined "critical year".

- High Priority subwatersheds: Latigo, Corral, Las Flores, Piedra Gorda, and Ramirez
- Medium Priority subwatersheds: Carbon, Los Alisos, Topanga, and Escondido
- Low Priority subwatersheds: Nicholas, Encinal, Trancas, Zuma, Solstice, Pena, and Tuna

These priorities, in conjunction with subwatershed specific characteristics and the desired risk-cost-beneficial reuse relationship, contributed to the development of a unique suite of activities for each subwatershed. Watershed priorities are shown below in Figure ES.2.

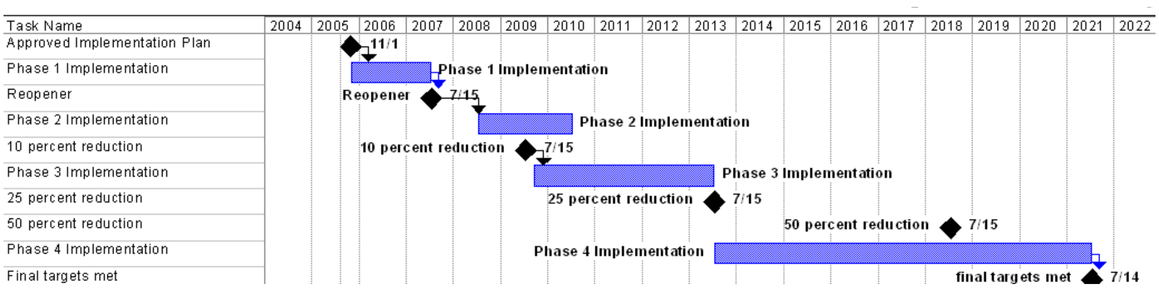
Figure ES.2 Subwatershed Priorities

ES.6. Planning and Implementation

ES.6.1 Schedule

The Implementation Plan was divided into four phases of activities. The activities consisted of implementation activities, as well as monitoring and additional studies that could be used to provide better information for future activities. To provide useful information, the additional studies will require extended development and implementation periods. Upon completion of these studies, it would be desirable to confirm, or adjust if necessary, the direction and requirements of the Implementation Plan. As such, the County and J1/4 Agencies proposed the addition of appropriately timed re-evaluation milestones. Implementation activities, suggested re-openers, and implementation milestones are illustrated below:

Santa Monica Bay Beaches Bacterial TMDL – J1/4
Implementation Plan Phasing



The general intent of what would be accomplished under each of the phases is as follows:

- Phase I – Conduct planning and initiate all committed non-structural activities and implement selected non--structural measures; initiate pre-feasibility studies for sub-regional pilot projects; develop inter-agency agreements for structural projects, initiate planning for on-site measures; initiate monitoring, additional studies, and source identification activities. The 2007 re-opener would follow Phase I. Note that Phase I is assumed to begin in November 2005, which is the basis of the proposed schedule. Should the initiation date change, the remaining implementation deadlines may change accordingly.

- Phase II – Continue implementation of committed non-structural activities; conduct non-structural pilot programs; continue planning for on-site measures; initiate planning and construction of pilot regional structural solutions; and continue and complete monitoring and source identification studies. A programmatic review is proposed to follow Phase II and is intended to leverage results not only from additional studies in these jurisdictional areas, but also advances in the technical, legal, and regulatory body of knowledge.

- Phase III – Refocus and reprioritize efforts as appropriate, and continue implementation of committed non-structural activities; implement successful piloted non-structural programs; begin implementation of on-site measures; and operate and evaluate pilot regional structural solutions.

- Phase IV – Refocus and reprioritize efforts as appropriate and continue implementation of non-structural solutions; continue or expand on-site measures; and continue, modify and/or initiate regional structural solutions.

ES.6.2 Subwatershed-Specific Activities

Activities were defined for each subwatershed. These activities included the appropriate level of non-structural, on-site structural, and regional structural activities based on subwatershed priorities and characteristics. In many cases, pilot scale implementation was proposed to establish the link of BMPs to water quality improvement, optimize design parameters, assess appropriate siting, and evaluate new technologies. These activities are summarized and presented on a subwatershed-specific basis in Section 5.

ES.6.3 Monitoring

Monitoring is a key element to both the re-evaluation of the Implementation Plan requirements and technologies after two years and for assessing the effectiveness of measures. Compliance monitoring is not, however, addressed in this plan. It is proposed that future monitoring take place during winter low flows, and winter storm flows (most critical). Six stations were proposed for future monitoring. The objective of these monitoring stations was to provide information to support future management decisions such as selection of structural and non-structural BMPs, and was not intended to be compliance-related. As such, proposed stations were not necessarily high priority watersheds, but represented watersheds where potentially useful information could be extracted. With the exception of Topanga Creek at the sandbar, all stations showed high bacteria counts (exceeding water quality standards) during the first storms of 2004-2005. The proposed stations are:

- Trancas Creek (discharges to Area of Special Biological Significance)
- Solstice Creek (potentially similar to Arroyo Sequit land usage and potential alternative reference subwatershed)
- Marie Canyon (high priority subwatershed)
- Sweetwater Creek (potential concentrated equestrian land uses)
- Topanga lagoon (sandbar and bridge)

In addition, effectiveness monitoring of structural measures per U.S. Environmental Protection Agency (EPA)/American Society of Civil Engineers (ASCE) protocols will also be incorporated in the long-term program.

ES.6.4 Additional Studies

Upon completion of the initial two years of monitoring, an evaluation will be made to determine whether microbial source tracking activities are required. Rationale for recommending such studies could include, but not be limited to, the need for further source identification; site specific, objective data development; and potential health risk assessments. This may include an evaluation of the appropriateness of the TMDL indicator constituents of concern.

Studies that would contribute to more cost-effective implementation of the bacteria TMDL, and which could be included in the J1/4 implementation effort include:

- Identification of the Most Relevant Human Health Indicators Study (2007-2009)
- Hydrology vs. Bacteria Loading Study (2005-2010)
- Bacterial Seasonal Variation Study (2005-2008)

ES.6.5 Integrated Plan Elements

The Implementation Plan was developed consistent with an Integrated Water Resources Approach (IWRA) on the basis of a) multiple pollutants removed and b) integrated water resources benefits. Table ES.3 below lists, for each recommended BMP, both the target pollutants and water resources benefits. For discussion purposes, target pollutants are grouped in the following families:

- Bacteria
- Nutrients
- Metals
- Organics
- Pathogens
- Trash

Integrated water resources benefits listed include:

- Conservation
- Reuse/Recycling
- Habitat
- Geomorphology (Hydromodification)
- Hydrology (Stream)
- Flood Control

ES.6.6 Performance Evaluation

Assessing the effectiveness of the management measures is critical to tracking progress toward meeting full TMDL compliance. Two basic approaches are presented in the Final Plan: 1) a Presumptive Compliance Approach and 2) a Targeted Monitoring-Based Approach.

The Presumptive Compliance Approach (PCA) assumes that the implementation of structural and non-structural BMPs will lead directly to reductions of exceedance days and attempts to quantify this relationship. It is recognized that there is significant uncertainty and it is expected that the iterative and adaptive management strategies are employed, both effectiveness will improve and the correlation of activities to water quality compliance will improve. The presumptive approach is confirmed in some cases by the use of information surveys toward targeted audiences.

The focused and targeted monitoring-based approach (TMBA) adopts some measures of presumptive compliance but incorporates monitoring data and attempts to normalize and extrapolate this monitoring data throughout the region. TMB results are presented in Interim Compliance Reports.

Other performance metrics include informational surveys, tracking of volumes of pollutants removed, and a comparison of expenditures relative to full implementation budgets.

Table ES.3 describes, for each recommended BMP, the performance evaluation measure and methods to be implemented to gage progress toward meeting TMDL targets.

ES.6.7 Reporting

An annual Implementation Plan progress report documenting compliance activities will be provided by the J1/4 Agencies. It is not anticipated that this report be exhaustive, but will include a summary of progress, successes and challenges, and requested modifications to the Implementation Plan. This report would reference activities conducted to date, compared to commitments made in this Implementation Plan.

ES.6.8 Program Budgets

Potential program budgets are not provided, but would eventually be considered for preliminary programmatic budgetary planning only. An initial budget analysis did not include those activities that are considered for implementation, but do include activities that are *committed* to or implemented on a *pilot* scale. In addition, specific allocation of costs between jurisdictional agencies was not addressed in this Plan.

Table ES.3
Summary of Best Management Practices, Integrated Water Resources Approach, and Performance Evaluation Measures

	BMPs and Activities	**Water Quality Benefits: Multiple Pollutants**	**Additional Integrated Water Resources Benefits**	**Performance Evaluation Measure and Method**
Activity Number	TMDL Monitoring and Studies	B = Bacteria N = Nutrients M = Metals O = Organics P = Pathogens T = Trash	CONS = water conserve RE = reuse/recycling HAB = habitat GEO = geomorphology HYD = hydrology (stream) FLD = flood & volume	
1	TMDL Monitoring: Trancas	B, N, M, O	N/A	Monitoring Results
2	TMDL Monitoring: Solstice	B, N, M, O	N/A	Monitoring Results
3	TMDL Monitoring: Marie Canyon	B, N, M, O	N/A	Monitoring Results
4	TMDL Monitoring: Sweetwater Creek	B, N, M, O	N/A	Monitoring Results
5	TMDL Monitoring: Topanga Lagoon (sandbar)	B, N, M, O	N/A	Monitoring Results
6	TMDL Monitoring: Topanga Lagoon (bridge)	B, N, M, O	N/A	Monitoring Results
7	Hydrologic Loading Estimates	N/A	HYD, GEO	Study Results
8	Structural BMP Monitoring	B, N, M, O	N/A	Study Results
9	Identification of the Most Relevant Human Health Indicators	B, P	N/A	Study Results
10	Hydrology vs. Bacteria Loading	B	HYD, GEO	Study Results
11	Bacteria Seasonal Variation Study	B	N/A	Study Results
	Non-Structural Measures			
	Public Information Participation Programs			
12	Outreach to pet owners establishing a link between animal wastes and health issues and focus on point of contact	B, N, P	N/A	Interim Compliance Reports, Information Surveys, PCA
13	Locate areas with corralled animals and educate property owners on bacteria TMDLs	B, N, P	N/A	Interim Compliance Reports, TMBA, PCA
14	Identify horse stables in the region and implement pilot program	B, N, P	GEO	Interim Compliance Reports, TMBA, PCA
15	Post signs at County and City-owned trailheads designated for equestrian users to not clean out horse trailers in parking lots and to clean horse waste.	B, N, P	N/A	Interim Compliance Reports, TMBA, PCA
16	Outreach at trailheads encouraging hikers to use restroom facilities	B, N, P	N/A	Interim Compliance Reports, Information Surveys, TMBA

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Table ES.3 (cont.)
Summary of Best Management Practices, Integrated Water Resources Approach, and Performance Evaluation Measures

Activity Number	BMPs and Activities	Water Quality Benefits: Multiple Pollutants	Additional Integrated Water Resources Benefits	Performance Evaluation Measure and Method
	TMDL Monitoring and Studies	B = Bacteria N = Nutrients M = Metals O = Organics P = Pathogens T = Trash	CONS = water conserve RE = reuse/recycling HAB = habitat GEO = geomorphology HYD = hydrology (stream) FLD = flood & volume	
17	Coordinate outreach activities with Pepperdine University	B, N, M, O	CONS, RE	Interim Compliance Reports, TMBA, PCA
18	Increase coordination between agencies and environmental organizations in preparing outreach materials	B, N, M, O, P	CONS, RE,HAB, GEO, HYD, FLD	Interim Compliance Reports, Information Surveys
	Industrial / Commercial Facilities Control Programs			
19	Provide an outreach program for all commercial facilities with corralled animals, including equestrian centers	B, N, P	N/A	Interim Compliance Reports, TMBA, PCA
20	Provide for regular BMP inspections for restaurants	B, N, P	N/A	Information surveys, Interim Compliance Reports, TMBA
21	Increase awareness of BMPs in restaurants by establishing a restaurant reward and recognition program	B, N, P	N/A	Interim Compliance Reports, Information Surveys, TMBA, PCA
22	Conduct industry-specific workshops	B, N, M, O, P, T	CONS, RE, HAB, GEO, HYD, FLD	Interim Compliance Reports, Information Surveys, PCA
23	Investigate the possibility of increasing frequency of trash collection at restaurants	B, N, M, O, P, T	N/A	Interim Compliance Reports
	Development Planning and Construction Programs			
24	Further emphasize applicable existing BMPs in development planning and construction programs	B, N, M, O, P, T	CONS, RE, HAB, GEO, HYD, FLD	Interim Compliance Reports
	Public Agency Activity Control Program			
25	Establish guidelines for optimizing frequency of cleaning cycles for drainage facilities and implement recommendations on Caltrans facilities	B, N, M, O, P, T	N/A	Volume and Expenditure Tracking

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Table ES.3 (cont.)
Summary of Best Management Practices, Integrated Water Resources Approach, and Performance Evaluation Measures

	BMPs and Activities	**Water Quality Benefits: Multiple Pollutants**	**Additional Integrated Water Resources Benefits**	**Performance Evaluation Measure and Method**
Activity Number	TMDL Monitoring and Studies	B = Bacteria N = Nutrients M = Metals O = Organics P = Pathogens T = Trash	CONS = water conserve RE = reuse/recycling HAB = habitat GEO = geomorphology HYD = hydrology (stream) FLD = flood & volume	
	Structural Measures			
	On-Site Options			
26	Caltrans-Malibu Joint Agency Activities	B, N, M, O, P, T	HAB	Interim Compliance Reports, Information Surveys
27	Residential Cisterns	B, N, M, O, P	CONS, RE, HAB, GEO, HYD, FLD	Interim Compliance Reports, Expenditure Tracking, Activities
28	On-site Storage and Reuse Projects	B, N, M, O, P	CONS, RE, HAB, GEO, HYD, FLD	Interim Compliance Reports, Expenditure Tracking, Activities
29	Small Scale Infiltration Projects	B, N, M, O, P	CONS, RE, HAB, GEO, HYD, FLD	Interim Compliance Reports, Expenditure Tracking, Activities
	Pilot Project Treatment Options			
30	Paradise Cove Pretreatment and System Upgrade	B, N, M, P		Monitoring Results
31	Las Flores Canyon Restoration and Water Quality Improvements (Biofiltration and infiltration)	B, N, M, O, P	GEO, HYD, FLD	Monitoring Results, Study Activities
32	Marie Canyon Drain Retrofit / Perocetic Acid/bactericides	B, N only		Monitoring Results
33	Latigo Shores Subsurface Flow Wetlands	B, N, M, O, P	CONS, RE, HAB	Monitoring Results

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9-1510

1. Introduction

1.1 TMDL Summary

The North Santa Monica Bay Jurisdictional Groups 1 and 4 Wet-Weather Bacterial Total Maximum Daily Load (TMDL) Implementation Plan (Implementation Plan) was prepared in response to Resolution No. 2002-022 of the California Regional Water Quality Control Board—Los Angeles Region (Regional Board) amending the Water Quality Control Plan for the Los Angeles Region (Basin Plan) to incorporate Implementation Provisions for the Region's Bacteria Objectives and to Incorporate a Wet-Weather TMDL for Bacteria at Santa Monica Bay Beaches (see Appendix A).

1.1.1 TMDL Development History

The Clean Water Act of 1972 (CWA), enacted into the U.S. Code, required States to develop a list, named the 303(d) List after the relevant section of the CWA, of impaired waters and name the pollutants for which they are impaired. States must then establish a watershed-based, pollutant-specific TMDL to bring impaired water bodies into compliance with the water quality standards necessary for achieving designated beneficial uses of the water body. The Santa Monica Bay beaches are designated as human body contact recreation, also known as REC-1, and are included on the State of California's 1998 303(d) List due to high indicator coliform bacteria exceedance.

The Regional Board released a first draft of the Santa Monica Bay Beaches Bacterial TMDL on November 9, 2001. As development of the TMDL progressed, the Regional Board staff decided to bifurcate the TMDL—one for dry weather and one for wet weather—to allow more time to consider the extensive public comments on the wet weather elements of the TMDL. Both the Dry- and Wet-weather TMDLs were approved by the U.S. Environmental Protection Agency (EPA) in June 2003 and became effective on July 15, 2003.

This Implementation Plan focuses on wet-weather TMDL implementation.

1.1.2 Jurisdictional Groups 1 and 4

The TMDL groups the subject area into seven jurisdictional groups and designates within each group a primary jurisdiction as the responsible agency. The jurisdiction that comprises greater than fifty percent of the land area in the group is selected as the primary jurisdiction. The responsible agency of each jurisdictional group is charged with submitting a TMDL implementation plan and a corresponding schedule to be used by the jurisdictional group.

Jurisdictional Group 1 (J1) area is primarily comprised of the County of Los Angeles (County), City of Malibu, and California Department of Transportation (Caltrans). Other agencies encompassed by the jurisdictional boundaries include the County of Ventura, the Cities of Calabasas and Los Angeles, and the State of California Department of Parks and Recreation. The County is the primary jurisdictional agency for J1, which is comprised of sixteen (16) subwatersheds (including the reference watershed, Arroyo Sequit watershed, which is excluded from the Implementation Plan). Jurisdictional Group 4 (J4) includes the

City of Malibu (primary jurisdiction), County of Los Angeles, and Caltrans, and consists only of Nicholas subwatershed.

Subwatersheds comprising Jurisdictional Groups 1 and 4 (J1/4) are shown in Figure 1.1. It should be noted that these subwatersheds do not include Malibu Creek Watershed.

1.1.3 Compliance Requirements

For this TMDL, the Regional Board implemented bacteria objectives using a reference system/anti-degradation approach. The purpose of utilizing this approach was to ensure that bacteriological water quality is at least as good as that of a reference site and that no degradation of existing bacteriological water quality is permitted where existing bacteriological water quality is better than that of a reference site. For the Wet-weather TMDL at Santa Monica Bay beaches, Leo Carrillo Beach and its associated drainage area, Arroyo Sequit Canyon, were selected as the local reference system. Leo Carrillo Beach was selected as the reference beach because it best met the three criteria for selection of a reference system. Specifically, its drainage is the most undeveloped subwatershed in the larger Santa Monica Bay watershed, it has a freshwater outlet (i.e., creek) to the beach, and it has adequate historical shoreline monitoring data.

Compliance Activities

Additional TMDL compliance activities included the following:

- Responsible agencies were required to submit a Coordinated Shoreline Monitoring Plan (CSMP) within 120 days of the effective date of the TMDLs to be used for compliance monitoring of the TMDLs. This plan was submitted in November 2003, and revised in April 2004.

- Responsible jurisdictions were required to develop an implementation plan for achieving compliance. After considering the Implementation Plan, the Regional Board will amend the TMDL and adopt an individual implementation schedule for each jurisdictional group that is as short as possible taking into account the implementation approach being undertaken.

1.1.4 Compliance Water Quality Objectives

The TMDLs are based on numeric targets for bacteriological water quality objectives for Water Contact Recreation (REC-1) revised by Regional Board Resolution 2001-018 amending its Basin Plan on October 25, 2001. This Basin Plan amendment received final approval from the EPA on September 25, 2002[1]. These water quality objectives are based on four bacterial indicators and include both geometric mean limits and single sample limits:

1) Resolution No. 2002-022, Finding 18.

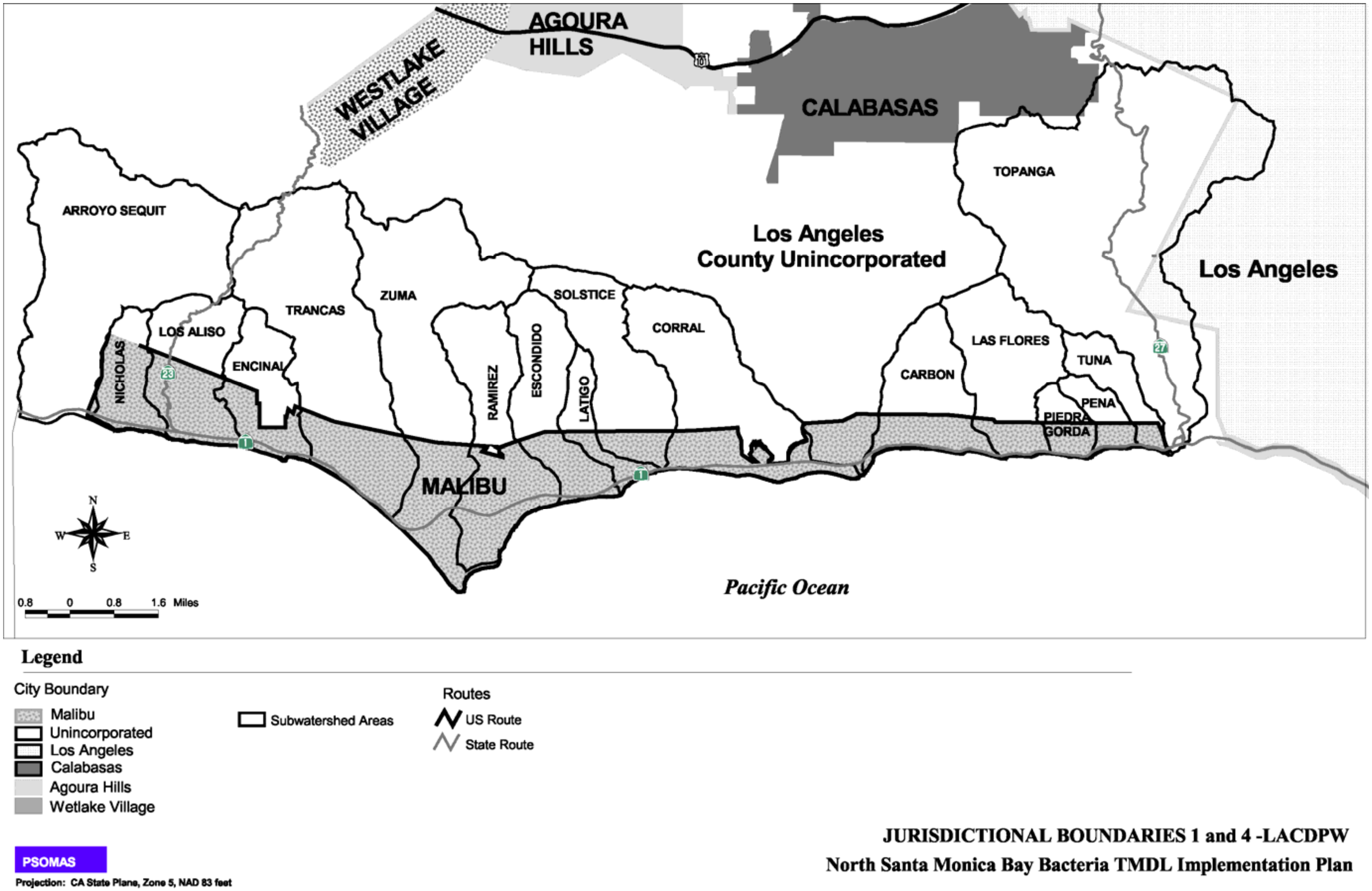

Figure 1.1 J1/4 Jurisdictional Agencies

RB-AR 7627

9-1513

1. **Rolling 30-day Geometric Mean Limits**
    a. Total coliform density shall not exceed 1,000/100 ml
    b. Fecal coliform density shall not exceed 200/100 ml
    c. Enterococcus density shall not exceed 35/100 ml.

The geometric mean is defined in Webster's Dictionary as "the nth root of the product of n numbers." Thus, the 30-day geometric mean calculation for the TMDL will be calculated as the 30th root of the product of 30 numbers (the most recent 30 day results). For weekly sampling, the 30 numbers are obtained by assigning the weekly test result to the remaining days of the week. If more samples are tested within the same week, each test result will supersede the previous result and be assigned to the remaining days of the week until the next sample is collected. This rolling 30-day geometric mean must be calculated for each day, regardless of whether a weekly or daily schedule is selected. Since zero cannot be used to calculate a geometric mean when bacteria is not detected in a sample, a value equal to half the detection limit will be used for calculation purposes. Development of alternative methods to calculate the 30-day geometric mean based on weekly data is outside the scope of this document.

2. **Single Sample Limits**
    a. Total coliform density shall not exceed 10,000/100 ml
    b. Fecal coliform density shall not exceed 400/100 ml
    c. Enterococcus density shall not exceed 104/100 ml
    d. Total coliform density shall not exceed 1,000/100 ml if the ratio of fecal-to-total coliform exceeds 0.1

The TMDL set allocations based on the maximum number of days within a storm year that sample results under the CSMP may exceed the water quality objectives (targets). Allocations for wet-weather are specific to each monitoring site and have been established based on historical monitoring data and/or comparison with historical monitoring data at the reference beach.

These site-specific allocations are listed below in Table 1.1. The maximum allowable number of exceedance days based on the reference system during year-round wet weather is seventeen (17) exceedance days per year under a daily sampling schedule. If a weekly sampling schedule is employed, the number of allowable exceedance days is scaled back accordingly to three (3) exceedance days per year for year-round wet weather.

Table 1.1 Final Allowable Wet-Weather Exceedance Days by Beach Location

	Estimated Number of Exceedance Days in Critical Year (1993)	Final Allowable Number of Exceedance Days
Leo Carrillo Beach, at 35000 PCH	17	17
Nicholas Beach- 100 feet west of lifeguard tower	14	14
Broad Beach	15	15
Trancas Beach ent., 50 yards east of Trancas Bridge	19	17
Westward Beach, east of Zuma Creek	17	17

	Estimated Number of Exceedance Days in Critical Year (1993)	Final Allowable Number of Exceedance Days
Paradise Cove, adjacent to west side of Pier	23	17
Latigo Canyon Creek entrance	33	17
Corral State Beach	17	17
Las Flores Beach	29	17
Big Rock Beach, at 19900 PCH	30	17
Topanga State Beach	26	17

1.1.5 Compliance Schedule

Based on the TMDLs as currently written, compliance schedules for TMDL compliance are listed below:

- Effective Date: July 15, 2003
- Project Kick-off: July 2004
- Draft Implementation Plan March 2005
- Final Implementation Plan July 2005
- Re-evaluation: 2007
- 10% reduction (6 years): 2009
- 25% reduction (10 years): 2013
- 50% reduction (15 years): 2018
- Final targets (18 years): 2021

Four years after the effective date, based in part on new data collected under the CSMP, the Regional Board will re-consider various provisions of the TMDLs, including:

- Allowable wet weather exceedance days
- Reevaluation of the reference system
- Reevaluation of the reference year
- Clarification or revision of the geometric mean implementation provision
- Reevaluation of proposed implementation plan elements

1.2 Coordinated Shoreline Monitoring Plan

While not part of this Implementation Plan, elements of the CSMP are discussed here. Compliance with the TMDL is to be based on monitoring conducted in accordance with the CSMP which has been submitted jointly by all jurisdictional groups and approved by the Regional Board. Monitoring under this plan began in November 2004. The CSMP was developed by a Technical Steering Committee consisting of representatives from each of the primary jurisdictions as well as additional responsible agencies. The plan was designed to comply with the monitoring requirements of both the dry- and wet-weather TMDLs and to provide data to support the re-evaluations that will be made when specific provisions of the

TMDLs are re-considered. CSMP monitoring sites located within J1/4 are listed Table 1.2 (from the Coordinated Shoreline Monitoring Plan, Revised April 7, 2004).

Table 1.2 J1/4 Coordinated Shoreline Monitoring Station Summary

Station Name	Type	Description (including historical site ID, if any)	Low Flow Diversion	Coordinates		Subwatershed	Sampling Agency
SMB-1-1	Point Zero	Arroyo Sequit Creek at Leo Carrillo State Beach (DHS010)	No	34.04558	-118.93336	Arroyo Sequit	LACDHS
SMB-1-2	Open Beach	El Pescador State Beach	--	TBD	TBD	Los Alisos	EMD
SMB-1-3	Open Beach	El Matador State Beach	--	TBD	TBD	Encinal	EMD
SMB-1-4	Point Zero	Trancas Creek at Broad Beach (DHS008)	No	TBD	TBD	Trancas	LACDHS
SMB-1-5	Point Zero	Zuma Creek at Zuma Beach (DHS007)	No	TBD	TBD	Zuma	LACDHS
SMB-1-6	Point Zero	"Walnut Creek" in Paradise Cove	No	34.01375	-118.79100	Ramirez	EMD
SMB-1-7	Point Zero	Ramirez Canyon at Paradise Cove (DHS006)	No	34.02032	-118.78600	Ramirez	LACDHS
SMB-1-8	Point Zero	Escondido Creek, just east of Escondido State Beach	No	34.02551	-118.76500	Escondido	EMD
SMB-1-9	Point Zero	Latigo Canyon, adjacent to the Tivoli Bay Villa Treatment Plant (DHS007)	No	34.02895	-118.75300	Latigo	LACDHS
SMB-1-10	Point Zero	Solstice Creek at Dan Blocker County Beach	No	34.03297	-118.74100	Solstice	EMD
SMB-1-11	Point Zero	Un-named creek at Puerco Beach (DHS004)	No	34.03328	-118.73300	Corral	LACDHS
SMB-1-12	Point Zero	Marie Canyon storm drain at Puerco Beach	No	34.03072	-118.71000	Corral	EMD
SMB-1-13	Point Zero	Sweetwater Canyon on Carbon Beach	No	34.03811	-118.67300	Carbon	EMD
SMB-1-14	Point Zero	Las Flores Creek at Las Flores State Beach	No	34.03684	-118.63600	Las Flores	EMD
SMB-1-15	Open Beach	Big Rock Beach (DHS001)	--	34.03670	-118.61012	Piedra Gorda	LACDHS
SMB-1-16	Point Zero	Pena Creek at Las Tunas County Beach	No	34.03933	-118.59600	Pena	EMD
SMB-1-17	Point Zero	Tuna Canyon	No	34.03936	-118.58900	Tuna	EMD
SMB-1-18	Point Zero	Topanga Canyon at Topanga State Beach (S2)	No	34.03814	-118.58200	Topanga	EMD

1.3 Implementation Plan Participants

1.3.1 Responsible Agencies

For the purposes of Implementation Plan development, the County has taken the lead for J1 while the City of Malibu has taken the lead for J4. Other affected agencies include Caltrans, and the County of Los Angeles Department of Beaches and Harbors. Other named agencies such as the City of Calabasas and City of Los Angeles have opted out of the Implementation Plan development as the extent of their impacted areas is limited.

It should be noted that Caltrans has reserved the right to proceed independently to address the TMDL goals depending on the specific costs and implementation measures identified during the implementation process.

1.3.2 Stakeholders

Stakeholder participation was primarily accomplished through the North Santa Monica Bay Watersheds Task Force, the members of which were solicited for input prior to the development of a draft plan, and who participated in an Implementation Plan workshop. Environmental groups actively engaged in the process included the Regional Board staff, Heal the Bay and the BayKeepers.

1.3.3 Other Implementation Plans

Concurrent with the development of this plan, Implementation Plans were being developed for the other Santa Monica Bay watershed Jurisdictional Groups, namely Groups 2 and 3 (combined plan) and Groups 5 and 6 (combined plan).

The City of Los Angeles is the lead agency for Jurisdictional Group 2 and is a significant participant in two other Jurisdictional Groups (3 and 7). The City of Santa Monica was designated the lead in Jurisdictional Group 3 and is a participant in Jurisdictional Group 2. Other responsible agencies within Jurisdictional Groups 2 and 3 include the City of El Segundo, the County of Los Angeles, and Caltrans.

Jurisdiction Group 5 is comprised of five responsible agencies: City of Manhattan Beach (primary jurisdiction), City of El Segundo, City of Hermosa Beach, County of Los Angeles and Caltrans. The limits of this area extend from the north boundary of the City of Manhattan Beach to just south of the Hermosa Beach Pier. Jurisdiction 6 is comprised of five responsible agencies: Cities of Hermosa Beach, Redondo Beach (primary jurisdiction) and Torrance, along with the County of Los Angeles and Caltrans. The limits of this area range from the boundary of Jurisdiction 5 just south of the Hermosa Beach Pier and just south of Artesia Boulevard in Redondo Beach, to the southern city limit of Torrance at the coast.

1.4 Objectives of Implementation Plan

There are numerous objectives for this Implementation Plan. First and foremost, the objective is to develop a plan that results in the improvement of water quality to a level such that shoreline waters meet or exceed the requirements of the TMDL and Resolution No. 2002-022. In addition, a significant objective of the Implementation Plan is to commit to strategic cost-effective solutions. It is recognized that cost-effective implementation of TMDL requirements in conjunction with other water resources demands and opportunities, will result in a greater overall benefit than solely focusing on treatment of bacteria in urban runoff. Therefore, this Implementation Plan represents an integrated water resources approach that takes a holistic view of regional water resources management by integrating planning for future wastewater, storm water, recycled water, and potable water needs and systems, and focuses on beneficial re-use of storm water, including groundwater infiltration at multiple points throughout a watershed. In addition, recognizing that bacteria are not the sole pollutant of concern, this Implementation Plan also addresses multiple pollutants for the Santa Monica Bay.

Because the Regional Board recognized that an integrated water resources approach not only provided water quality benefits to the people of the Los Angeles region, but also potentially served a variety of public purposes, it acknowledged that a longer timeframe is reasonable for an integrated water resources approach because it requires more complicated planning and implementation such as identifying markets for the water and efficiently siting storage and transmission infrastructure within the watershed(s) to realize the multiple benefits of such an approach.

Another objective of the Implementation Plan is, therefore, to include methods for identifying, developing, designing, implementing, purchasing, installing, monitoring, evaluating, and maintaining the most appropriate "source control" and "treatment control" solutions. Given the additional complexity of an integrated water resources approach, the Implementation Plan will be presented to the Regional Board to justify a timeframe of 18 years to comply with the TMDL requirements.

The last critical objective of the Implementation Plan is to provide an adaptive and iterative framework for implementation. Because source prioritization efforts have not yielded conclusive source tracking results, and because technologies, particularly for bacteria treatment are developing, it is recognized that both the objectives of the TMDL and mitigation strategies may require revision and reexamination. This recognition is incorporated in the scheduling and phasing of activities within the Implementation plan.

2. Summary of Technical Analyses

This section summarizes the results of technical analyses that were conducted as part of the development of the Implementation Plan. These analyses are listed in the reference section of this Implementation Plan.

2.1 Existing Conditions

The purpose of the Source Identification and Prioritization, Hydrogeology and Aquifers, and Hydrology analyses were to establish some baseline conditions to help understand the issues and conditions within the J1/4 area.

2.1.1 Source Identification and Prioritization

The purpose and objectives of the source identification and prioritization efforts were to, on a macro-scale, identify and evaluate potential sources of water quality impairment in the affected subwatersheds and to prioritize these sources. Numerous sources of data were evaluated in an attempt to establish some relation between the source loading and water quality impairment. The task involved: a literature search and assessment of historic water quality monitoring; a review of other resource management studies of the watershed areas, as well as personal communications with key stakeholders; resource mapping; and field reconnaissance.

Monitoring data for E. coli, fecal coliform, total fecal coliform and enterococcus have been collected over the past 5 years from the following entities: Heal the Bay, Resource Conservation District of Santa Monica Mountains, County of Los Angeles Department of Health Services, County of Los Angeles Department of Public Works, and the City of Los Angeles. Even though E. coli is not cited in the TMDL, it was included in the data collection since the presence of E. coli in water is a strong indication of recent sewage or animal waste contamination and is particularly relevant to fresh water.

Potential Sources as a Basis for Prioritization

While not directly relevant to the J1/4 study area, the results of a risk assessment prepared by Stone Environmental (2004) show that shallow groundwater in the Malibu Creek study area is significantly influenced by bacteria from sources other than On-Site Wastewater Treatment Systems (OWTS). Stormwater infiltration and direct percolation from the land surface in sandy soil areas are likely to be significant potential sources of contamination. These results provide insight into the potential sources of contamination within J1 and J4.

Given the indication that the OWTSs are probably not a widespread source of bacterial contamination at the beach, the source identification and prioritization effort focused instead on other potential sources including restaurants, horses, urban runoff, etc. An attempt was made to establish a correlation between subwatershed land uses, densities, soil properties, number of storm drains, and exceedance occurrences. Given the limited data, the task of source identification and prioritization was an exercise of deduction or a "process of elimination." The data did not support the identification of one conclusive source (e.g., restaurants, horse ranches, etc.) identified by the source identification and prioritization effort, but did identify the effects of urbanization, particularly urbanization in proximity to water bodies, as being linked to exceedance of water quality standards. As a result the focus of the prioritization effort shifted from source prioritization to targeted subwatershed prioritization to support an implementation strategy.

Therefore, potential sources or conditions associated with urban runoff, in conjunction with other factors such as proximity to a water body and recreational use of beaches, formed the basis for evaluating and prioritizing subwatersheds. Factors considered in the prioritization of subwatersheds included:

- Monitoring Data
  - Recent monitoring data, in particular, water quality exceedances associated with CSMP, was evaluated on a probability basis. Probabilities were determined by the proportion of single sample exceedance occurrences to total samples collected.
  - Exceedance-day monitoring data that formed the basis of the TMDL. The TMDL listed the number of exceedance days for a number of subwatersheds during the critical year (1993). Those subwatersheds with exceedance days exceeding 50% of the TMDL threshold were designated high priority, and those subwatershed with exceedances within 10% of the threshold were designated low priority.
- Land Use Based Criteria
  - Residential development near shoreline,
  - Commercial development near shoreline,
  - Horse ranch near shoreline,
  - Horse ranches in watershed,
  - Development near streams within watershed
  - Proportion of residential development in the watershed
  - Proportion of other development in the watershed

  Figures 2.1.1-2.1.16 graphically illustrates relative land uses for each subwatershed with the following subcategories: residential and educational; industrial and commercial; managed open space; and natural open space.
- Runoff potential: primarily a function of soil type, vegetation and land use.
- Physical criteria: number of storm drains at the shoreline, and
- Beach usage: relative potential exposure to humans as a function of beach usage assumed to be a function of parking lot spaces at beaches.

Nicholas

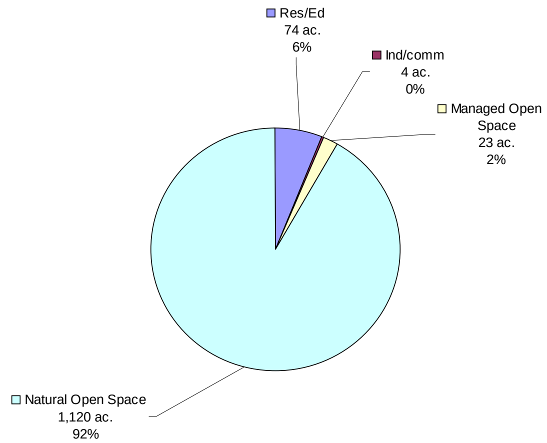

Figure 2.1.1 Nicholas: Breakdown of Land Use

Encinal

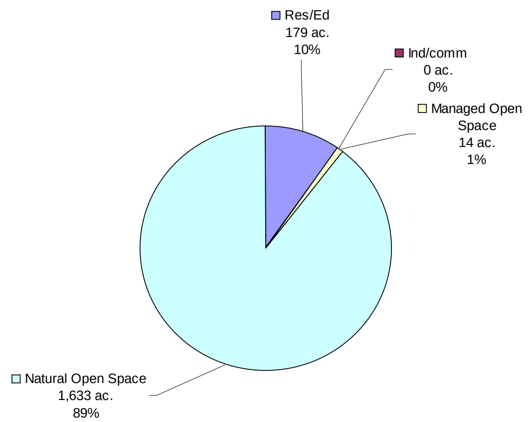

Figure 2.1.2 Encinal: Breakdown of Land Use

Trancas

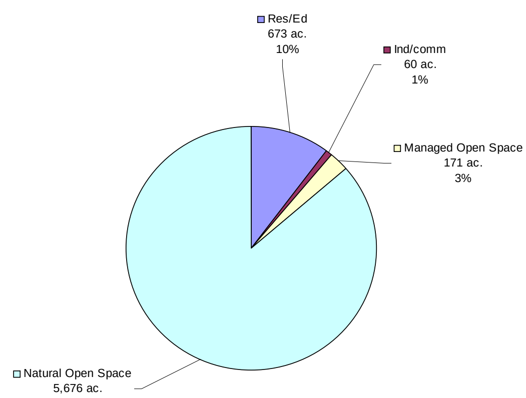

Figure 2.1.3 Trancas: Breakdown of Land Use

Zuma

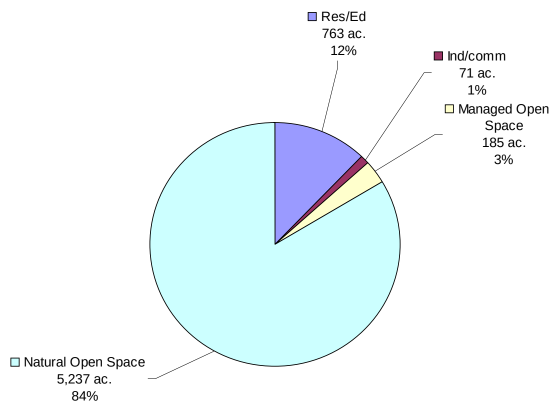

Figure 2.1.4 Zuma: Breakdown of Land Use

Solstice

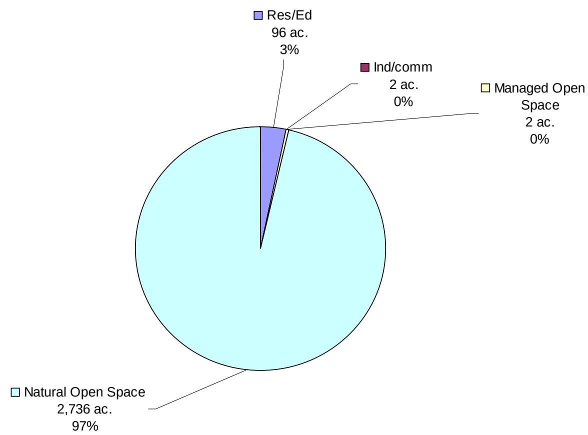

Figure 2.1.5 Solstice: Breakdown of Land Use

Pena

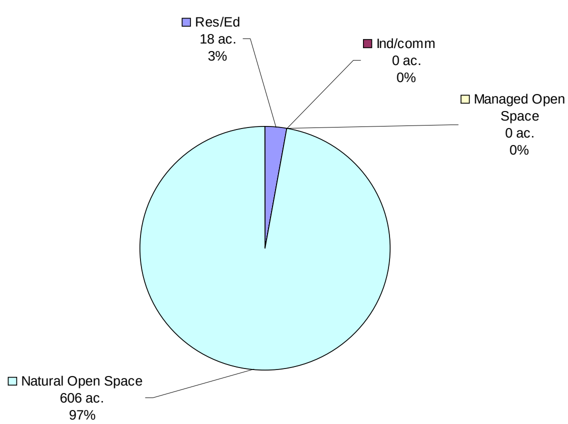

Figure 2.1.6 Pena: Breakdown of Land Use

Tuna

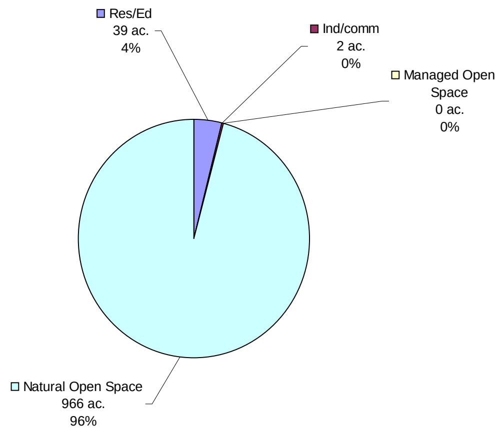

Figure 2.1.7 Tuna: Breakdown of Land Use

Carbon

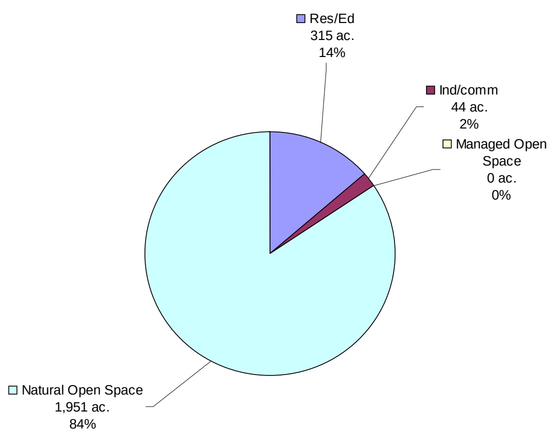

Figure 2.1.8 Carbon: Breakdown of Land Use

Los Alisos

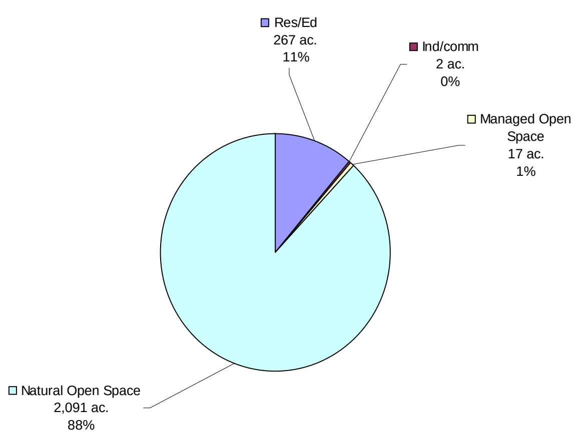

Figure 2.1.9 Los Alisos: Breakdown of Land Use

Topanga

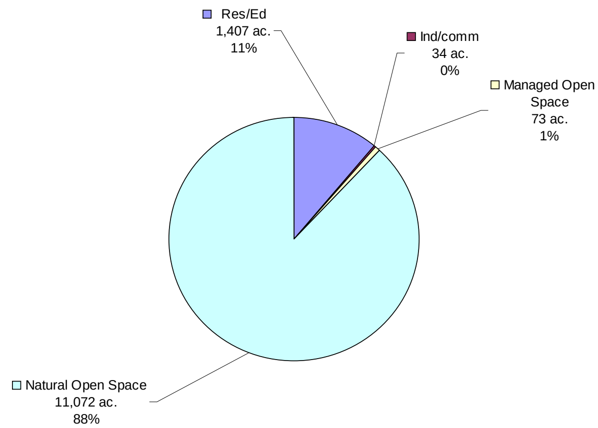

Figure 2.1.10 Topanga: Breakdown of Land Use

Escondido

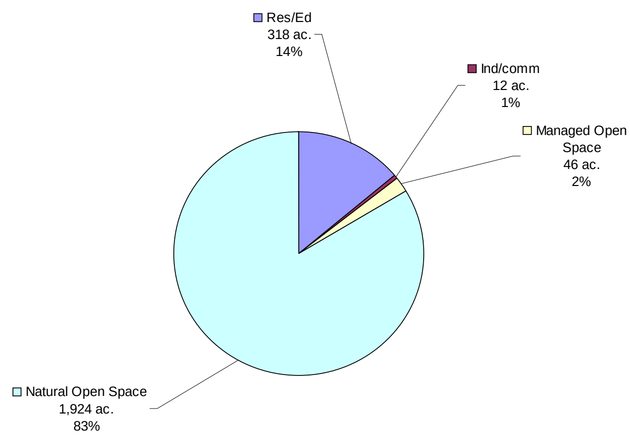

Figure 2.1.11 Escondido: Breakdown of Land Use

Latigo

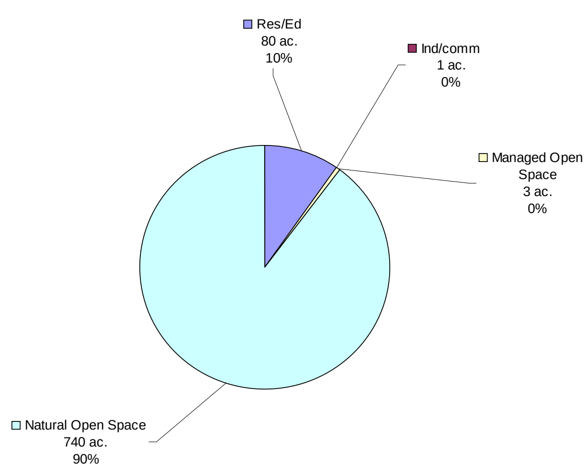

Figure 2.1.12 Latigo: Breakdown of Land Use

Corral

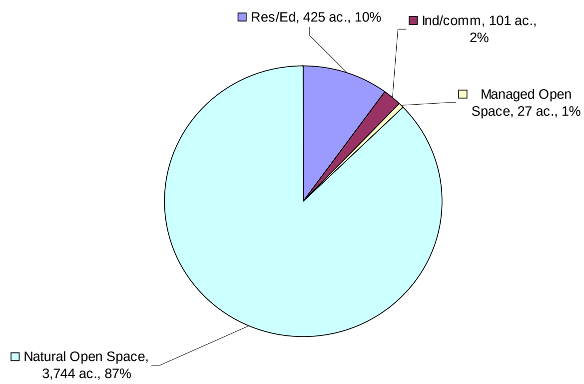

Figure 2.1.13 Corral: Breakdown of Land Use

Las Flores

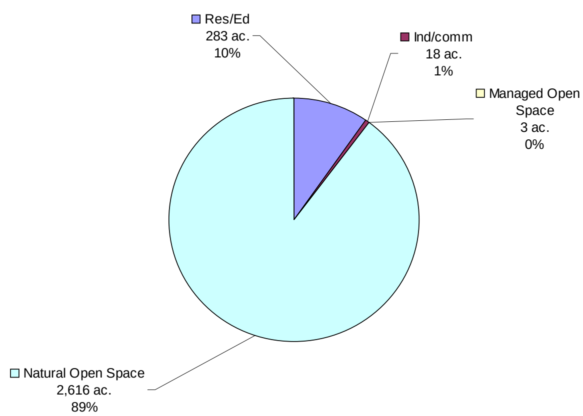

Figure 2.1.14 Las Flores: Breakdown of Land Use

Piedra Gorda

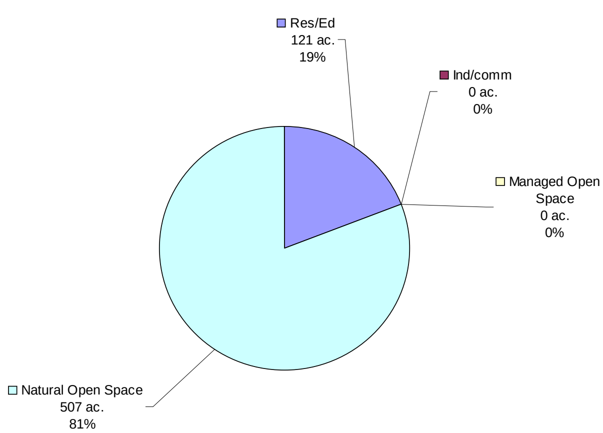

Figure 2.1.15 Piedra Gorda: Breakdown of Land Use

Ramirez

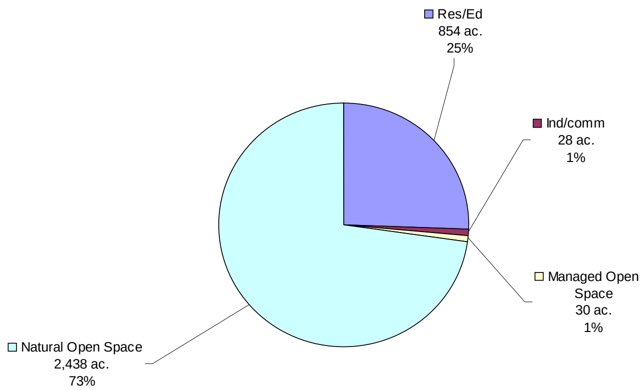

Figure 2.1.16 Ramirez: Breakdown of Land Use

The above factors were considered as a whole and priorities for subwatersheds were established on the basis of the above factors. In addition, those subwatersheds that were identified as high priority per the TMDL were also prioritized. The results of this analysis are illustrated in Figure 2.2. Based on the priority ranking and/or the TMDL exceedance days, it was established that the highest priority watersheds are Ramirez (Paradise Cove), Corral (including Marie Canyon), Latigo, Las Flores, and Piedra Gorda. Figures 2.3.1-2.3.3 present composite land uses for high, medium, and low priority subwatersheds.

2.1.2 Hydrogeology and Aquifers

Hydrogeologic and aquifer characteristics were evaluated on a macro-scale to establish the potential for infiltration as both a water conservation and water quality best management practice. Topography, basin slopes, and drainage patterns were evaluated as potential regional infiltration facilities. Geology of the project area was reviewed, and soils were evaluated based on Natural Resource Conservation Service (NRCS, formerly Soil Conservation Service) Soil Classification (ABCD) and the County soil types and runoff response characteristics.

These analyses concluded that the soils in the project area were, for the most part, poorly drained and not conducive to effective infiltration practices.

Because depths to groundwater are critical design parameters for both infiltration potential and septic system performance, the US Division of Mines and Geology was consulted to estimate general groundwater depths. A review of this data indicated that groundwater depths were generally:

- Less than 5 feet in beach areas
- 5 to 10 feet deep in coastal floodplain areas, and coastal stream canyons
- Approximately 10 feet in the upper reaches, and
- Significantly deeper along ridge lines and mountain peaks.

Figure 2.2 Subwatershed Priorities

Low Priority

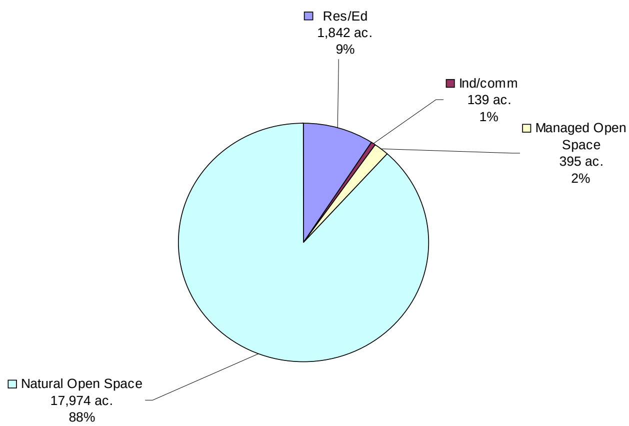

Figure 2.3.1 Low Priority: Breakdown of Land Use
Nicholas, Encinal, Trancas, Zuma, Solstice, Pena, and Tuna

Medium Priority

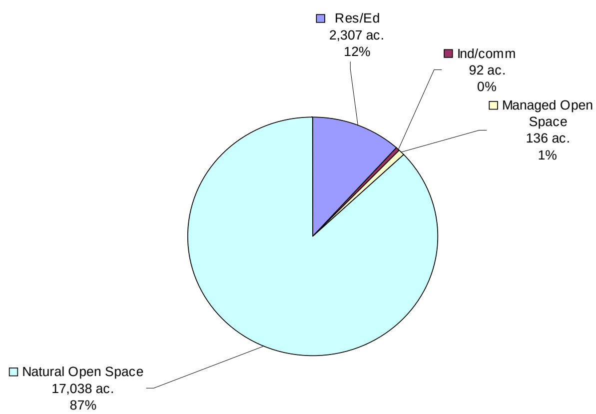

Figure 2.3.2 Medium Priority: Breakdown of Land Use
Carbon, Los Alisos, Topanga, and Escondido

High Priority

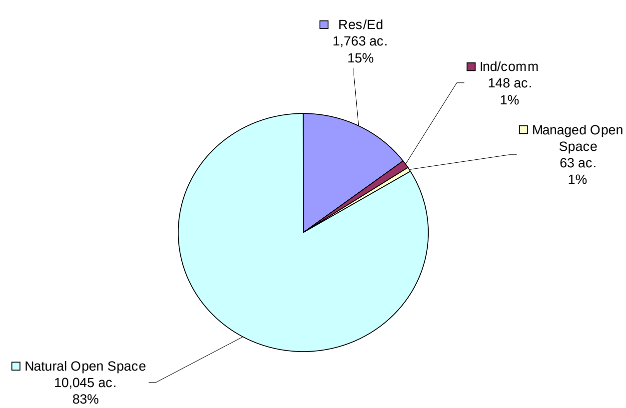

Figure 2.3.3 High Priority: Breakdown of Land Use
Latigo, Corral, Las Flores, Piedra Gorda, and Ramirez

Because most of the residences within J1/4 utilize onsite wastewater treatment systems (septic systems), seepage and impacts to groundwater are of importance, particularly since the level of risk of exposure is closely tied to the vertical separation between the infiltrating surface of the dispersal system and the water table.

Aquifer characteristics were characterized as being limited based on a review of DWR Bulletin 118 for the South Coast Hydrologic Region. The closest basins, Malibu, Thousand Oaks, and Russell Valley, are all outside the J1/4 area.

Therefore, given the local soils, geology, and groundwater conditions, and the need to avoid excessively raising groundwater levels in areas with onsite wastewater systems, the potential for regional groundwater injection and infiltration is limited, and localized infiltration practices are more feasible. It must also be recognized, however, that even local recharge can potentially increase the water table, thereby potentially impacting septic systems. As such, local recharge must be carefully evaluated for its potential to affect septic systems locally.

2.1.3 Surface Water Hydrology

A hydrologic analysis was conducted to support the potential incorporation of structural measures in the TMDL implementation[1]. The purpose of the analyses was to estimate, on a macro-scale, preliminary potential volumes of water (within each subwatershed) that would theoretically need to be captured and treated to meet TMDL requirements. This planning-level analysis successfully resolved the discontinuity between exceedance-day TMDL criteria and conventional design-storm analytical techniques using a methodology that examined daily rainfall volumes over the historical period of record. This methodology involved:

1) Ranking daily rainfall volumes per year. Precipitation analyses were conducted for four County of Los Angeles rain gages located at elevations ranging from 15 feet to 1620 feet, within and adjacent to the J1/4 areas.

2) Establishing the “critical” rainfall day each year—the 18th and 15th largest daily precipitation events each year.

3) Establishing a 90th percentile that corresponded to the TMDL criteria based on a review of the period of record. The volume corresponding to the top 10 percent of rainfall was selected as the critical storm volume. The average 90th percentile 18th largest storm volume was 0.68 inch; the 15th largest storm volume was 0.83 inch on average.

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1) The TMDL stipulated a threshold number of exceedance days based on daily monitoring activities. In Jurisdiction 1 the number of exceedance days is seventeen; in Jurisdiction 4, the number of exceedance days is fifteen. It is recognized however, that while the TMDL (and many of the related analyses) are based on daily criteria, because the Coordinated Shoreline Monitoring Plan describes many locations where weekly monitoring will occur, the number of exceedances will be pro-rated accordingly.

It should be noted that out of necessity, the analysis needed to build upon the 17 exceedance-day criteria. For implementation purposes, the actual criteria will be adjusted to correspond to compliance monitoring frequencies.

Rainfall data sets were then converted to runoff volume estimates for each subwatershed using precipitation values, zoned land uses (and percentages of the subwatersheds that are impervious), soil types, and runoff coefficients developed by the County. To address the potential range of volumes, the analysis considered reduction factors established in adjacent watersheds for similar conditions in estimating ranges of target treatment volumes.

Table 2.1 shows the maximum target precipitation and runoff volume that would need to be managed (captured, treated, reused, diverted, etc.) for each subwatershed based on these rainfall depths.

Table 2.1 Target Precipitation and Storage Volumes

Subwatershed	Precipitation Volume (in.)	Runoff Coefficient	Maximum Target Volume (MG)[a]	Potential Reduced Volume (MG)[b]
Arroyo Sequit	0.68	0.24	34	13
Nicholas	0.83	0.28	8	3
Los Aliso	0.68	0.24	10	4
Encinal	0.68	0.24	8	3
Trancas	0.68	0.29	36	13
Zuma	0.68	0.28	33	12
Ramirez	0.68	0.33	21	8
Escondido	0.68	0.22	9	3
Latigo	0.68	0.26	4	1
Solstice	0.68	0.2	11	4
Corral	0.68	0.44	35	13
Carbon	0.68	0.37	16	6
Las Flores	0.68	0.32	17	6
Piedra Gorda	0.68	0.28	3	1
Pena	0.68	0.28	3	1
Tuna	0.68	0.21	4	1
Topanga	0.76	0.25	65	24
		Totals	**318**	**118**

Notes:
a. Based on target precipitation
b. Extrapolated from J2/3 analysis for reduced volume and 5 in 50 year exceedance, and should be considered preliminary and subject to change.

Studies on adjacent watersheds (TMDL Implementation Plans for Jurisdictional Groups 2 and 3) have involved further analyses based on a continuous simulation of 50-years of precipitation record in an attempt to provide further optimization of storage volumes. For a watershed in North Santa Monica Bay (Santa Ynez – runoff coefficient = 0.31), it was estimated that the target volumes could be reduced to 37% of the target volume, calculated in a similar method noted above, and still exceed TMDL requirements only 5 out of 50 years compared to 1 out of 50 years using the maximum target volume. Areas with lower runoff coefficients showed even greater percentage reductions (Susilo, 2004). In addition, the aforementioned analyses did not consider pollutant concentrations within storms or between a series of storms. Table 2.1 also lists target precipitation and storage volumes, and, assuming an effective percentage reduction similar to that calculated in an adjacent watershed, potential volumes that could be considered for implementation.

The proposed method is limited to the Implementation Plan and reductions will be confirmed and developed further with future studies. In Table 2.1, the "Potential Reduced Volume" column is an assumed volume based on adjustments and reductions developed at local watersheds. It is recognized that this volume is only a preliminary planning estimate, and will change upon the collection and analysis of both hydrologic streamflow and bacteria pollutograph data.

It must be noted that the hydrologic volumes are preliminary and presented for planning purposes. Furthermore, studies (for Jurisdictions 2 and 3) have shown that the target storage volumes in undeveloped subwatersheds may be overestimated by this approach; therefore, the values should be considered conservative. This will be addressed when pre-design parameters developed as part of future studies.

2.2 General Opportunities for Multiple Beneficial Uses

2.2.1 Water Supply and Reuse

This Implementation Plan utilizes an integrated water resources management approach that will identify beneficial use opportunities and treatment management options. The main purpose of this section is to summarize the current and future water supply beneficial uses, water use and reuse scenarios in the J1 and J4 study areas.

The approach used in evaluating beneficial use options involved identifying potential locations at both local and regional levels and estimating the amount of runoff that can be managed by the beneficial use options. The potential for beneficial use was assumed to be related to land uses since certain land uses offer more potential for reuse, such as landscape irrigation for golf courses and parks. Therefore, this analysis involved establishing a spatial distribution of potential areas and assessing the size and potential demand of these areas.

Potential efficiencies of various reuse options, local and regional, are discussed. Local reuse opportunities include on-site capture using cisterns. Regional reuse opportunities include groundwater recharge, reuse for recreation, regional capture and reuse for irrigation or other non-potable supply. In establishing reuse opportunities, a review of the practices of local water agencies was conducted. These agencies included: County of Los Angeles Water Works District 29, Las Virgenes Municipal Water District, West Basin Municipal Water District, and the City of Los Angeles. Estimates of potential demand indicated limited regional potential; the Trancas and Corral watersheds making up 75% of the approximately 1000 acre-feet of total potential demand. Within the Corral subwatershed, Pepperdine University already utilizes imported water from the Malibu Mesas Water Reclamation Plant which can provide 150 acre-feet of recycled water supply.

On this basis, the majority of reuse opportunities in J1/4 will likely be limited to localized on-site solutions. These solutions will be easier to implement.

2.2.2 Recreational Uses

Data sources for the evaluation of recreational water use opportunities included the Santa Monica Mountains Conservancy, the National Parks Service, and Southern California Association of Governments (SCAG). Figure 2.4 shows recreational areas and illustrates the placement of park areas relative to developed land (near the coast).

In addition, slopes and soil types were reviewed for potential applicability for regional and sub-regional water quality facilities. These evaluations indicated that many of the slopes and soil types were not readily suitable for larger scale (particularly land intensive) water quality best management practices.

2.2.3 BMP Location Evaluation

This effort was intended to evaluate potential sites for facilities that would be required to implement the TMDL implementation plan for various runoff management options. Both local (including sub-regional) and regional siting options were considered.

Local sites would allow for the storage and reuse of stormwater, reducing flow volumes and potentially improving water quality. Potential local sites include residential zoned facilities, parks and recreation centers (though state and federal facilities might require additional inter-jurisdiction coordination), government facilities (parking lots, service yards, etc.), schools (again requiring inter-jurisdictional coordination), and parking and urban vacant lots.

Regional treatment sites would require pre-treatment and storage, and possibly transmission pipelines, reuse locations, onsite storage and reuse. Operational storage was assumed to be equivalent to target runoff volumes described in Section 2.1.3. Regional methods of source control and regional treatment facilities could be required in order to maximize potential beneficial uses and reduce wet weather discharges to the beaches.

Criteria for regional sites included proximity to storage facilities, street access, public ownership (preferred), sufficient distance from development, flat terrain, avoidance of environmentally sensitive areas, and sites with public support. A detailed list of facilities is provided on a watershed-by-watershed basis in Section 5.

2.3 Description of Potential Non-Structural activities

This section describes existing non-structural (or institutional and programmatic) activities and recommends bacteria-specific programs to be considered for implementation. These activities build upon the NPDES Municipal Separate Storm Sewer System Permit for the County of Los Angeles, and are divided into five programs: 1) Public Information and Participation, 2) Industrial/Commercial (assumed to include illicit discharge and illicit connections), 3) Development Planning, 4) Development Construction, and 5) Public Agency Activities.

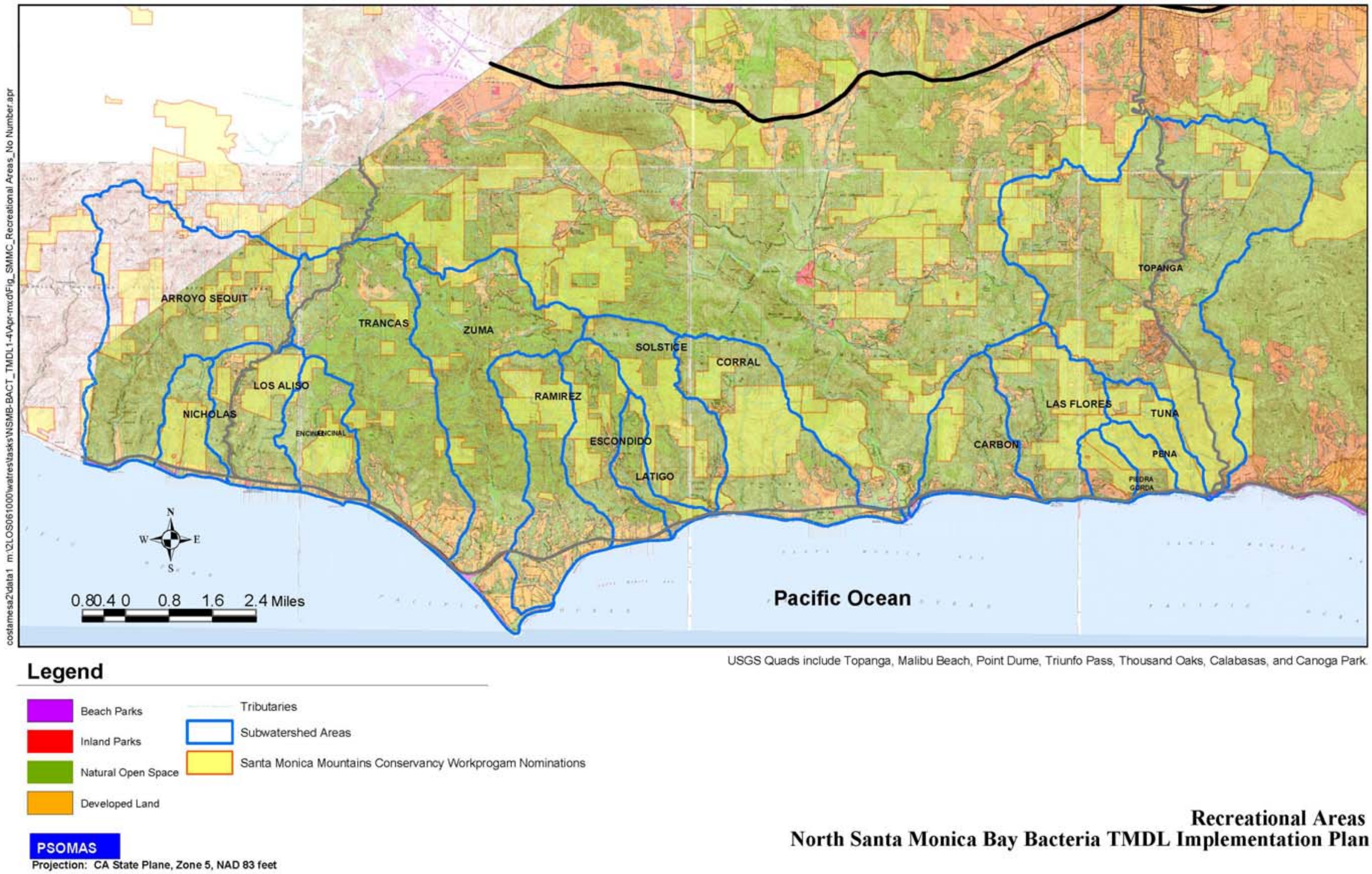


Figure 2.4 Recreational Areas

RB-AR 7647

9-1533

2.3.1 Public Information and Participation

The purpose of this public information and participation program is to implement nonstructural (source control/institutional) solutions as a critical and cost-effective element of an iterative and adaptive Bacteria TMDL program. This section reviews existing public information and participation programs as well as industrial/commercial facilities control programs and makes recommendations to incorporate bacteria TMDLs into these programs.

A number of Public Information/Public Participation programs were reviewed. Reviews consisted of phone interviews, online reviews, and document reviews. Multiple agencies operating within the jurisdictions were contacted along with environmental organizations and groups operating in the area. The programs described here are not an exhaustive list of all programs, but are rather an overall view of the most applicable and available programs. Not all environmental groups active in the area were contacted nor were all programs of agencies reviewed. Many agencies and environmental organizations co-sponsor programs. Thus, many of the materials are unified and redundant across agencies. Overall, current programs do not directly address bacteria, but rather seek to promote pollution prevention in general. Many current programs could be modified to discuss bacteria and other TMDLs and establish a link between certain activities and bacterial loading of stream and creeks.

Existing Programs included:

City of Malibu Clean Water Program

The Clean Water Program provides a brief introduction of the stormdrain system and BMPs that address water pollution prevention and targets three groups: residents, business team members, and contractors and developers. The Clean Water Team is represented by a dolphin mascot, Bu, that appeals to children and acts as a seal of approval for businesses participating in the Clean Water Program. As part of the program, local businesses and developers and contractors that implement the suggestions in the Clean Water Program receive a sign and a seal of approval sticker for display.

Numerous other handouts produced by the County of Los Angeles, Environmental Protection Agency, the Santa Monica Bay Restoration Project, and the Clean Water Program are also available at the Malibu Public Works counter. Items that are related to bacterial loading include picking up after pets, properly maintaining septic systems, and retaining storm water on site. A few of the brochures explain the link between bacterial loading and animal waste and improperly operating septic systems. The "Living Lightly" booklet – an informational handbook focused on watershed stewardship - is also available at the counter.

There is no municipal sewer system in the Malibu area. Therefore, most residents and business owners are entirely dependent on septic systems. For 2005, Malibu plans to release a septic system and leach field booklet and develop additional stormwater public information materials. The septic system and leach field booklet will be made available at the city, through the mail, and at real estate brokerages. These booklets are being developed to coincide with a septic system inspection program currently under development in a joint project with the Regional Board. For residential septic systems, the City recently launched a point-of-sale inspection program to identify and inventory septic systems in the area.

County of Los Angeles Stormwater Education Program

The County of Los Angeles Department of Public Works, implements a Stormwater Education Program (SEP) as part of its compliance with its NPDES Permit. The SEP uses a variety of mediums to educate the public and businesses about what people can do to prevent pollution from entering water bodies. A large portion of the area within J1/4 lies within the unincorporated area of the County of Los Angeles. SEP also provides assistance to incorporated cities to promote cohesive pollution prevention efforts throughout the region.

County brochures are directed at general stormwater pollutants except for the Dog Owner Tips which specifically focuses on cleaning up after your pets to reduce bacteria in stormwater. SEP provides online information targeted towards RV owners. This information is designed to educate RV owners regarding proper disposal practices for wastes. List of disposal sites are provided with contact information.

Caltrans' District 7 Programs

Caltrans is responsible for stormwater pollution controls along the State Highways in J1/4, including Pacific Coast Highway (LA-1), Decker Road (LA- 23), and Topanga Canyon Road (LA-27). As part of its storm water management activities, Caltrans uses a variety of methods to educate the public about the importance of managing storm water. The general approach of the Public Education Program is to:

- Inform the public regarding the storm water quality issues that pertain to Caltrans properties, facilities and activities; and

- Encourage public behavior changes regarding the release of potential pollutants (e.g., litter, spilled loads and oil leaks).

Caltrans' storm water outreach program consists of a variety of written materials, monthly and quarterly bulletins, a website, workshops, storm drain stenciling, anti-litter signs, a statewide Adopt-a-Highway Program, along with many local municipality partnerships. "Pathogens in Storm Drain Discharges Brochure" is an example of written materials that is most directly related to bacteria.

In District 7, "No Dumping" and "Litter Fee" signs were installed at selected locations on highways and freeways. Warnings were stenciled at the drain inlets to prohibit discharges into drainage systems in the park-and-ride lots, rest areas, vista points, and other areas with pedestrian traffic."

Other Public Information Programs

Many stakeholder groups have developed their own public information materials. Some of these groups include:

- Malibu Coastal Land Conservancy
- Septic Tank Service Providers' Programs
- Santa Monica Bay Restoration Commission
- Santa Monica Mountains Conservancy
- Santa Monica Mountain Trails Council
- Equestrian Trails, Inc.
- Resource Conservation District of the Santa Monica Mountains
- Pepperdine University

Bacteria-Specific Programs

Many programs are not currently addressing bacteria or informing the public about TMDLs. Most existing programs consist of general efforts to educate individuals, businesses, and industry about pollution prevention, impacts of pollution and good housekeeping. Bacteria-specific information can be incorporated into new and existing programs through the following programs:

- Outreach to pet owners establishing a link between animal wastes and health issues and focus on point of contact

- Locate areas with corralled animals and educate property owners on bacteria TMDLs

- Identify horse stables in the region and implement pilot program

- Post signs at County and City-owned trailheads designated for equestrian users to not clean out horse trailers in parking lots and to clean up horse waste

- Outreach at trailheads encouraging hikers to use restroom facilities

- Provide septic system pumpers and customers with septic system guides

- Coordinate outreach activities with Pepperdine University

- Increase coordination between agencies and environmental organizations in preparing outreach materials

2.3.2 Industrial/Commercial

Agencies within the J1/J4 implement an industrial/commercial facilities control program. The goal of this program is to change behaviors through a combination of outreach and site visits. Most existing programs do not specifically target bacteria, but are designed to minimize general pollutants of concern that will tend to assist in reducing bacterial loading. A partial list of elements from existing programs follows:

City of Malibu

Malibu has implemented multiple programs to comply with the NPDES permit requirements for commercial/industrial facilities and to address local concerns. Some outreach programs target both residential and commercial/industrial facilities.

Inspections required under the permits for industrial and commercial facilities are conducted by the City's inspectors and restaurant inspections are contracted to the County of Los Angeles Department of Health Services (DHS) inspectors. Industrial and commercial facilities are given educational materials specific to the type of business during an inspection. These inspections are not specifically designed to target bacteria, but rather general pollutant BMPs. Additionally, all retail gasoline and automotive dealerships are required to meet the BMP requirements as specified by the Stormwater Quality Task Force Best Management Practice Guide for Retail Gasoline and Automotive Dealerships. To ensure that these commercial establishments are in compliance, the City has implemented a rigorous commercial business inspection program.

Enforcement actions include, but are not limited to, warnings, notices of violations, administrative civil liability actions, and monetary fines. Enforcement actions occur when continued violations are discovered. All inspection data is tracked in an inventory database of all commercial/industrial facilities. The City has indicated in its individual annual report to the Regional Board that commercial/industrial facilities generally do not follow up with training of their employees in BMPs without constant inquiries from inspectors and that most facilities do not keep up with all BMPs.

Representatives with the City of Malibu are concerned with bacteria loading from restaurant operations. Restaurant waste, in both solid form (packaging, paper products, cans, food products, etc..) and liquid form (i.e., cooking oil, grease, animal fats, food products, etc.), can collect in areas that come in contact with stormwater runoff and provide an ideal habitat for specific forms of bacteria that may enter stormwater drains. Prior to food service inspections, food service providers are mailed a BMP fact sheet for reducing pollution.

County of Los Angeles Department of Public Works

The Department of Public Works is responsible for ensuring compliance control programs for commercial and industrial businesses within unincorporated areas. The County of Los Angeles maintains an inventory of its commercial/industrial facilities along with inspection data. These inspections target pollutants of general concern and not specifically bacteria. Inspections are designed to be educational and informative for commercial/industrial facilities in conjunctions with confirming BMPs are properly implemented as required by law. BMPs can take the form of schedules of activities, prohibitions of actions, maintenance procedures, treatment requirements, and structural controls. When additional BMPs are needed, the inspector recommends non-structural BMPs. BMP handouts created for specific industries within Los Angeles the County include:

- General commercial/industrial facilities
- Equestrian and stable facilities
- Food and related products facilities
- Potential New Programs

As a means to reduce bacterial loading associated and/or linked to commercial/industrial facilities, modifications to existing programs and new programs are recommended. Effectiveness of these new programs can be measured via numerous methodologies including compliance, participation levels, and ultimately sampling. Existing commercial/industrial facility control programs are not directly addressing bacteria, other TMDLs, or informing commercial and industrial businesses about bacteria TMDLs. With regards to commercial horse stables and equestrian facilities, an anecdotal link has been established associating animal wastes with bacteria loading. Some of the bacteria-specific recommendations include:

- Provide an outreach program for all commercial facilities with corralled animals, including equestrian centers

- Provide for regular BMP inspections for restaurants

- Increase awareness of BMPs in restaurants by establishing a restaurant reward and recognition program

- Conduct industry specific workshops

- Investigate the possibility of increasing frequency of trash collection at restaurants

2.3.3 Development Planning

Two land use plans affect development in the subwatershed areas. One plan is the City of Malibu's Local Coastal Program (LCP), certified by the California Coastal Commission in September 2002. The second plan is the County of Los Angeles' Malibu Land Use Plan, which guides development in the unincorporated portions of the Santa Monica Mountains Coastal Zone and was certified by the California Coastal Commission in 1986. The subwatershed areas lie almost completely within the state-designated Coastal Zone. Any development within the Coastal Zone must be conducted in a manner that protects coastal resources.

As of this writing, the City's LCP is the subject of litigation and has not yet been implemented. If fully implemented as certified, the City's LCP will regulate both land uses and development standards within the City of Malibu. The County's Malibu Land Use Plan, a component of the County of Los Angeles General Plan, guides land uses but does not contain comprehensive development standards. Under the Land Use Plan, most development in the unincorporated Coastal Zone must undergo an additional level of environmental review prior to approval. The County is currently working on updating the Land Use Plan, which is primarily a policy document, and adding a local implementation program. The local implementation program will contain the standards that ensure coastal resources are protected from development. Together, the new Land Use Plan and the local implementation program—once certified by the California Coastal Commission—will constitute the County's LCP for the unincorporated portions of the Santa Monica Mountains Coastal Zone.

The City's LCP and the County's Malibu Land Use Plan are intended to be basic planning tools used by the local government, in partnership with the California Coastal Commission, to guide development in the coastal zone and contain the ground rules for future development and protection of coastal resources. The LCP and Land Use Plan specify appropriate location, type, and scale of new or changed uses of land and water. These programs govern decisions that determine the short- and long-term conservation and use of coastal resources. Chapter 17 of the City LCP's Local Implementation Plan details the Water Quality Protection Ordinance. This includes requiring development to evaluate potential adverse impacts to water quality and consider site design, source control and treatment control BMPs. This section also discusses designing to prevent the introduction of pollutants that may result in water quality impacts.

Many non-structural solutions that can be incorporated into an Implementation Plan for an effective bacteria control program can be implemented within the overall framework of the existing NPDES permit. The County of Los Angeles and the City of Malibu must implement a Development Planning Program, which identifies various controls to minimize water quality impacts of stormwater runoff generated from all Planning Priority Development and Redevelopment projects. Through the use of project planning and permit approval process and CEQA, Permittees are required to assure that appropriate post-construction BMPs are included in Priority Planning Development and Redevelopment Project plans and designs to:

- Minimize impacts from stormwater and urban runoff on the biological integrity of Natural Drainage Systems and water bodies

- Maximize the percentage of pervious surfaces to allow percolation of stormwater into the ground;

- Minimize the quantity of stormwater directed to impervious surfaces and the MS4;

- Properly designed and maintain Treatment Control BMPs in a manner that does not promote the breeding of vectors; and

- Provide appropriate permanent measures to reduce stormwater pollutant loads in stormwater from the development sites.

In addition to controlling peak flows, each Permittee is required to develop and implement a Standard Urban Storm Water Mitigation Plan (SUSMP). In terms of treating stormwater runoff from the development site, the SUSMP includes Numerical Design Criteria for Treatment Control BMPs. The two most common methods are a volumetric treatment control or a flow based treatment control. Bacteria-specific measures include further emphasizing applicable existing BMPs in development planning and construction programs

California Environmental Quality Act

The California Environmental Quality Act (CEQA), Public Resources Code, Section 21000 et seq., requires environmental assessments of projects in California. As a part of CEQA, a proposed project is evaluated to determine whether the project may have an adverse impact upon the environment. If an initial study indicates that significant adverse environmental impact may occur as a result of a proposed project then the environmental impact(s) must be mitigated. Either a Mitigated Negative Declaration, or for more substantial projects, an Environmental Impact Report comparing various project alternatives and identifying the impacts and mitigation measures must be prepared and adopted.

The Storm Water Quality Management Plan (SQMP) requires the assessment of a development project's impacts upon hydrology and water quality. Current guidance is contained within the Development Planning Model Program for the preparation and review of local CEQA documents. The guidance relies on a general approach to assessment. Revisions to these guidelines may be necessary to ensure that CEQA documents adequately address bacteria and other impairments for which TMDLs have been prepared when evaluating a project's water quality impacts.

The CEQA process can assist in the evaluation of appropriate BMPs to reduce pollutants. Addressing wet weather TMDLs during the CEQA process will require modification of existing hydrology and water quality evaluation criteria. Seven criteria designed to supplement the existing standard Initial Study checklist incorporated into the CEQA Guidelines along with any changes agencies may have made to incorporate stormwater quality issues into the CEQA review process are listed below

1. Potential impact of project construction on stormwater runoff

2. Potential impact of project post-construction activity on stormwater runoff

3. Potential for discharge of stormwater runoff

4. Potential for discharge of stormwater pollutants from material storage, vehicle or equipment fueling, vehicle or equipment maintenance (including washing), waste handling, hazardous materials handling or storage, delivery areas, loading docks or other outdoor work areas

5. Potential for discharge of stormwater to impair the beneficial uses of the receiving waters or areas that provide water quality benefit

6. Potential for the discharge of stormwater to cause significant harm on the biological integrity of waterways and water bodies

7. Potential for significant increases in erosion of the project site or surrounding areas.

When considering TMDL requirements in the CEQA process, the lead agency and project proponent should determine the potential for the project to increase bacterial loading based on the change in proposed land use and impervious surface, and evaluate the project characteristics that would minimize the impact of increased loading. These should be identified in the project SUSMP for permanent, post-construction BMPs. For larger projects (for example those in categories that require preparation of a SUSMP), a quantitative analysis may be required. The analysis would need to demonstrate that post-project bacteria loads, with application of BMPs, would be equal to or less than pre-project conditions. Alternatively, the analysis could demonstrate that through project BMP design, the project could manage a proportionately equivalent volume on-site to the target volume established in the TMDL for the watershed.

Any unique construction phase BMPs should be identified in the CEQA documentation and subsequently incorporated in the project Stormwater Pollution Prevention Plan (SWPPP) which would be prepared prior to construction. CEQA mitigation monitoring plans can identify these available mechanisms as the primary enforcement methods.

The criteria can be further refined to evaluate the project's ability to meet TMDL implementation requirements as an overall component of stormwater quality. The following plan of action is recommended for incorporating the review of TMDLs into the CEQA process:

1. Identify the TMDL required issues not currently addressed by CEQA
2. Address required TMDL issues within standard conditions of approval.
3. Modify CEQA review process.

2.3.4 Development Construction

As part of the existing NPDES Permit, requirements exist for construction activities that disturb equal to or greater than one acre of land or whose projects disturb less than 1 acre but are part of a larger common plan of development that in total disturbs one or more acres. As adopted by the State Board, the General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit, 99-08-DWQ), referred to as the General Permit, includes clearing, grading and disturbances to the ground such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. The General Permit has the following provisions:

- Develop and implement a SWPPP which specifies BMPs that will prevent all construction pollutants from contacting stormwater and with the intent of keeping all products of erosion from moving off site into receiving waters.

- Eliminate or reduce non-stormwater discharges to storm sewer systems and other waters of the nation.

- Perform inspections of all BMPs.

Though many of the construction related BMPs are not specifically targeted at reducing or eliminating bacteria from runoff, implementation of the construction BMPs can effectively reduce bacteria in the receiving waters and storm drain systems. In general, there are two areas of focus for construction site BMPs that will assist in bacteria reduction: 1) enhanced sediment control, as sediment can contain bacteria, and 2) control/elimination of non-stormwater discharges from construction sites, as this becomes dry weather runoff which contributes to bacteria transport off-site. Therefore, by managing these two areas on construction sites, bacteria levels can be reduced in some cases. These categories already exist under SWPPPs, but additional emphasis could be given in contractor education and compliance inspection activities.

Examples of existing required BMPs that can be further emphasized include:

- Proper handling of temporary toilets (sanitary/septic waste management), and containment and cleanup of spills surrounding temporary toilets (sanitary/septic waste management)

- Proper management of lunch truck and food disposal (solid waste management), and

- Reduction of runoff from exiting site will result in less runoff to pick up bacteria from off site en route to the ocean (e.g. water conservation practices, illicit connection/discharge, potable water/irrigation, vehicle and equipment cleaning, liquid waste management)

2.3.5 Public Agency Activities

This task describes both current and recommended public agency activities for the three primary agencies: City of Malibu, County of Los Angeles, and Caltrans.

City of Malibu

In February 2002, the City of Malibu, along with the County, began implementing programs under a new NPDES permit cycle. City funds have also been allocated to record activity at all priority drains over the next few years. Drains that are suspected of contributing to degraded water quality will be a priority for video monitoring. Suspicious discharges will be sampled and tested, and the City will take enforcement actions if necessary.

Information on drainage system operation and maintenance (cleaning) activities was obtained from Melanie Irwin, former Public Education Coordinator for the City of Malibu.

Street sweeping reduces the amount of trash and debris in stormwater, which can potentially reduce bacteria levels. As part of the City's roadway operation and maintenance activities, all streets in the Malibu area are swept on a regular basis.

Raw sewage spills, leaks, and overflows from septic systems are a potential threat to both human health and the quality of receiving waters if the bacteria pollutants enter the storm drain system. Therefore, the City gives high priority to septic system complaints and reports of septic system failures, including overflows. To respond to septic overflows, the City has developed a spill response program that is implemented any time there is a septic spill.

The City does not maintain any corporate yards to support its maintenance activities, but City employees inspect the offsite yard to ensure that the pollution prevention plan is in place and that yard workers have a clear understanding of applicable BMPs including illicit discharge controls, good housekeeping practices, material storage controls, and vehicle leaks and spill controls.

County of Los Angeles

The County of Los Angeles has developed a Public Agency Activities Model Program for agencies to use in developing their own programs. The model provides specific guidance in the following areas:

- Sewage Systems Operations
- Public Construction Activities Management
- Vehicle Maintenance/Material Storage Facilities Management
- Landscape and Recreational Facilities Management
- Storm Drain Operation and Management
- Streets and Roads Maintenance
- Parking Facilities Management
- Public Industrial Activities Management
- Emergency Procedures
- Treatment Feasibility Study

Recent results of the Program, published in the 2004 annual program report, include a variety of measures to comply with the MS4 permit, including storm system maintenance and catch basin cleaning (trash and litter are potential carriers of bacteria).

The County also visually monitors open channel storm drains and other drainage structures for debris at least annually. Those sites experiencing frequent illicit discharges have been identified and prioritized for regular inspection by the County. The County has also designated stormwater coordinators to work with residents to prevent illegal dumping into storm drains, coordinate stormwater stenciling and facilitate work on clogged drains. Residents can call an environmental hotline (1-888-CLEANLA) to report illegal dumping into the County's storm drain system.

The County maintains a number of vehicle maintenance facilities, material storage facilities, and corporation yards which each have pollution prevention plans.

Caltrans District 7

Caltrans operates under a statewide NPDES permit which governs management of its storm water activities. As part of its storm water activities, Caltrans has developed an approved Storm Water Management Plan (SWMP) which addresses storm water pollution control related to planning, design, construction, maintenance and operation of all transportation facilities as an ongoing part of Caltrans normal business practices. An important component of the SWMP is the Project Planning and Design Guide (PPDG) which provides specific design guidance for incorporating BMPs into projects during the planning and design phases of a project. These include Treatment BMPs, Design Pollution Prevention BMPs, and critical Construction Site BMPs. Other components of the SWMP include research and development of BMPs, monitoring of storm water activity through regional work plans and annual reporting, and continual funding of storm water research and public education.

New Public Agency Activities

Through a combination of revising existing public agency activities and implementing new public agency activities, the agencies in Jurisdictions 1 and 4 can further focus activities to optimize reduction in bacteria and other TMDL constituents. Most existing agency activities do not specifically target bacteria TMDLs. Therefore, the following activity was offered for consideration.

- Establish guidelines for optimizing frequency of cleaning cycles for drainage facilities

2.4 Description of Structural BMPs

Structural Best Management Practices can be potentially implemented on a local, sub-regional, or regional scale. The watershed specific elements of the Implementation Plan will include specific recommended combinations of structural and non-structural measures to be implemented as appropriate within each jurisdiction or combination of jurisdictions that can quantitatively be predicted to have some success of achieving the reduction in exceedance days required by the TMDL. The purpose of this analysis is to identify these structural measures. This effort identified potential treatment requirements, technologies, and management options for specific areas of the watersheds that are to be treated for either discharge or reuse/recharge.

2.4.1 On-Site (structural source control) Options

These options include cisterns, on-site storage/reuse, onsite capture and infiltration, and septic-related BMPs; the stormwater BMPs are intended to reduce the total volume and flow rate of runoff leaving properties and entering the storm drain system, including any bacteria that might be picked up in the runoff on-site. Some limited pre-treatment might be required for a larger system to minimize operational problems. It should be recognized that on-site options, like non-structural options, may not fully mitigate the impacts of pollutant loading, but their implementation could contribute to integrated water quality solutions, and could contribute to the reduction of the magnitude and extent of downstream (regional) options.

Residential Cisterns

Cisterns are low-cost water conservation devices that could be used to reduce runoff volume and, for smaller storm events, delay and reduce the peak runoff flow rates. They store and divert runoff from impervious roof areas on residential properties. This stored runoff could provide a source of chemically untreated 'soft water' for gardens and compost, free of most sediment and dissolved salts.

On-Site Storage and Reuse Projects

This option involves capturing runoff from areas other than, or in addition to, rooftops and storing it for subsequent reuse on-site. These other areas include driveways, parking lots, and paved sports areas. This option could also include some treatment (such as chlorination) and would require careful management, and consideration of water distribution systems.

The potential sites for this type of system would be public parks, government facilities, or schools at which the runoff could be reused for irrigation without meeting full Title 22 treatment Standards (requiring filtration and disinfection). They would be installed underground since they would need to be big enough to storage large volumes of runoff. The landscape maintenance could involve a controlled subsurface distribution system (i.e., no sprinkler system) so that direct public contact is essentially eliminated. The opportunities for these types of projects would have to be identified and developed on a case-by-case basis.

Small Scale Infiltration Projects

Many on-site options have been identified that capture storm water and allow it to infiltrate into the ground at rates that would provide water quality treatment and reduce the downstream flow. The options include porous pavement, retention grading, infiltration pit, bioretention, and infiltration culverts are discussed. As with any infiltration option, the pre-design considerations include the following:

- Soil types and groundwater depths
- Presence of contaminated groundwater/subsurface soils, and the potential impacts of introducing pollutants into the subsurface system.
- Proximity to potentially impacted structures
- Maintenance to prevent long-term clogging

Porous Pavements

These on-site options include various pavement and paver options, including

- Porous Concrete:

- Grass Pavers:
- Gravel Pavers:
- Interlocking Paving Blocks:
- Pervious Crushed Stone:

Retention Grading

Residential landscape area retention grading is a concept whereby a site is graded to create a "sunken garden" that holds runoff and rainwater until it can be absorbed into the ground. This type of grading works best in highly permeable soils.

Infiltration Pits and Culverts

Infiltration pits are a common means of storm water management in many areas of the United States. They involve adding a grate with a rock pit below at the lowest end of paved areas such as driveways and parking lots.

Bioretention Areas

Bioretention areas are local landscape depressions that function as retention basins.

Analysis of Capture and Infiltration

Infiltrating runoff requires that the soils be permeable enough to allow percolation into the groundwater basin. Preliminary studies indicate that it is unlikely that there is opportunity for groundwater recharge through on-site infiltration projects on a large scale. There is the potential, however, for some runoff to infiltrate into the top layers of soil, where it will reduce the overall runoff volume leaving the site, recognizing potential risks due to slope stability. In addition to the need for permeable soils, an infiltration system requires that the soil be uncontaminated to avoid degradation of the underlying aquifer. One additional concern about the use of infiltration pits is that unmaintained or unmonitored installations could be a risk to groundwater quality (e.g. from illegal dumping). As with all the options maintenance of these installations is important to provide consistent treatment.

On-Site Wastewater Alternatives

While on-site wastewater alternatives are not typically a stormwater treatment option, given the potential for septic-related pollutant loads, and embracing an integrated, holistic approach to water resources management, potential alternative on-site wastewater options discussed here may be considered.

Reference is made here to a trademarked on-site wastewater treatment system called Living Machines™: integrated, multi-benefit, natural systems approaches to treating wastewater.

The Living Machines™ are site-specific biological solutions that re-route waste streams into resources. The technology is reportedly simple to operate, and more cost effective to build and run than conventional treatment.

2.4.2 Regional and Sub-Regional Structural Options

The following are potential regional (and sub-regional) options:

- Capture, store, treat and discharge
- Capture, store and beneficially reuse for irrigation or similar non-potable uses
- Capture, store, treat and inject

It should be recognized that the structural storm water BMPs presented here focus on bacteria-specific structural BMPs, and that in most cases, pre-treatment BMPs are required. These BMPs could include some combination of biofilters, extended detention basins, filters, and/or proprietary BMPs. These pre-treatment BMPs are not discussed in detail in this but the cumulative effect of pre-treatment as part of a treatment train is summarized in the table at the end of this section.

This section discusses traditional as well as candidate treatment technologies that could potentially be utilized for treatment of bacteria, where discharges are released. Traditional treatment methods would probably be most applicable with high wet weather runoff flowrates. The candidate treatments technologies have not been proved for this application but could possibly provide treatment on small-scale in localized drainage areas. The treatment technologies examined consist of the following:

- Traditional treatment
- Storm water Filtration Units
- Advanced Oxidation
- Peracetic Acid (PAA) and Other Bactericides
- Subsurface Constructed Wetlands

It should be noted that many of the information related to new and proprietary technologies were provided by vendors and manufacturers, and implementation should be carefully monitored and considered in the context of adaptive management practices.

Table 2.2 summarizes the BMP approaches described above. It should be noted that different BMPs have different pre-treatment options (which can provide removal of multiple pollutants) and different integrated uses. In general, pre-treatment will consist of a) gross-solids removal (e.g., utilizing screens or nets), and b) detention, which allows for deposition of sediments and particulate pollutants while providing transient storage for bacteria treatment.

Table 2.2 Structural BMP summary

Structural BMPs	Treatment Effectiveness							Integrated Resources		
	Bacteria	Nutrients	Metals	Organics	Trash	Sediment	Oil & Grease	Reuse	Conservation	Recharge
On-Site Options										
a) Cisterns	U	U	U	U	U	U	U	X	X	
b) Storage and Reuse	3	3	3	3	3	3	3	X	X	
c) Small Scale Infiltration	3	3	3	3	3	3	3	X	X	X
d) On-site Wastewater	3	U	U	U	U	U	U			
Regional Solutions										
Capture, Store, Treat, and Discharge	3	3*	3*	3*	3*	3*	3*			
Capture, Store, Treat, and Reuse	3	3*	3*	3*	3*	3*	3*	X	X	
Treatment options (subgroup)										
- Traditional Treatment/Small Package	3	U	U	U	1	1	1	N/A	N/A	N/A
- Storm Water Filtration	U/2 exp	2	3	3	3	3	3	N/A	N/A	N/A
- Advanced Oxidation	U/3 exp	U	U	U	1	1	1	N/A	N/A	N/A
- Peracetic Acid/bactericides	U/3exp	U	U	U	1	1	1	N/A	N/A	N/A
- SSF Wetlands	3	3	3	U	1	1	1	N/A	N/A	N/A

Notes: * required pretreatment is included in overall treatment train and will remove many of the other constituent pollutants
1 = low effectiveness, 2 = medium effectiveness, 3 = high effectiveness, U = unknown, exp = expected performance

Table 2.2 highlights the potential benefits of different structural options. These benefits include treatment effectiveness, and integrated water resources – both of which are critical to the integrated approach of this Implementation Plan.

2.5 Regulatory and Permitting Considerations

This section identifies specific local regulations including planning, public works and zoning codes, as well as state and federal regulations which cover the planning, siting and development of regional facilities which are under consideration.

In general, the regulatory issues associated with the options in Table 2.2 for the management of the urban wet weather runoff and attainment of the TMDL are related to:

- Permitting the construction and operation of regional facilities;
- Permitting effluent, whether for beneficial reuse or for discharge; and
- Permitting the construction of on-site treatment systems.

2.5.1 Local Considerations

Local permitting and regulatory considerations are summarized below, and require consultation should structural projects be considered for implementation.

County and City Code Citations

County/City	Planning/ Zoning Code	Building Code	Plumbing Code	Environmental Protection	Other
County of Los Angeles	Title 22 Planning and Zoning Oak Tree Permit	Title 26 Building Code	Title 28 Plumbing Code	Title 12 Environmental Protection, Chapter 12.80 Stormwater and Runoff Pollution Control Title 20 Utilities	Title 32 Fire Code DHS permit for corralled animals
City of Malibu	Title 17 Malibu Zoning Ordinance	Title 15 Buildings and Construction, Chapter 15.04 Building Code	Title 15 Buildings and Construction, Chapter 15.12 Plumbing Code	Title 13 Public Services, Chapter 13.04 Stormwater Management and Discharge Control Title 13 Public Services, Chapter 13.12 Underground Utility Districts	Title 8 Fire Code Local Coastal Program (LCP)

Local Regulations that Govern Implementation Options for SMBB Bacteria TMDL

Implementation Options	Local Regulations/Permits					
	Building Codes	Plumbing Codes	Planning and Zoning	Public Works	Environmental Protection	Other
Cisterns/On-Site Storage and Reuse	Building Permit, Grading Permit	Plumbing Permit	Planning Approval	If using public right of way	N/A	N/A
Porous Pavement	Building Permit, Grading Permit	N/A	Planning Approval	If using public right of way	N/A	N/A
Retention Grading	Building Permit, Grading Permit	N/A	Planning Approval	If using public right of way	N/A	N/A
Infiltration Trenches	Building Permit, Grading Permit	N/A	Planning Approval	If using public right of way	N/A	N/A
On-site Wastewater Treatment	Building Permit, Grading Permit	Onsite Wastewater Treatment Operating Permit	Planning Approval	If using public right of way	N/A	N/A
Treatment, Reuse and Discharge Facility	Building Permit, Grading Permit	Plumbing Permit	Planning Approval	If using public right of way	N/A	N/A

2.5.2 State and Federal Considerations

State and Federal considerations are tabulated and described below.

State/Federal Environmental Regulations that Govern Implementation Options for SMB Bacteria TMDL

	NPDES Permit	Coastal Zone	Dept. of Health Services	Fish and Game	Corps of Engineers	Fish and Wildlife	NFMS
On Site BMPs							
Cisterns	Already approved in Phase I MS4 permit	Already approved in LCP	N/A	N/A	N/A	N/A	N/A

	NPDES Permit	Coastal Zone	Dept. of Health Services	Fish and Game	Corps of Engineers	Fish and Wildlife	NFMS
Porous Pavement	Already approved in Phase I MS4 permit	Already approved in LCP	N/A	N/A	N/A	N/A	N/A
Infiltration Trenches	Already approved in Phase I MS4 permit	Already approved in LCP, but permit needed if landslide hazard	If considered groundwater replenishment	N/A	N/A	N/A	N/A
OSWT	N/A	Must meet LCP standards	N/A	N/A	N/A	N/A	N/A
Regional Solutions							
Treatment and Discharge Facility	Already approved in Phase I MS4—use of chemicals may require new permit; if new Ocean discharge, may need permit and antideg analysis	If in Coastal Zone – a Public Works Plan and Coastal Development Permit	N/A	Depends on location and discharge; if a new discharge would need approval	Depends on location of treatment and discharge	Depends on location of treatment / discharge; if new discharge would need approval	Depends on location of treatment/discharge; if new Ocean discharge would need approval
Treatment and Direct Reuse	New permit	If in Coastal Zone – a Public Works Plan and CDP	Permit Required and may meet Title 22	Depends on location	Depends on location	Depends on location	Depends on location

2.5.3 Permit Requirements for Direct Discharge to Waters

Treatment and Discharge Solutions

Capturing, treating and discharging stormwater flow could be considered consistent with the stormwater permit. This level of treatment could be considered a BMP and thus the existing permit would be sufficient.

Permitting for Discharge of Stormwater into Deeper Ocean Waters

The California Ocean Plan regulates discharges into the Pacific Ocean within three miles of territorial waters. Beyond three miles, the national Clean Water Act applies, mandating that the EPA to issue the permit. In most cases, the EPA has asked the state to jointly issue permits for US waters outside the three-mile zone.

The Ocean Plan has four specific requirements for point source discharges: 1) the same bacteria standards apply as those along the shore in waters less than 30 feet deep and bounded by a distance of 1,000 feet from the shoreline; 2) the discharge will not violate the physical characteristics of the ocean, such as discoloration, floatables and reduction of light; 3) the chemical characteristics of the ocean will not be violated; 4) the discharge must comply with water quality objectives of the Ocean Plan. When determining compliance, actual initial dilution and background concentration are considered. There are other aspects of the Ocean Plan that state that a discharge may not harm the biological characteristics of the Ocean. Table A of the Ocean Plan applies to effluent discharges only.

The Ocean Plan contains specific implementation requirements for permitting discharges. Stormwater can be discharged into the Ocean if, with dilution, it can meet the water quality standards as contained in Ocean Plan Table B and the implementation requirements contained in other parts of the Plan. In addition, if the stormwater discharge were located a distance from the shoreline, an anti-degration analysis may be necessary, as this would be considered a "new discharge." Because this would be an intermittent and occasional discharge that occurs only in wet weather, it may be possible to negotiate with the Regional Board to allow the existing stormwater permit to be applicable for ocean discharge.

The Ocean Plan also designates Areas of Special Biological Significance (ASBS). ASBS are "areas designated by the State Board as requiring protection of species or biological communities to the extent that alteration of natural water quality is undesirable." A portion of the J1/4 area north of Pt. Dume is located within the ASBS No.24 – Mugu Lagoon to Latigo Point (see Figure 2.5). It should be noted that the SWRCB is currently considering amendments to the Ocean Plan. The Ocean Plan prohibits discharges to ASBS and specifies that discharges shall be located a sufficient distance from ASBS-designated areas. However, the State Board does have the authority to grant exceptions to the prohibition on ASBS discharges, provided that the exception will not compromise protection of ocean waters for beneficial uses. The State Board has authorized four discharges under this exception authority. It is assumed that effective implementation of the Bacterial TMDL Implementation Plan will provide a basis for the State Board to allow for stormwater discharges to the Ocean.

One of the amendments that is moving forward on the Ocean Plan concerns bacterial standards. The State Board plans to a) add an enterococcus standard to the Ocean Plan; b) delete the single sample standards currently in the Ocean Plan and change to a trigger for additional monitoring; c) require monitoring for total coliform at offshore stations; d) require total and fecal coliform and enterococcus monitoring at all shoreline stations, and at all stations determined by the Regional Boards to be used for water-contact recreation; and e) amend the Bacterial Assessment and Remedial Action Requirements.

Figure 2.5 Areas of Special Biological Significance No. 24

In addition to the standards contained in the Ocean Plan, ocean discharges must comply with AB 411. AB 411 required the Department of Health Services to establish minimum standards for the sanitation of public beaches. DHS's implementing regulations were adopted in 1999 and require testing of waters adjacent to all public beaches for total coliform, fecal coliform, and enterococci; compliance with standards for total coliform, fecal coliform, and enterococci; use of DHS sampling protocols; and weekly bacterial testing between April 1 and October 31 for any beach visited annually by more than 50,000 people which also has a storm drain outlet that flows in the summer.

2.5.4 Treatment and Reuse Solutions

Beneficial reuse can take the form of irrigation as well as industrial use and other non-potable uses. To assure protection of public health where water reuse is involved, the California Department of Health Services (DHS) has been statutorily directed to establish statewide reclamation criteria for the various uses of reclaimed water (Water Code Section 13521). DHS has promulgated regulatory criteria which are currently set forth in the California Code of Regulations, Title 22, Division 4, Chapter 3, 60301 et seq. DHS's regulatory criteria include numerical limitations and requirements, treatment method requirements, and provisions and requirements related to sampling and analysis, engineering reports, design, operation, and maintenance.

The Regional Board must also approve the application for beneficial reuse of wastewater. No person may either reclaim water or use reclaimed water until the Regional Board has either issued reclamation requirements or waived the necessity for such requirements (Water Code Section 13524). In the process of issuing reclamation requirements, the Regional Board must consult with and consider recommendations of DHS (Water Code Section 13523). Title 22 officially only applies to recycled wastewater (of sewage origin). Formal application of Title 22 Regulations normally is triggered when a wastewater or water agency is proposing, often in conjunction with a water agency, or with direct users, to deliver treated wastewater. That type of reuse must be permitted by the Regional Board through WDR's, which might be added to an existing NPDES/WDR permit or as a stand-alone Water Reclamation WDR.

If an agency is contemplating stormwater reuse, the permitting process is not as clear. If the stormwater project is just treatment and discharge back to the channel or storm drain, it is assumed that the Regional Board would view that as a BMP, not a new discharge. If the reuse project is going to look like a traditional reuse project, where the producing agency (e.g. the MS4 agency) is delivering water to others for unrestricted irrigation use, it is a safe assumption that it would need to be free of potential pathogens that might have been in the source water (runoff). It is possible that this quality might be achieved with a slightly less stringent treatment train than typical Title 22 treatment.

2.5.5 Issues Regarding Implementation of Options Consistent With the State and Federal Regulations

On-site BMPs are already permitted under state and federal regulations. Only in an extreme situation in which the on-site solution would have the potential to damage a natural resource protected by a state or federal resource agency, (e.g. a wetland) would it be considered necessary to go beyond the existing permits.

However, for the regional solutions which involve treatment, discharge, or reuse, the state and federal regulations would be applicable if:

- The location of the regional facility impacts the natural aquatic, terrestrial or avian resources protected by the state and federal resource protection agencies.
- The location of the facility is in the Coastal Zone, thereby requiring a Coastal Development Permit, local planning and zoning approval, and a Public Works Plan for the Coastal Commission.
- The location of the facility requires construction in a wetland or Waters of the U.S., requiring dredging and filling of a wetland or Waters of the U.S., which would involve the Corps and the state and federal water quality and resource protection agencies.
- A new surface water discharge is developed for the product (effluent) of the regional facility requiring a new NPDES permit, and potentially an anti-degradation analysis.
- The product or effluent of the regional facility is reused as a non-potable water supply either directly or after storage in an aquifer where it is injected. This would require the Regional Board and DHS to permit the reuse and the groundwater replenishment.

2.6 Monitoring Considerations

The goal of the Implementation Plan monitoring program is to establish procedures to analyze and track water quality status and trends, assist in identifying pollutants of concern, point source tracking, and to evaluate reductions achieved by Best Management Practices (BMPs). It is intended to supplement the Coordinated Shoreline Monitoring Program by providing upstream tributary monitoring information, which would also assist in further identifying potential sources. It is also intended to provide information that could assist with the re-opener 2007, so that future generations of the Implementation Plan resources can be better focused.

A number of candidate monitoring stations have been identified to assist with further identifying potential sources and evaluating non-structural BMPs. Samples from the first storm of the wet season (in October 2004) were also taken at these stations.

The objective of these monitoring stations is to provide information to support future management decisions, such as selection of structural and non-structural BMPs, and is not intended to be compliance-related. As such, proposed stations were not necessarily high priority watersheds, but represented watersheds where potentially useful information could be extracted. With the exception of Topanga Creek at the sandbar, all stations showed high bacteria counts (exceeding water quality standards) during the first storms of 2004-2005. The proposed stations are:

- Trancas Creek (discharges to Area of Special Biological Significance)
- Marie Canyon (high priority subwatershed)
- Sweetwater Creek (potential concentrated equestrian land uses)
- Topanga lagoon (sandbar and bridge)
- Solstice Creek (potentially similar to Arroyo Sequit land usage and potential alternative reference subwatershed)

Sampling results indicated significant exceedances in the areas of interest. Of the sampling conducted, pre-event and storm event sampling indicated high levels of bacteria in most areas, and with the exception of some locations in Topanga Creek all samples exceeded water quality standards. October stormflow conditions showed significantly higher values than the August dry conditions. In August, only 1 of 6 Topanga Creek samples exceeded compliance limits while in October, 16 of 18 samples exceeded the limits (including all Enterococci results). These data indicate the importance of the winter high flow runoff in determining total bacterial loads from the watershed to the beaches.

These monitoring data are only used to indicate the potential for contributions to exceedances in the immediate vicinity of the watershed outflows to the bay. Shorezone dilution, dispersion, and degradation were not quantified as part of this study. It is not known if surfzone exceedances occurred in the immediate vicinity of the lower watershed at the time of the streamborne exceedances.

Another significant source of data was the Topanga Creek Watershed Water Quality Study, Final Report for the period October 2003 – 2004 was issued in December 2004 (Dagit, et al. 2004). The report summarizes water quality and exceedances for Topanga Creek and recommends BMPs for the watershed as part of ongoing work by the Resource Conservation District of the Santa Monica Mountains (RCDSMM). This study summarized percent exceedances for wet weather. In a reduced data set, Solstice showed no exceedances (only two samples). For other subwatersheds, exceedances were significantly higher. Arroyo Sequit, Nicholas, Zuma, and Topanga all showed exceedances between 24 and 30 percent. Los Alisos, Trancas, Ramirez, Latigo, and Piedra Gorda showed exceedances between 30 and 50 percent. Escondido and Corral had exceedances above 50 percent. Data were not available for the other subwatersheds.

3. Plan Development and Evaluation

3.1 Methodology

The general methodology for alternative development, evaluation, and prioritization of activities was developed in response to the following questions.

- Where do we have the most significant problems?
- What is our tolerance for uncertainty and does this tolerance depend on location?
- Where can we leverage solutions to achieve multiple benefits?
- Where do we have a higher probability of success?
- What do we want to do now versus waiting until better information and technologies become available?

In response to these questions, the methodology described below was developed. Each of these components and the implications therein are described in the following sections:

- To balance uncertainty between potential costs and potential benefits, consistent with an integrated approach, a "compliance triangle" model was applied to compare different broad approaches. This model balances costs, risks, and beneficial reuses.

- To address the allocation of resources, results of the watershed prioritization effort were used to tailor plan elements to watershed priorities.

- To systematically implement activities in a phased adaptive manner, a "commit-pilot-consider" approach was adopted.

3.2 The Compliance Triangle

Three different broad, thematic alternative approaches were developed and evaluated. The results of the evaluation formed the basis for the Implementation Plan. The result was the development of subwatershed-specific integrated solutions that would each meet the objectives of the TMDL while combining several runoff management options. The three over-arching concept alternatives are defined below:

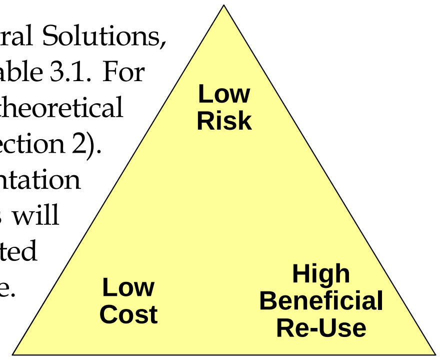
- **Low Cost** – includes options that meet the minimum regulatory requirements with the least capital and maintenance costs. This alternative would not include a high amount of beneficial use of runoff and may pose a higher risk of non-compliance with the TMDL.

- **Low Risk** – includes options that minimize the risk of non-compliance with the TMDL without regard to cost or optimizing the beneficial use of runoff.

- **Maximum Beneficial Reuse** – includes options that maximize the amount of runoff for beneficial use. This alternative assumes the same risk of non-compliance with the TMDL as the low risk alternative.

The "Compliance Triangle"

Each alternative includes components from Non-Structural Solutions, Local Solutions, and Regional Solutions, as shown in Table 3.1. For each structural alternative there is an upper limit, or theoretical goal, of runoff volume to be managed (as discussed in Section 2). For each thematic alternative, proposed implementation options are presented. The performance of these options will be evaluated and the implementation plan will be adjusted to address the findings at each re-evaluation phase. Regional solutions will be considered and may be included as part of the modification of the Implementation Plan.



"Compliance Triangle"

Table 3.1 Alternatives Comparison

Alternative	Non-Structural Options	On-Site Options	Regional Options
Low Cost	Implement existing and new programs (commit + pilot)	Pilot-scale implementation of the following: • Cisterns • On-site storage and reuse • Small-scale capture and infiltration	Not included
Low Risk	Implement existing and new programs (commit + pilot)	Not included	Capture, store, treat and discharge
Beneficial Reuse	Implement existing and new programs (commit + pilot)	Full-scale implementation of the following: • Cisterns • On-site storage and reuse • Small-scale capture and infiltration	Capture, store, treat, and beneficially reuse

3.2.1 Low Cost Alternative

The low-cost thematic, by definition, is the alternative configured to have the lowest capital and O&M costs. This alternative assumes a higher level of risk of compliance with the TMDL than the other alternatives by focusing on non-structural options and avoiding significant local or regional structural solutions. Thus, it has the lowest runoff management goal. The following runoff management options are included in the low cost alternative: 1) institutional (non-structural) options, 2) local options, and 3) regional options.

Non-Structural Options

Non-structural solutions are programmatic activities that provide source control measures intended to prevent or reduce the levels of bacteria, or bacteria sources (e.g., trash and pet waste) from initially being picked up by runoff whether onsite, in the street, or in the storm drain system. In general, institutional solutions do not substantially reduce the volume of wet weather runoff to be managed. Due to the ubiquitous nature of indicator bacteria, and limited correlation with human pathogen sources such as trash and fecal material, institutional solutions may have limited effectiveness in reducing indicator bacteria concentrations at the beaches. Human pathogen sources, however, such as human and animal fecal material, may be more significantly reduced by these measures and therefore reduce human health risk in beach waters.

On-Site Local Options

Local, or on-site, solutions provide an important step in managing wet weather runoff. Three options have been identified as potentially feasible for providing local source control for J1/4: 1) residential cisterns, 2) on-site storage and reuse, and 3) capture and infiltration. Pilot scale implementation of these local options will be included in the low cost option. With implementation of these options runoff is retained locally and discharge of runoff and associated bacteria is avoided.

Regional Options

The low cost solution will not include regional options because of the very high cost and major implementation requirements associated with management of runoff at the regional level.

3.2.2 Low Risk Alternative

The intent of the low risk thematic alternative is to manage the highest theoretical target runoff goal, and will include options that will minimize the compliance risk with the TMDL without regard to the cost or optimal beneficial use of runoff. The target runoff management goal for the low risk alternative is described in Section 2.1.4. The low risk alternative includes the same non-structural options as the low cost alternative. This alternative also includes regional storage and treatment options. However, the low risk alternative is designed to manage more runoff volume than the low cost alternative.

Non-Structural Options

The low risk alternative will include the same recommended institutional options as that of the low cost alternative.

On-Site Local Options

Local solutions are not included in the low risk alternative because, given the emphasis on Regional solutions, their implementation will not substantially reduce the need to manage runoff regionally to ensure the lowest level of risk.

Regional Options

For this option, runoff would be captured and initially stored in operational facilities. Treatment would depend on target constituents (in this case, primarily bacteria). Trash and suspended solids would be present in wet weather flow, and pretreatment of flows would, therefore, be required to remove these constituents before treatment to remove bacteria is implemented. Regional capture, storage, treatment, and discharge will require construction of storage and treatment facilities in each subwatershed designed to meet the AB411 beach standards. The effluent would then be discharged to the ocean, typically through storm drain outfalls. Preliminary target volumes by watershed could be as high as that described in Section 2.

3.2.3 Maximum Beneficial Reuse Alternative

The maximum beneficial reuse alternative includes options that maximize the amount of runoff that can be beneficially reused. The maximum beneficial reuse alternative shares the same non-structural options as the low cost and low risk alternatives, but includes additional options to beneficially reuse a portion of the runoff. Unlike the low cost alternative, this option recommends full scale implementation of cisterns, on-site storage and reuse, and small-scale capture and infiltration.

Non-Structural Options

The maximum beneficial reuse alternative will include the same recommended institutional options as that of the low cost alternative, which consist of new and expanded programs.

Local Options

The maximum beneficial reuse alternative incorporates all of the following local options: 1) residential cisterns, 2) public on-site storage and reuse projects, and 3) small-scale capture and infiltration projects. The maximum beneficial reuse option includes full scale implementation of each local option discussed in this section, whereas the low cost option only included pilot studies. It should be noted that full scale implementation implies implementation at publicly owned and proactive privately-owned facilities to the maximum extent practicable, and does not imply retrofitting of private residences or mandatory retrofitting programs.

Regional Options

Given the inventory of opportunities, this option does not appear to have significant immediate potential. The option is intended to divert wet-weather runoff to beneficial use with appropriate treatment for the intended use. It involves the capture, storage (operational storage facilities), diversion of runoff to facilities for treatment (to be determined but may be similar to Title 22 standards) for unrestricted outdoor water use, seasonal storage, and distribution to sites for reuse. Capturing and storing runoff eliminates discharge of the quantity of water downstream to the beach, thereby potentially reducing the number of exceedance days, especially at lower flows. This option involves use of some of the same capture, operational storage, and base treatment facilities as the treat and discharge option, but at a much smaller scale. In this case, a portion of the runoff that would have otherwise been discharged is beneficially reused as an irrigation supply to the extent that there is demand and it is economically feasible. To minimize capacity of treatment and/or off-stream diversion pumping to storage, short-term operational storage will likely be required to balance the hydrograph, and longer-term storage may be required to balance water availability with seasonal demand.

3.3 Alternatives Comparison for Area-Wide Implementation

Criteria for evaluation were developed to look at relative need (priority), costs, and benefits. The semi-quantitative comparison assumed full implementation throughout the jurisdictional areas. The subject criteria were:

- Volume of runoff managed
- Volume of runoff beneficially used
- Relative Cost
- Regulatory compliance
- Design complexity and constructability
- Facilities siting difficulty
- Reliability and Performance
- Compatibility with a phased approach

After evaluating each of the three alternatives, it appears that no one approach is clearly the single best watershed-wide solution for obtaining bacteria TMDL compliance. Instead, various options from the alternatives should be applied on a subwatershed by subwatershed basis. A summary of approaches selected for each subwatershed that takes into account the unique characteristics of that watershed is presented in the following section.

3.4 Subwatershed Focusing

As discussed in Section 2, watershed priorities were established. The results of this analysis are summarized in Figure 3.1. Using the results of the broad alternative evaluation the following general approach was used to develop implementation measures adapted to the watershed priorities:

- **Low priority watersheds** – generally low cost approach (non-structural measures)

- **Medium priority watersheds** – generally low cost and some beneficial use (generally on-site solutions)

- **High priority watersheds** – partial low risk and/or maximum beneficial use approach

3.5 Commit-Pilot-Consider Model

Prioritization of BMP options based on relevance to known contamination sources requires strong evidence relating water quality problems to specific sources of bacteria, such as septic systems, equestrian facilities, dog waste, restaurants, litter, or wildlife. Ideally, BMPs that address the most significant sources of bacteria should be given the highest priority. Based on analyses conducted as part of this Implementation Plan, the storm runoff from urban environments, in general, was identified as the highest priority contributor to bacterial contamination in Santa Monica Bay.

Figure 3.1 Subwatershed Priorities

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Thus, activities associated with urban development appear to be the most prevalent sources of bacteria. However, in the absence of more detailed source identification, the data was not sufficient to specifically pinpoint which sources were contributing most significantly to water quality impairment problems. Therefore, in the absence of conclusive evidence prioritizing specific sources of contamination within urban runoff, the logical approach is to implement a broad range of BMPs that target activities near the coast associated with urban land use.

3.5.1 Implementation Requirements and Potential Effectiveness

A commit-pilot-consider model was developed to evaluate the ***implementation requirements*** and ***potential effectiveness*** associated with each BMP. The approach was most directly applied to non-structural BMPs, but can be applied to structural approaches as well. BMPs are assigned a subjective rating of easy/moderate/difficult for implementation requirements and low/medium/high for potential effectiveness.

The implementation requirements rating is based on several factors including the relative cost, level of effort required to implement the BMP, permitting issues, regulatory constraints, and political issues.

The potential effectiveness rating is based on several factors including the potential to educate the public and/or business community, ability to change habits and behaviors, and geographic extent and coverage, and other factors that would presumably result in improved water quality.

3.5.2 Commit-Pilot-Consider

Three levels of implementation are proposed in this Implementation Plan.

- **Commit**: Agencies commit to engaging in the activities so designated within the indicated time frame

- **Pilot**: Agencies commit to limited scale implementation to establish the effectiveness of the measure (structural and non-structural) and to help identify the severity of the potentially targeted source (for non-structural solution)

- **Consider**: If the perceived need for this BMP, based on preliminary studies, is not apparent, or if the subject technology is potentially costly or unproven, these activities will be considered in future phases of implementation.

The basis for determining the appropriate level of implementation is illustrated in Table 3.2. BMPs at the "commit" level of the model are high priority BMPs, while BMPs at the "consider" level of the model are of lower priority. Pilot studies are recommended prior to full-scale implementation for BMPs at the "pilot" level of the model.

Table 3.2 Commit-Pilot-Consider Model

		Implementation Requirements Rating		
		Difficult	**Moderate**	**Easy**
Potential Effectiveness Rating	**High**	Pilot	Commit	Commit
	Medium	Consider	Commit	Commit
	Low	Consider	Consider	Consider

If the pilot study BMPs prove to be effective in reducing water quality impairment problems, in conjunction with continued evaluation of monitoring data to establish the relative bacteria contributions of various sources, consideration can then be given to widespread implementation.

3.6 Assessment of Effectiveness.

The Regional Board requests additional detail on specifics for assessing effectiveness. Two basic approaches are presented in the Final Plan: 1) a presumptive approach and 2) a targeted monitoring-based approach.

3.6.1 Presumptive Approach

The presumptive approach assumes that the implementation of structural and non-structural BMPs will lead directly to reductions of exceedance days and attempts to quantify this relationship. It is recognized that there is significant uncertainty, and it is expected that the iterative and adaptive management strategies are employed, both effectiveness will improve and the correlation of activities to water quality compliance will improve.

A presumptive approach is needed because of the high sensitivity of compliance to hydrology (exceedance days), and that as a result an ineffective could still yield short-term compliant results, while a plan that is beginning to show effectiveness could still show non-compliance. In addition, there is high sensitivity to other hydrologic factors such as the Malibu Creek drainage. There are potential contributions from other sources outside the sphere of influence of this plan (Onsite Wastewater Systems), and monitoring in the wave wash further could add additional variability which would make direct tracking of effectiveness difficult.

The California Association of Stormwater Quality Agencies (CASQA) has initiated efforts to quantify effectiveness, and the County of Los Angeles conducted (and will be updating) segmentation studies to establish behavioral changes tracked by public information efforts. None of these approaches, however, have presented definitive measures for quantifying water quality improvement due to the inherent difficult of this type of analysis.

Therefore, the first proposed measure of effectiveness is a presumptive approach tied to effort with presumed performance, which would be updated and revisited at the reopener phase in 2007.

Parameters assumed for this presumptive gage include:

- Population:
  - Permanent Residential Population: 18,000 (based on 2000 census values for Malibu and Topanga)
  - Assumed Non-Residential Population (workforce, visitors, students): 10,000
  - Total Target Population for all measures: 28,000
  - Approximate Population distribution (assumed based on total residential developed land use fraction)
    - High Priority Subwatersheds: 30%
    - Medium Priority Subwatersheds 40%
    - Low Priority Subwatersheds: 30%
  - Distribution/readership of local information outlets (Malibu Times): Circulation = 12,000, readership estimated 36,000. Malibu times Magazine circulation 25,000; readership estimated at 75,000 (source: personal communication with Malibu Times staff August 9, 2005)
- Commercial (from smartpages.com)
  - Equestrian-Related Businesses (stables, breeders, suppliers): 10
  - Pet Related Businesses (retail, suppliers, grooming): 50
  - Restaurants in J1/4 Areas: 50
  - Septic/Plumbing Services (not necessarily in Malibu Area): 30
  - Approximate distribution of commercial/industrial activity (assumed based on total land use areas)
    - High Priority Subwatershed: 40%
    - Medium Priority Subwatershed: 25%
    - Low Priority Subwatershed: 35%
- On Site Opportunities
  - Public Land Opportunities (within J1/4 agencies): 23 (see Attachment 1)
  - Public Land Opportunities (outside of J1/4 agencies)

    - Schools/Universities: 5
  - State/Federal Parklands (excluding Malibu Creek/Lagoon and Leo Carillo): 5 - El Pescador, La Piedra, El Matador, Point Dume, Robert H. Meyer.

- Behavioral change (change of activities contributing to pollutant loading and exceedances)*

  - Assumed average number of annual impressions required for 10% reduction in pollutant generating activities (reference segmentation study): 3/year (note that this could be 3 impressions for 100% of the population, or 7 impressions for 20% of the population and 2 impressions for 80% of the population)

  - Assumed number of annual impressions required for 25% reduction in pollutant generating activities: 4/year (potentially 7 impressions for 40% of the population, and 2 impressions for 60%)

  - Assumed number of impressions required for 50% reduction in pollutant generating activities: 6/year (potentially 8 impressions for 60% of the population and 3 impressions for 40%; or 7 impressions for 80% and 2 impressions for 20%)

- Assumed reductions based on incentive-based activities as a function of allocated budget*

  - 10% cost – 10% target reduction
  - 25% cost – 25% target reduction
  - 50% cost – 50% target reduction
  - 100% cost – 100% target reduction

  *Note: All parameters to be revisited upon additional information. Target reductions assumed to be composite number of allowable exceedances for all areas.

3.6.2 Targeted Monitoring-Based Approach

The Targeted Monitoring-Based Approach(TMBA) adopts some measures of presumptive compliance but incorporates monitoring data and attempts to normalize and extrapolate this monitoring data throughout the region.

The TMBA assumes the development of Annual Interim Compliance Reports that consider a number parameters, and present analyses and discussions of each parameter in order to estimate a reduction in pollutant loadings. These parameters consider:

- Coordinated in-stream monitoring. These data include water quality and flow data, with the first two years being primarily baseline information.

- Extrapolation of source control implementation effectiveness. This involves developing an algorithm, and applying it to extrapolate the effectiveness of activities within a targeted subwatershed that has isolated expected pollutant sources (typically not a high priority watershed), and applying these reductions to other subwatersheds that have similar expected sources.

- Extrapolation of small storm effectiveness. This involves developing and applying an algorithm that recognizes hydrologic variability and normalizes pollutant and hydrologic data for comparison with the benchmark (90th percentile) standard year.

- Hydrologic conditions and variable accountability. This involves better understanding hydrologic responses to better define targeted reductions in exceedances.

- Pilot projects. When on line, Pilot Projects will have raw data which can be analyzed and interpreted using the extrapolation algorithms described above.

- Assessment of progress toward full implementation

The TMBA, while also presumptive in many respects, will provide more results-oriented data by which to make more effective management decisions, to support progress toward compliance and potential adaptive and iterative modifications to the Plan. It is, however, anticipated that the TMB approach may not yield readily significant results until at least the 3rd year of implementation.

3.7 Implementation Plan Framework

Based on the focused approach for each subwatershed, and using the commit-pilot-consider model, an overall implementation plan framework was developed for the entire J1/4 watershed area. The plan summarizes the options and BMPs that would form the program within each subwatershed, the level of commitment, and potential phasing. This framework is presented and the plan described in detail in Section 4.

4. Implementation Plan Commitments

4.1 General Approach

This section presents an overview of the Implementation Plan commitments. It describes the general approach to implementation, the implementation phases and overall schedule, and the methods for plan assessment, monitoring and reporting. Detailed descriptions of specific activities, programs and projects and the specific plan commitments on a subwatershed basis are described in Section 5.

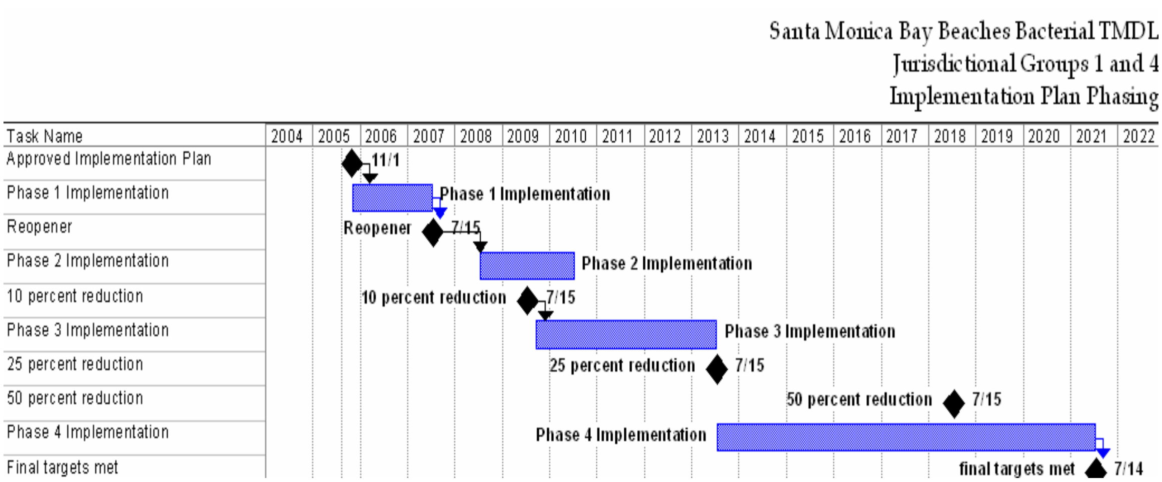
As outlined in Section 3, the Implementation Plan consists of combinations of non-structural activities, local on-site structural measures and regional structural solutions selected for each subwatershed. The elements contained in the plan for each watershed include those that are committed either for implementation or pilot programs/projects. Other measures may be considered at some point in the future depending upon the effectiveness of the committed and pilot programs or in response to specific opportunities that may be presented but are not part of the initial commitments. A summary of the plan is shown in Table 4.1.

Table 4.1 Summary of Watershed Activities

Sub watershed	Watershed Priority	Non-Structural Measures				Structural Measures	
		Public Information and Participation Programs	Industrial/ Commercial Facilities Control Programs	Development Planning and Construction Program	Public Agency Activity Control Program	On-Site Options	Regional Solutions
Nicholas	Low	Commit, Pilot & Consider	Consider only	Commit	Commit & Consider	Consider only	N/A
Los Alisos	Low (Low-Med)	Commit & Consider	N/A	Commit	Commit & Consider	Consider only	N/A
Encinal	Low	Commit & Consider	N/A	Commit	Commit & Consider	Consider only	N/A
Trancas	Low	Commit, Pilot & Consider	Commit, Pilot & Consider	Commit	Commit & Consider	Consider only	Consider only
Zuma	Low	Commit, Pilot & Consider	Commit, Pilot & Consider	Commit	Commit & Consider	Consider only	N/A
Ramirez	High	Commit, Pilot & Consider	Commit, Pilot & Consider	Commit	Commit & Consider	Commit & Consider	Pilot Project
Escondido	Med (Med-High)	Commit, Pilot & Consider	Consider only	Commit	Commit & Consider	Pilot & Consider	N/A
Latigo	High	Commit, Pilot & Consider	Consider only	Commit	Commit & Consider	Commit & Consider	Pilot Project
Solstice	Low	Commit, Pilot & Consider	Consider only	Commit	Consider only	Consider only	N/A
Corral	High	Commit & Consider	Commit & Pilot	Commit	Commit & Consider	Commit, Pilot & Consider	Pilot Project
Carbon	Low (Low-Med)	Commit & Consider	Commit & Pilot	Commit	Commit & Consider	Consider only	N/A

Sub watershed	Watershed Priority	Non-Structural Measures				Structural Measures	
		Public Information and Participation Programs	Industrial/ Commercial Facilities Control Programs	Development Planning and Construction Program	Public Agency Activity Control Program	On-Site Options	Regional Solutions
Las Flores	High	Commit, Pilot & Consider	Commit, Pilot & Consider	Commit	Commit & Consider	Commit & Consider	Pilot Project
Piedra Gorda	High	Commit & Consider	N/A	Commit	Commit & Consider	Commit & Consider	N/A
Pena	Low	Commit & Consider	N/A	Commit	Commit & Consider	Consider only	N/A
Tuna	Low	Commit & Consider	Commit & Pilot	Commit	Commit & Consider	Consider only	N/A
Topanga	Medium	Commit, Pilot & Consider	Commit, Pilot & Consider	Commit	Commit & Consider	Commit & Consider	Consider only

The Implementation Plan was divided into four phases of activities. The activities consisted of implementation activities, as well monitoring and additional studies that could be used to provide better information for future activities. To provide useful information, the additional studies will require extended development and implementation periods. Upon completion of these studies, it would be desirable to confirm, or adjust if necessary, the direction and requirements of the Implementation Plan. As such, the County and J1/4 Agencies proposed the addition of appropriately timed re-evaluation milestones (re-openers). Implementation activities, suggested re-openers, and implementation milestones are illustrated below:



The general intent of what would be accomplished under each of the phases is as follows:

- Phase I – Conduct planning and initiate all committed non-structural activities and implement selected non--structural measures; initiate pre-feasibility studies for sub-regional pilot projects; develop inter-agency agreements for structural projects, initiate planning for on-site measures; initiate monitoring, additional studies, and source identification activities. The 2007 re-opener would follow Phase I. Note that Phase I is assumed to begin in November 2005, which is the basis of the proposed schedule.

Should the initiation date change, the remaining implementation deadlines may change accordingly.

- Phase II – Continue implementation of committed non-structural activities; conduct non-structural pilot programs; continue planning for on-site measures; initiate planning and construction of pilot regional structural solutions; and continue and complete monitoring and source identification studies. A programmatic review is proposed to follow Phase II and is intended to leverage results not only from additional studies in these jurisdictional areas, but also from advances in the technical, legal, and regulatory body of knowledge.

- Phase III – Refocus and reprioritize efforts as appropriate, and continue implementation of committed non-structural activities; implement successful piloted non-structural programs; begin implementation of on-site measures; and operate and evaluate pilot regional structural solutions.

- Phase IV – Refocus and reprioritize efforts as appropriate and continue implementation of non-structural solutions; continue or expand on-site measures; and continue, modify and/or initiate regional structural solutions.

While these provide the general commitment to the timing and execution of activities, under the iterative approach the actual implementation of specific programs and projects will depend upon what is learned during each succeeding phase from the initial implementation of measures, the results of monitoring, and revisions that may be made to the TMDL at re-openers.

Tentative project schedules are presented in Appendix B to detail the general order and timing of committed activities within this Implementation Plan. The start and end dates of most projects have been approximated for budgetary and overall management purposes. These dates are not intended to be used as firm compliance dates, as several factors could cause projects to be expedited, delayed, or extended. It is the intention of the responsible agencies to programmatically follow this schedule; however, many factors, such as environmental permitting, land acquisitions, and ordinance change, are outside their direct control. Any significant changes to project schedules will be outlined within the annual progress reports.

4.2 Plan Execution

An analysis of wet weather runoff events and bacterial exceedances hypothesizes that if wet weather flow reaches the beach, then bacterial exceedance is highly likely. Therefore, the initial strategy for reducing exceedances is tied to a combination of reducing bacteria at the source through non-structural and on-site measures, and reducing the amount of runoff that reaches the receiving water, rather than focusing exclusively on treating the flow collected in the storm drain system for bacteria reduction. This strategy emphasizes the beneficial use of wet weather runoff and the installation of local solutions where possible to reduce downstream flows. It also focuses on local source control to reduce the level of bacteria and other pollutants discharged into the storm drains. Water quality improvements in the receiving waters would be realized from water quantity (flow) management practices, including local structural BMPs, as well as source control. Utilizing large-scale, end-of-pipe, regional solutions minimizes the risk of noncompliance, it also carries with it larger costs and potential impacts to the local, densely urbanized beach communities. Therefore, regional solutions are proposed to be limited to pilot scale implementation, and only after appropriate feasibility studies are conducted.

The Implementation Plan assumes an iterative, phased approach to implementation. Non-structural and on-site options will be implemented initially and the results of these efforts monitored to determine the subsequent course of action. In parallel, shoreline monitoring at the point of discharge from the storm drain to the surf zone ("zero point") as well as continued research on BMP effectiveness and pathogen indicators will be ongoing.

At the TMDL re-opener scheduled for July 2007, only very limited, short-term information and data will be available to assess the effectiveness of these measures for achieving water quality improvements in the Santa Monica Bay beaches. In addition, the numeric target, load allocation, and pathogen indicators for this TMDL may be revisited at this re-opener; however, the basis for compliance will likely not be fully reconsidered as sufficient research may not have been conducted and results [may not] have been evaluated for applicability to this TMDL by this time. Therefore, it is recommended that periodic re-evaluations, supported by annual reporting, be planned to more adequately incorporate the results of monitoring and special studies (see Section 4.3.2) as well as BMP performance in reviewing the TMDL approach. Potential time frames for additional re-openers are suggested in Section 4.1.

4.3 Monitoring

The monitoring proposed in this Implementation Plan is intended to support cost-effective implementation of control measures. It is not intended to replace reference beach study efforts (conducted by the Southern California Coastal Water Research Project), regulatory compliance monitoring (under the Coordinated Shoreline Monitoring Plan) or currently required Municipal Separate Storm Sewer monitoring efforts. In addition, monitoring is limited to wet-weather activities, as dry weather TMDLs are addressed in a separate implementation plan.

4.3.1 Water Quality Monitoring Recommendations

Sampling conducted to date provides a widespread snapshot of water quality conditions and that can be used as a record of baseline information on watershed contributions of bacteria to Santa Monica Bay beaches during wet weather periods. It is important to begin such programs recording status and trends as a basis for monitoring the effectiveness of storm water management BMPs. Multiple winter storm events should be collected from all lower watersheds as a means of assigning relative bacterial loading to the bay. Similarly, multiple stormflow samples of source areas and above and below BMPs will be needed to assess the design and effectiveness of watershed-based controls.

The variety of weekly, monthly, and storm-event based samples collected from SMB watersheds to date may be used as initial indicators of areas for BMP focus. They all are designed to measure point concentrations, and in some cases point loads. However, none of these sampling programs can be used to effectively gauge relative contributions from watersheds nor the relative value of various BMP designs without incorporating cumulative load, either monthly, seasonally, or storm event-based, as part of their results. Comparative loads will be needed to judge the cumulative effects on surfzone bacterial concentrations from individual watersheds. Similar to any TMDL, the challenge will be to back up from surfzone concentration limits to cumulative loads supporting compliance. Ocean and watershed flow and dilution modeling coupled with watershed flow measurements will be required to complete that link. Flow/stage height relationships may be available or can be created for lower watershed bridge crossings for the monitored watersheds. Upper watershed locations (such as Topanga Canyon locations) may be flow monitored using hand held meters or through the installation of gauged crossings or weirs.

Six stations were proposed for future monitoring. The objective of these monitoring stations was to provide information to support future management decisions such as selection of structural and non-structural BMPs, and was not intended to be compliance-related. As such, proposed stations were not necessarily high priority watersheds, but represented watersheds where potentially useful information could be extracted. With the exception of Topanga Creek at the sandbar, all stations showed high bacteria counts (exceeding water quality standards) during the first storms of 2004-2005. The proposed stations are:

- Trancas Creek (discharges to Area of Special Biological Significance)
- Solstice Creek (potentially similar to Arroyo Sequit land usage and potential alternative reference subwatershed)
- Marie Canyon (high priority subwatershed)
- Sweetwater Creek (potential concentrated equestrian land uses)
- Topanga lagoon (sandbar and bridge)

Winter Low Flow

As feasible, monthly monitoring at each of the 6 stations from periods between storms (at least a week after the last storm) to characterize the common, winter low flow periods (7 samples, November 2005 through April period of 2006 (and 2006- 2007)). This monitoring may reveal high concentration point sources suitable for BMPs and will help describe the pattern of seasonal loading by watersheds. This effort is not intended to be conducted throughout the entirety of the implementation period, rather, it will be initiated and ended as necessary.

Winter Storm Flows (most important)

As feasible, four storms from each of the 6 stations, at least 3 samples per storm per station for the same basic period as winter low-flow samples. Winter storm flows dominate the loading for all constituents and it is important to get a record of changing concentrations and flows during the course of individual storms in order to reconstruct total loads by storm and for the season-total estimate.

In addition to the stream site samples, opportunistic storm drain flows should be sampled from winter storms. Drains and potentially leaky sewer systems were documented in the Source Identification effort. Up to 3 drains per watershed per storm even could be sampled, as available, as part of the winter stormflow monitoring. All parameters, including flow, should be assessed from the drains as a means of pinpointing potential sources of load to the bay. The need for this additional effort would be established after the re-opener.

Simultaneous Surfzone Monitoring

Surfzone bacteria should be sampled at the same time as the stream sampling. Samples should be collected immediately up and downcoast from either the closed berm (which transmits water with some constituents, potentially including bacteria) or open stream channel. These results provide the final, important evidence documenting the relative contribution of the watershed to the surfzone contamination (the purpose of the TMDL). This effort will be completed as safety provisions will allow and as long as this data is deemed necessary for implementation purposes.

4.3.2 Hydrologic Loading Estimates

It is critical that the concentration data generated from the monitoring program be combined with simple hydrologic loading estimates from each watershed to produce estimates of seasonal and annual loads. Precipitation records and runoff models must be constructed for each watershed to relate to the point measurements of flow taken for each monitoring event. The modeling provides a cost-effective alternative to continuous flow records from gauging stations (the preferred alternative). Regardless, seasonal (monthly) and storm-event flow estimates from each subbasin will provide the information needed for source assessment and control. It is recommended that stream gages be provided in Topanga Canyon and in one of the smaller adjacent watersheds so that the Topanga precipitation gages can be utilized for calibration studies.

4.3.3 Structural BMP Monitoring

Because the integrated approach incorporates removal of multiple pollutants, structural BMPs will be monitored for effectiveness. One potential methodology for this effort is outlined in the *Urban Stormwater BMP Performance Monitoring A Guidance Manual for Meeting the National Stormwater BMP Database Requirements Prepared by GeoSyntec Consultants, Urban Drainage and Flood Control District and Urban Water Resources Research Council (UWRRC) of ASCE In cooperation with Office of Water (4303T) U.S. Environmental Protection Agency, Washington, DC 20460 April 2002 EPA-821-B-02-001* which includes provisions for sampling suites (recommended constituents) and detection limits. In addition, E. Coli should be incorporated as a constituent of concern to be added to the bacteria suite.

4.4 Additional Future Detailed Studies Needed

Due to the significant uncertainties associated with the initial development of the bacterial TMDL, there are a number of special studies that should be conducted either within J1/4 area or elsewhere in the Santa Monica Bay watersheds. In addition, a number of efforts and studies are continuing in other regions of California and the rest of the country on similar issues such as appropriate human health indicators. The following studies are suggested as highly relevant to both the J1/4 area and all of the Santa Monica Bay area. The results of such studies, as well as the experience gained during the early phases of implementation and monitoring, should support the need for additional permit re-openers as discussed in Section 4.1. The J1/4 agencies will partner with other jurisdictional groups (the Regional Board, SCCWRP and other parties) by conducting, contributing to, or tracking the results of such studies.

4.4.1 Identification of the Most Relevant Human Health Indicators Study

This study has potential implications throughout Santa Monica Bay and Southern California and is related to the previous proposed study. The purpose of this study would be to evaluate the effectiveness of existing bacteriological indicators as a gauge to evaluate potential risks to human health and, if appropriate, to recommend alternative indicators. This study would be of benefit during a first or potentially second, re-opener and as an implementation optimization tool.

The presence of three bacteria indicators (total coliform, fecal coliform, and enterococcus) in surface waters is used as an indirect measurement for human health risk. The scientific link between these indicators and actual risk is subject to debate, and it is generally agreed that additional scientifically defensible data would be beneficial. Because these indicators are used nationally and any effort to reassess their effectiveness must be scientifically sound and substantially founded, this effort is outside of the expertise of the J1/J4 agencies and should be completed with the help of the scientific, and potentially the regulatory community.

It is important to use indicators that would predict public health and beneficial uses of the Bay. It is also recognized that since the goal of this study is based on scientific discovery, the results nor its acceptance cannot be predicted or guaranteed, and the study would be costly.

The proposed time frame for this effort would be in Phase 2 of the Implementation Plan if work by other agencies cannot be leveraged.

4.4.2 Hydrology vs. Bacteria Loading

This study would potentially have applications throughout the Santa Monica Bay, but should be conducted in J1/4 areas because of the area's rural character. It is also recognized that this effort may have some overlap with current research (e.g., by the Southern California Coastal Water Research Project) and prior to initiation and development of a work plan, a more comprehensive investigation of this research is warranted. The study would monitor pollutant loads using a continuous sampler at runoff gage locations to determine pollutographs for several storm events. Monitoring data would be used to attempt to establish relationships between rainfall, runoff, and pollutant loading. Perhaps most critically, the effort would develop design hydrology for TMDL studies in the North Santa Monica Bay area and use the design hydrology and pollutant/runoff relationships. The County also would seek to use this study to determine if a peak flow exemption should be considered. This study would be of benefit during a re-opener and as an implementation tool.

Flow rate gaging stations are necessary to accurately measure storm flows, determine pollutant concentrations for grab samples, and calibrate rainfall-runoff models for design hydrology. Currently, there are no gaging stations located near drainage outlets in the North Santa Monica Bay watersheds. For this reason, calculating storm flows and subsequent pollutant loading cannot be performed with high levels of confidence. This makes the design of structural BMPs difficult. However, Topanga Creek (F34C-R), Malibu Creek (F130-R), and Ballona Creek (F38C-R) are existing runoff stations that can be modified for pollutant monitoring.

Determining the rainfall/runoff/pollutant load relationship should provide insight into costs associated with treatment of different runoff events. Exclusion of peak flow treatment may be possible if pollutants are diluted by large flow volumes.

The effort can be divided into two phases: monitoring bacteria levels/loading and development of design hydrology. For both phases, gaging stations must be constructed. The runoff data is necessary to determine pollutant loadings, determine runoff relationships, and calibrate a rainfall-runoff model.

For the monitoring portion, water quality samples from storm flows will be collected and combined with flow rate data generated from the gaging stations and/or model to determine pollutant loadings. This information will be analyzed to establish a link between storm intensity/duration and bacteria loading.

The design hydrology development will explore the relationships between rainfall, runoff, and pollutant loads. After establishing the relationships, a method of determining pollution loads will be established for ungaged watersheds in the North Santa Monica Bay area. A method for determining the amount of runoff that requires treatment will be established that is consistent with Public Works methodology.

The study could conclude that higher flows can be excluded from treatment processes without increasing a risk to human health. This could potentially reduce the cost to comply with the TMDL. New gaging stations and design hydrology could provide a more accurate account of storm flow rates making structural BMP design more efficient.

The processes to design and construct new gaging stations could be costly and lengthy, especially if right-of-way needs to be purchased or if construction is in a coastal zone – which is almost guaranteed. It may be possible to install gaging stations at existing bridge or channel facilities to reduce these costs and avoid construction in the coastal zones. The potential timeframe for this effort is July 2005-July 2010.

Assuming right-of-way will not need to be acquired, design and construction of stream gaging stations would take about two years with an additional year to develop and calibrate a model. Three to five years of monitoring data would be necessary to draw conclusions regarding bacteria loadings. Since a rainfall-runoff model can be applied retrospectively, these tasks can be performed concurrently. This study should be completed in three to five years of its starting date.

4.4.3 Bacteria Seasonal Variation Study

The results from this study can be applied to all of Santa Monica Bay, however due to the larger rural areas in NSMB, monitoring in J1/J4 is preferred. This effort could be conducted in concert with other monitoring efforts.

The purpose of the proposed study is to analyze how seasonal variations in tide, ocean currents, temperature, sunlight, red tide, aquatic life migration, and other natural phenomenon affect bacteria levels. This study would be of benefit during a re-opener and as an implementation tool.

The study would consist primarily of a literature review, and while it may assist in the understanding of bacteriological variances and spikes, it might be inconclusive or could result in additional uncertainty resulting in increased beach closures. This study could be completed within 3 years.

4.5 Reporting

Annual Implementation Plan progress reporting documenting compliance activities will be provided by the J1/4 Agencies. It is not anticipated that this report be exhaustive, but a summary of progress, successes and challenges, and requested modifications to the Implementation Plan. It is proposed that no additional reporting of monitoring results be required, but that monitoring results would be provided in an annual summary report of Implementation Plan Progress. This report would reference activities conducted to date, compared to commitments made in this Implementation Plan.

5. Subwatershed-Specific Implementation Plan

Section 5.1 describes in some detail, the proposed efforts and responsible agencies. Sections 5.2 through 5.18 describe activities specific to each subwatershed. These activities were based on priority and subwatershed-specific activities (based on land uses within subwatersheds).

5.1 Summary and Overview of Subwatershed-Specific Plans

This section describes specific activities for implementation. These activities are based on the previously-described source and watershed prioritization efforts, and include non-structural and structural measures. The subwatershed-specific matrices indicate a level of commitment for each activity ("commit-pilot-consider") and the time frame in which the activity would be implemented. The plans include non-structural, as well as on-site regional structural activities.

5.1.1 Non-Structural Activities

The following is a summary of non-structural measures that were identified for consideration, commitment to implement, or commitment to initiate pilot studies or programs.

Public Information and Participation Program

- ***Outreach to pet owners establishing a link between animal wastes and health issues and focus on point of contact.*** The objective of this recommendation is to target pet owners with information about pet waste and its impact on the bay. Pet waste is typically associated with development as the concentration of pets is generally higher in higher density areas. Environmental literature currently does not draw the connection between pet waste and bacterial contamination in the bay. Animal feces can be washed into the bay through grass, landscaping, streets, and sidewalks which eventually lead to a storm drain. Even if the source is miles from the coast, pet owners would be more likely to pick up after their pets both at home and in public areas if they were aware that dog feces contains fecal Coliform and enterococci bacteria, which determine beach closures, and may contain pathogens such as Giardia and Salmonella that can make swimmers ill.

  This activity will be both planned and implemented during Phase 1 of TMDL implementation.

  Lead Agencies: County of Los Angeles and City of Malibu

- ***Locate areas with corralled animals and educate property owners on bacteria TMDLs.*** Horse stables and other animal corrals generate a preventable source of indicator bacteria. These studies identified 210 horse ranches within the J1/4 boundaries. It is assumed that there are higher incidences of corralled animals than horse ranches.

Properties with corralled animals could readily be determined by utilizing zoning maps and aerial photos thus narrowing down the zones that permit such uses. The impact of this effort would be dependent on the amount of land in the J1/4 area used for corralling animals, and it's potential to be improved by BMPs.

This program will educate the owners of corralled animals about bacteria TMDLs and steps they can take to decrease negative impacts on the environment. A network of volunteers from environmental organizations could be trained in this area. It should be also noted that all future development allowing corralled animals or horses within the City of Malibu will be regulated under the requirements of the Local Coastal Program Land Use Plan. Thus, these new developments will be required as a condition of approval to implement numerous BMPs that seek to reduce bacterial loading.

Lead Agencies: County of Los Angeles and City of Malibu

- ***Identify horse stables in the region and implement Pilot program.*** A pilot program can be established within a horse stable area to test and illustrate the effectiveness of BMPs in reducing bacteria. This program is designed for non-commercial stable owners and is applicable to corralled animals in general. Stable owners will be more likely to adopt a BMP they can see in action with real results. A potential site for this program is the City of Malibu owned Malibu Equestrian Center. Other potential areas for implementation of this program are those areas zoned for horse ranches that are within areas with little or no development such as Nicholas subwatersheds. Suitable BMPs are included in the City of LA's pamphlet on Stormwater Best Management Practices for Horse Owners & Equine Industry.

  Lead Agencies: County of Los Angeles and City of Malibu

- ***Post signs at City and County-owned trailheads designated for equestrian users to not clean out horse trailers in parking lots and to clean up horse waste.*** Parking areas at trailheads tend to be graded dirt lots that increase runoff at a greater rate in comparison with trails. On trails, horse waste is filtered by vegetation before entering waterways which may or may not be the case within trailhead parking lots. Posting signs in parking lots would reduce potential bacteria loading from horse manure.

  Lead Agencies: County of Los Angeles and City of Malibu

- ***Outreach at trailheads encouraging hikers to use restroom facilities.*** People may not realize the implications of urinating or defecating in natural areas such as local, state, and national parks. Posting signs at trailheads to remind hikers to use the restroom before a hike will both increase awareness and prevent improper waste disposal.

  Lead Agencies: County of Los Angeles and City of Malibu

- ***Provide septic system (OWTS) pumpers and customers with septic system guides.*** The goal of this suggestion is to provide septic system owners with information pertaining to their septic system and how to prevent pollution using proper maintenance procedures. The Stormwater Manager's Resource Center has compiled a pollution prevention fact sheet on septic system controls. This sheet indicates that resource system failures occur for a number of reasons, including improper siting, inadequate installation or system operation. A similar handout could be developed for homeowners and business owners who operate septic systems in Jurisdictions 1 and 4. The handout could be distributed to septic system pumping businesses throughout the Malibu area. Septic system pumpers would be motivated to distribute the handouts during pump out visits to generate new business from requests for additional services.

Lead Agencies: County of Los Angeles and City of Malibu

- ***Coordinate outreach activities with Pepperdine University.*** The goal of this program is to provide applicable outreach materials to Pepperdine University. Pepperdine University is located within the Corral Subwatershed. The campus consists of approximately 181 acres relatively in close proximity to the shore. It was established that the subwatershed where the University is located has had exceedances for total coliform, fecal coliform, and enterococcus. Activities would consist of distributing new materials to new dormitory residents at the beginning of each year, providing outreach materials for posting around campus and in dormitories; conducting workshops with Pepperdine staff (maintenance personnel, cafeteria staff) and presenting information to student organizations regarding the use of BMPs on campus. In addition, a communication link could be established with the university's science departments.

  Lead Agencies: County of Los Angeles and City of Malibu

- ***Increase coordination between agencies and environmental organizations in preparing outreach materials.*** Numerous efforts are continually put forth to produce outreach materials, but production is not always coordinated between organizations and agencies, resulting in similar duplicate materials being prepared, increasing overall costs or messages that are not consistent. Agencies and organizations within J1/4 should make it a high priority to coordinate activities between agencies and with various organizations operating in the area. The following list includes some ideas that may help to increase communication between agencies:

  Compile and distribute contact information from all the agencies and organizations in the J1/4 area.

  – Encourage organizations and agencies to post outreach materials on their websites so it can be easily reviewed.

  – Implement an email list or public listserv to discuss outreach materials and post new material before it is produced.

  – Fund a website that provides links to all agencies and organizations in the J1/4 area and their outreach materials.

– Provide additional funding and resources to augment and expand existing programs that specifically address bacterial pollution.

– This BMP could be adapted to provide an integrated approach. In order to do this, the agencies and organizations should work together to ensure that outreach materials address multiple, if not all the stormwater pollutants.

This activity will be both planned and implemented during Phase 1 of TMDL implementation.

Lead Agencies: County of Los Angeles, City of Malibu, and Caltrans.

Industrial/Commercial Facilities Control Programs

- ***Provide an outreach program for all commercial facilities with corralled animals, including equestrian centers.*** Distribute previously produced pamphlets dealing with specific BMPs and educate owners regarding the bacteria TMDL and the need for BMPs. Develop this into a targeted industry sector-specific workshop, e.g. "Horse Lovers for the Environment Day." A locally-targeted sector workshop of this nature will draw from the local base of outdoor enthusiasts, and permit the equestrian commercial sector to respond to commonly-held suspicions that these activities are harmful to the environment. Businesses participating in these workshops and interested in implementing BMPs could use this as a selling point to prospective clients they may only want to keep their horses at facilities that are environmentally correct. These facilities in turn could pass on applicable knowledge from the workshops to clients such as that they should pick up after their horses while on trails. Participation by local businesses is expected to be high for a locally-oriented environmental protection program, and to generate sector-wide camaraderie in resisting the public image of these establishments as detrimental to the environment. It should be noted at the workshops that the Malibu Local Program Land Use Plan recently approved has stringent requirements for future confined animal facilities and existing facilities should implement those BMPs that will be required for future facilities.

  Lead Agencies: County of Los Angeles and City of Malibu

- ***Provide for regular BMP inspections for restaurants.*** Restaurants are potential sources of bacteria loading in urban runoff entering storm drains. Restaurants throughout Los Angeles County are inspected for food safety by the County of Los Angeles Department of Health Services (DHS). Health inspectors use their inspection results to award each restaurant a "grade" of A through C (or a numerical score for facilities receiving less than a C grade) which conveys to the public the performance of the restaurant in matters related to cleanliness and food safety. While it may not be possible to continue utilization of DHS staff for inspections, additional inspections either by trained water quality personnel or by DHS inspectors should be continued on a regular basis. Should DHS inspectors be utilized, they should be trained to assess compliance with storm water pollution control requirements for restaurants, and should report to the County each restaurant's performance regarding stormwater compliance and BMP implementation. If feasible, this would make use of an existing mechanism, thereby avoiding some of the additional cost and training requirements associated with implementing a new program. At this point it is not clear whether DHS-coordinated inspections can be continued and expensed.

This activity will be both planned and implemented during Phase 1 of TMDL implementation.

Lead Agency: County of Los Angeles, potentially the City of Malibu.

- ***Increase awareness of BMPs in restaurants by establishing a restaurant reward and recognition program.*** Restaurants are a potential source of urban bacteria loading. This pilot study would provide public recognition on a recurring basis for restaurants that qualify for a water quality protection award. Restaurants that implement stormwater quality measures including bacteria pollutant control measures can apply for the certification on a quarterly basis, and if they are found to have succeeded, are rewarded with recognition by the Malibu community. Recognition could include a framed certificate, recognition by the governing agency, and/or a newspaper advertisement for all qualifying restaurants. An additional qualification for the certification should be attendance by at least one current employee (in a decision-making capacity) to at least one of the annual "Malibu Restaurants for the Environment Day" BMP workshops.

  Once informed about restaurant BMPs, the restaurant-goers can report improper housekeeping practices such as the cleaning of mats outside and disposal of mop bucket water outside. With implementation of this program, improper housekeeping processes may be curtailed thus reducing a potential source of urban bacteria loading.

  Lead Agencies: County of Los Angeles and City of Malibu

- ***Conduct industry specific workshops.*** The agencies should conduct industry specific workshops for the bacteria TMDL in the Malibu area, particularly for those industries such as restaurants and equestrian facilities which may contribute to bacteria loading in runoff. These workshops should be locally-based and held on an annual or biannual basis. Repeating the workshops on a regular schedule would allow the TMDL agencies to provide new information to restaurant operators and equestrian facility owners as it becomes available (i.e. revised BMPs and updates on progress of the TMDL toward clean water) to keep the issue in the forefront of attention. In addition, outreach through scheduled workshops will help to address new restaurant operators and equestrian facility owners as they begin business within the region.

  This activity will be both planned and implemented during Phase 1 of TMDL implementation.

  Lead Agencies: County of Los Angeles and City of Malibu

- ***Investigate the possibility of increasing frequency of trash collection at restaurants.*** This pilot program would require restaurants to have refuse picked up more often with the cost borne by the restaurant. The recommendation should be initiated by inspecting a sample of restaurants and food processing facilities to identify existing practices, and evaluate the degree of accumulation of trash at the typical facility. Trash and associated food waste from restaurants is a potential urban source of bacteria and provides a medium for growth. During storm events trash not contained within covered receptacles has the potential to be washed into storm drains. This program may be incorporated into current inspection programs or into a revised program utilizing health inspectors as previously discussed. This recommendation might be assessed in conjunction with the enhanced implementation of BMPs, to determine whether trash management on-site is an effective substitute for increased frequency of trash collection, and which of the two is the lower-cost option for the agencies and for the businesses. A continuing discussion of this recommendation might be instituted at the annual or biennial sector-specific BMP workshops.

  Lead Agency: County of Los Angeles

Development Planning and Construction Program

- ***Further emphasize applicable existing BMPs in development planning and construction programs.*** Emphasizing existing BMPs for bacteria can be accomplished by providing information to construction site planners and site inspectors. If BMPs are not implemented, construction sites can contribute a substantial volume of runoff to storm drains since the sites are generally stripped of vegetation during construction. Construction sites can be potential sources of bacteria or at least provide runoff to serve as a medium to transport bacteria into storm drains. In handouts a link should be made between these BMPs and potential bacteria loading. During inspections inspectors should remind developers of the BMPs and ensure that they are properly implemented on a continuous basis.

  Lead Agencies: County of Los Angeles and City of Malibu

Public Agency Activity Program

- ***Establish guidelines for optimizing frequency of cleaning cycles for drainage facilities.*** Agencies within J1/4 should review cleaning cycles for drainage facilities relative to what is required by the NPDES permit and develop guidelines for an optimum program. Studies supporting this plan identified stormwater drains in urban areas as the sources of bacteria loading. This BMP could potentially require more equipment and labor to optimize current methods and timing of cleaning cycles. Optimized cleaning cycles could be implemented in coastal areas with higher densities. As a part of this BMP, pre and post-sampling of drains would be required to determine its effectiveness before it is implemented on a larger scale.

  This activity will be both planned and implemented during Phase 1 of TMDL implementation.

In Caltrans roadway facilities, recommendations with respect to increasing cleaning frequencies will be coordinated with the City of Malibu and implemented on a limited basis. These efforts are subject to approval through the normal processes with both agencies.

Lead Agencies: Caltrans, City of Malibu, and County of Los Angeles

Caltrans-Malibu Joint Agency Activities. City of Malibu and Caltrans will work together toward possible joint efforts to implement trash reduction measures on Pacific Coast Highway, State Route 1, that is heavily used by beach visitors. These measures could include increasing frequencies of street sweeping and trash pickup by entering into a delegated maintenance agreement, instituting Adopt-A-Highway Program for trash pickup by volunteers, and posting litter prohibition signs and special information signs at selected locations.

Lead Agencies: City of Malibu and Caltrans

5.1.2 On-Site Structural Activities

On-site solutions provide an important step in managing wet weather runoff. Three options have been identified as potentially feasible for providing local source control for J1/4: 1) residential cisterns, 2) on-site storage and reuse, and 3) capture and infiltration. With implementation of these options runoff is retained locally and discharge of runoff and associated bacteria is avoided.

It should be recognized that local solutions, like institutional solutions, may not fully mitigate the impacts of pollutant loading. For the low cost alternative, pilot studies will be conducted to evaluate effectiveness prior to implementation of the alternatives described below.

The lead agencies for local options will primarily be the County of Los Angeles and City of Malibu.

Residential Cisterns

Cisterns collect diverted runoff from impervious roof areas on-site, and are typically above-ground, storage reservoirs ranging from 60 to 10,000 gallons in volume. Cisterns can reduce the volume of runoff from a site, and for smaller storm events, delay and reduce the peak runoff flow rates. The runoff stored in the cistern provides a source of chemically untreated 'soft water' for gardens and compost, free of most sediment and dissolved salts. Individual cisterns could be located beneath each downspout, or the desired storage volume could be provided in one large, common cistern that collects rainwater from several sources.

For this alternative, cisterns will be implemented in a portion of the watershed to reduce runoff volume and, for smaller storm events, delay and reduce the peak runoff rates. In conjunction with other new and enhanced programmatic solutions, education and incentive programs will be implemented with the goal of achieving installation of cisterns at 5 to

10 percent of single-family and multi-family residences. It was assumed that 1,000 gallon cisterns would be installed at single-family residences and 10,000 gallon cisterns would be installed at multi-family residences.

It is estimated that a 5 to 10 percent level of installation would be able to manage approximately 36 to 72 acre-feet of wet weather runoff annually in the Jurisdiction 1 and 4 subwatersheds. One of the advantages of cisterns is that they may be proportionally more effective for managing runoff from small storms than from larger storms.

On-Site Storage and Reuse

On-site storage/reuse involves capturing runoff from rooftops and other hardscaped areas, performing limited treatment, and storing it for subsequent reuse on-site in a much larger (on the order of 100,000 gallons) underground-type of storage. Reuse would require careful management and consideration of water distribution systems.

Potential sites for this option are public parks, urban vacant lots, government facilities, commercial facilities, and schools; at which the runoff could be reused for irrigation under specific, controlled conditions without needing to meet full Title 22 treatment standards (requiring filtration and disinfection).

Small-Scale Capture and Infiltration

Small-scale capture and infiltration involves capturing runoff from hardscaped areas and infiltrating into the soil. Various methods for on-site infiltration include, but are not limited to, porous pavement, retention grading, dry wells, and bioretention. The majority of soils within Jurisdictions 1 and 4 are categorized as having very poor infiltration rates. Of the soils with high infiltration rates, much of this area is along the coastal sands or in the steep, mountainous terrains. The steep, mountainous terrain is not appropriate for on-site infiltration projects because there is no development or urban land use that generates runoff; and these areas are too far upstream of the desired runoff concentration points. Slope stability is also a significant concern. Smaller scale BMPs such as infiltration trenches, swales, French drains, and porous pavement should be considered on an individual parcel basis, particularly in rural residential areas.

Table 5.1 Potential Locations for On-Site Facilities

Site	Site Type	Subwatershed	Address	Jurisdiction	Approx. Area (acre)	Commitment
Malibu Lagoon County Beach (Surfrider)	Public Parking Lot	Carbon	23000 PCH, Malibu	LACDBH	0.68	Pilot
Las Flores Creek Park	Public Recreation Area	Las Flores	3755 Las Flores Canyon Road, Malibu	City of Malibu	4	Commit
Las Flores Maintenance Station (Caltrans)	Maintenance Station	Las Flores	3503 Las Flores Canyon Rd, Malibu	Caltrans		Pilot
Charmlee Nature Center	Public Recreation Area	Los Aliso	2577 South Encinal Canyon Road, Malibu	City of Malibu	547	Consider
Nicholas Canyon County Beach	Public Parking Lot	Nicholas	33850 PCH, Malibu	LACDBH	1.18	Consider
Topanga County Beach (East Lot)	Public Parking Lot	Topanga	18700 PCH, Malibu	LACDBH	0.97	Pilot
Topanga County Beach (West Lot, unpaved)	Public Parking Lot	Topanga	18700 PCH, Malibu	LACDBH	0.96	Pilot
Zuma County Beach (Lot #1)	Public Parking Lot	Zuma	30050 PCH, Malibu	LACDBH	2.21	Consider
Zuma County Beach (Lot #2)	Public Parking Lot	Zuma	30050 PCH, Malibu	LACDBH	1.72	Consider
Zuma County Beach (Lot #3)	Public Parking Lot	Zuma	30050 PCH, Malibu	LACDBH	0.61	Consider
Zuma County Beach (Lot #4)	Public Parking Lot	Zuma	30050 PCH, Malibu	LACDBH	0.67	Consider
Zuma County Beach (Lot #5)	Public Parking Lot	Zuma	30050 PCH, Malibu	LACDBH	1.15	Consider
Zuma County Beach (Lot #6)	Public Parking Lot	Zuma	30050 PCH, Malibu	LACDBH	0.91	Consider
Zuma County Beach (Lot #7)	Public Parking Lot	Trancas	30050 PCH, Malibu	LACDBH	1.37	Consider
Zuma County Beach (Lot #8)	Public Parking Lot	Trancas	30050 PCH, Malibu	LACDBH	2.19	Consider
Zuma County Beach (Lot #9)	Public Parking Lot	Trancas	30050 PCH, Malibu	LACDBH	0.64	Consider
Zuma County Beach (Lot #10)	Public Parking Lot	Trancas	30050 PCH, Malibu	LACDBH	0.29	Consider
Zuma County Beach (Lot #11)	Public Parking Lot	Trancas	30050 PCH, Malibu	LACDBH	0.56	Consider
Zuma County Beach (Lot #12)	Public Parking Lot	Trancas	30050 PCH, Malibu	LACDBH	2.04	Consider
Trancas Canyon Park	Public Recreation Area	Trancas	between 6120 & 5942 Trancas Canyon Rd,	City of Malibu	15	Commit
Zuma Beach Maintenance Yard	Maintenance Facility	Zuma	30100 PCH, Malibu	LACDBH	0.53	Consider
Point Dume County Beach	Public Parking Lot	Zuma	7103 Westward Beach Rd., Malibu	LACDBH	2.45	Consider

Table 5.1 lists J1/4 Agency-owned candidate locations and levels of commitment for on-site measures within the J1/4 areas. These areas are somewhat limited and in some subwatersheds where on-site structural measures are committed, piloted, or considered, it may not be feasible to implement on-site structural measures within J1/4 Agency right of way. In this event other publicly-owned properties should be contemplated and

commercial development opportunities considered, before attempting to implement on private residential properties. It should be noted that while some of the listed facilities are sewer treatment plants, the functional use of these plants is not considered for storm water treatment. That is, the sewer treatment plants would not be used to treat runoff, but are facilities that are candidates for on-site treatment of local runoff.

5.1.3 Regional Pilot Projects

Regional structural solutions are recommended for evaluation as pilot projects for selected high-priority subwatersheds. These regional structural pilot projects should be considered candidate pilot projects that are subject to change and modification upon additional, more detailed study. Implementation of these pilot projects will be subject to confirmation of engineering feasibility and technologies that may change the treatment approach. These activities will initiate in Phase 1. The treatment volumes for pilot projects are generally below full target treatment volumes to better establish and understand the relationships between exceedances, storm volumes, and pollutant levels within storms, as well as to improve potential for optimal cost-effectiveness.

The following additional considerations should be made with respect to pilot projects:

- All projects require an administrative pre-feasibility evaluation.
- All projects require feasibility-study level analysis and conceptual designs.
- Proposed treatment concepts are subject to change.
- All parametric estimates (watershed area, treatment volume, etc.) are preliminary.
- Any budgetary estimates are preliminary and subject to change.
- All projects are subject to permitting and right-of-way resolution.
- Should a pilot project be found infeasible, replacement projects will be investigated.
- It is assumed that pilot projects will be operational throughout the implementation period, and that any decommissioning would occur after the implementation plan duration.
- All projects will require review of environmentally sensitive areas and establishment of jurisdictional delineations as appropriate. Project flow rates and treatment levels will depend on available right-of-way and project engineering, and are subject to modification.

5.1.4 Prioritizing and Phasing Philosophy

Activities stipulated for each subwatershed are determined by its priority rating. Priorities range from “low,” which would require primarily non-structural BMPs only, to “high” which would include more rigorous implementation of both non-structural and structural BMPs. The requirements for a “medium” priority watershed would fall between those of the low and high priority watersheds.

As previously stated, implementation categories for BMPs are “commit,” “pilot,” and “consider.” There are four phases in which these BMPs could be scheduled to begin planning and implementation. These phases are referenced in the summary tables in the following section. The summary tables include columns labeled “Initiate Planning” and “Initiate Implementation.”

“Commit” activities are the highest priority, and are generally scheduled to begin planning in Phase 1 with the following exceptions: a) “Further emphasize applicable existing BMPs in development planning and construction programs” though committed BMPS, are scheduled to initiate planning in Phase 2, and b) subwatersheds with committed structural BMP measures may not have a clearly defined initiated planning date, reflecting potential uncertainties, and instead may reference “Phase 1 or 2.” These watersheds include Ramirez, Latigo, Corral, Las Flores, Piedra Gorda, and Topanga.

BMPs that are to be piloted and considered would begin the planning phase no earlier than Phase 2 and implementation no later than phase 3. Items marked with an asterisk are those pilot or consider items that will be implemented only if necessary upon completion of the planning phase.

It should be noted that the medium priority subwatersheds of Los Alisos Canyon and Carbon do not include significantly different activities than their low priority counterparts. They, however, have accelerated schedules for the consideration of structural BMPs; with planning and implementation initiated in Phases of 2 and 3, respectively. It should also be noted that subwatersheds with potential for beneficial reuses (such as Trancas) would warrant consideration of additional BMP activities.

5.2 Arroyo Sequit

Because Arroyo Sequit is the reference subwatershed and basis for the Santa Monica Bay Beaches Bacterial TMDL, it is excluded from the Implementation Plan. Arroyo Sequit Subwatershed is virtually undeveloped (less than 2.5 percent is developed); therefore, anthropogenic sources of bacteria are sparse. It is for this reason that the CSMP (2004) identified the monitoring station at this subwatershed as a reference site for implementing the TMDL. Bacteria are still present in sampling, although at low levels and likely principally associated with wildlife, horses, and dogs. Much of the open space within the subwatershed is within parcels belonging to the Santa Monica Mountain Conservancy. Therefore, these lands have added protections.

5.3 Nicholas (J4)

5.3.1 Subwatershed-Specific Description

General Description

Nicholas Canyon is the sole Jurisdiction 4 area. It is a 1220-acre subwatershed that is bounded by Arroyo Sequit to the northwest and Los Alisos to the southeast. More than half of the Nicholas Subwatershed is within lands proposed for acquisition by the SMMC, and except for a small area of medium to high density and low density residential development along the shoreline, the subwatershed can generally be characterized as predominately natural open space. There is a 2-acre parcel in the subwatershed that is designated as a wildlife preserve or sanctuary. Just east of PCH is a horse ranch. Nicholas County Canyon Beach is a moderately popular beach that provides parking for 151 vehicles. The beach also provides fishing, picnicking, restrooms, showers, surfing, swimming, and in the summer months, there is a food truck.

Estimate of Potential Total Runoff to Be Managed

Hypothetical target 24-hour operational storage and treatment volumes were developed should structural measures be eventually required within the subwatershed. The upper limit of this volume is 8 million gallons, though based on detailed hydrologic studies in adjacent subwatersheds, this volume could be reduced to 3 million gallons.

Specific/Historical Concerns

Nicholas Canyon is considered a low priority subwatershed. Monitoring in the critical TMDL year did not show excessive exceedance days, and the source prioritization effort did not conclude that it was a high priority subwatershed.

5.3.2 Watershed-Specific Plan of Activities

The following matrix summarizes the activities specifically designated for this subwatershed. The basis for activities selected in this matrix is primarily the subwatershed priority status. Descriptions of general activities described below were provided in Section 5.1.1. Specifics regarding potential implementation scheduling are provided in Appendix B.

Nicholas (J4) Best Management Practices	Commit	Pilot	Consider	Initiate Planning	Initiate Implementation
Non-Structural Measures					
Public Information and Participation Programs					
Outreach to pet owners establishing a link between animal wastes and health issues and focus on point of contact or purchase	X			Phase 1	Phase 1
Locate areas with corralled animals and educate property owners on bacteria TMDLs		X		Phase 2	Phase 3
Identify horse stables in the region and implement pilot program		X		Phase 2	Phase 3
Post signs at County and City-owned trailheads designated for equestrian users to not clean out horse trailers in parking lots and to clean up horse waste			X	Phase 2	Phase 3*
Outreach at trailheads encouraging hikers to use restroom facilities			X	Phase 2	Phase 3*
Provide septic system (OWTS) pumpers and customers with septic system guides.	X			Phase 1	Phase 2
Increase coordination between agencies and environmental organizations in preparing outreach materials	X			Phase 1	Phase 1
Industrial/Commercial Facilities Control Programs					
Provide an outreach program for all commercial facilities with corralled animals, including equestrian centers			X	Phase 2	Phase 3*
Development Planning and Construction Program					
Further emphasize applicable existing BMPs in development planning and construction programs	X			Phase 2	Phase 2
Public Agency Activity Control Program					
Establish guidelines for optimizing frequency of cleaning cycles for drainage facilities	X			Phase 1	Phase 1
Caltrans-Malibu Joint Agency Activities			X	Phase 1	Phases 1 & 2
Structural Measures					
On-Site Options					
a) Cisterns			X	Phase 3	Phase 4*
b) Storage and Reuse			X	Phase 3	Phase 4*
c) Small Scale Infiltration			X	Phase 3	Phase 4*
d) On-Site Wastewater			X	Phase 3	Phase 4*

*if necessary

5.4 Los Alisos

5.4.1 Watershed-Specific Description

General Description

Los Alisos Canyon is a 2380-acre subwatershed that is bounded by Nicholas Canyon to the northwest and Encinal to the southeast. Per SCAG (2000) land use data, it has 267 acres of residential development. In the upper region of the subwatershed around Decker Canyon there is a scattering of rural residential development and a small area designated as open space and recreation. In the area of La Vienta Creek and along the shoreline the area is mostly low density residential with a small area of medium to high density residential development (also along the shoreline). There are two inland parks west of PCH in the area of La Vienta Creek. Only 5 acres of non-pastoral or livestock agricultural land (nursery, vineyards) are found within the subwatershed. Most of the upper half of the subwatershed is protected by the Santa Monica Mountain Conservancy.

Estimate of Potential Total Runoff to Be Managed

Hypothetical target 24-hour operational storage and treatment volumes were developed should structural measures be eventually required within the subwatershed. The upper limit of this volume is 10 million gallons, though based on detailed hydrologic studies in adjacent subwatersheds, this volume could be reduced to 4 million gallons.

Specific/Historical Concerns

Los Alisos Canyon is considered a medium priority subwatershed based on the source prioritization effort described previously

5.4.2 Watershed-Specific Plan of Activities

The following matrix summarizes the activities specifically designated for this subwatershed. The basis for activities selected in this matrix is primarily the subwatershed priority status. Descriptions of general activities described below were provided in Section 5.1.1. Specifics regarding potential implementation scheduling are provided in Appendix B.

Los Alisos Best Management Practices	Commit	Pilot	Consider	Initiate Planning	Initiate Implementation*
Non-Structural Measures					
Public Information and Participation Programs					
Outreach to pet owners establishing a link between animal wastes and health issues and focus on point of contact or purchase	X			Phase 1	Phase 1
Post signs at County and City-owned trailheads designated for equestrian users to not clean out horse trailers in parking lots and to clean up horse waste			X	Phase 2	Phase 3*
Outreach at trailheads encouraging hikers to use restroom facilities			X	Phase 2	Phase 3*
Provide septic system (OWTS) pumpers and customers with septic system guides.	X			Phase 1	Phase 2
Increase coordination between agencies and environmental organizations in preparing outreach materials	X			Phase 1	Phase 1
Development Planning and Construction Program					
Further emphasize applicable existing BMPs in development planning and construction programs	X			Phase 2	Phase 2
Public Agency Activity Control Program					
Establish guidelines for optimizing frequency of cleaning cycles for drainage facilities	X			Phase 1	Phase 1
Caltrans-Malibu Joint Agency Activities			X	Phase 1	Phases 1 & 2
Structural Measures					
On-Site Options					
a) Cisterns			X	Phase 2	Phase 3*
b) Storage and Reuse			X	Phase 2	Phase 3*
c) Small Scale Infiltration			X	Phase 2	Phase 3*
d) On-Site Wastewater			X	Phase 2	Phase 3*

*if necessary

5.5 Encinal

5.5.1 Watershed-specific description

General Description

Encinal Canyon is an 1830-acre subwatershed that is bounded by Los Alisos to the northwest and Trancas Canyon to the southeast. Per SCAG (2000) land use data, it has 179 acres of residential development. Scattered rural residential development is found beyond the incorporated boundaries of Malibu, and is located primarily along streams. Medium to high density development dominates the shoreline with some intermingling of low density development. Two small agricultural (non-pastoral or livestock) parcels comprising a total of about 14 acres are located relatively close to the shoreline. Approximately one-third of the land area within this subwatershed is proposed for acquisition by the SMMC.

Estimate of Potential Total Runoff to Be Managed

Hypothetical target 24-hour operational storage and treatment volumes were developed should structural measures be eventually required within the subwatershed. The upper limit of this volume is 8 million gallons, though based on detailed hydrologic studies in adjacent subwatersheds, this volume could be reduced to 3 million gallons.

Specific/Historical Concerns

Encinal Canyon is considered a low priority subwatershed based on the source prioritization effort described previously. Encinal has no zoned horse ranch or commercial land uses.

5.5.2 Watershed-Specific Plan of Activities

The following matrix summarizes the activities specifically designated for this subwatershed. The basis for activities selected in this matrix is primarily the subwatershed priority status. Descriptions of general activities described below were provided in Section 5.1.1. Specifics regarding potential implementation scheduling are provided in Appendix B.

Encinal Best Management Practices	Commit	Pilot	Consider	Initiate Planning	Initiate Implementation*
Non-Structural Measures					
Public Information and Participation Programs					
Outreach to pet owners establishing a link between animal wastes and health issues and focus on point of contact or purchase	X			Phase 1	Phase 1
Post signs at County and City-owned trailheads designated for equestrian users to not clean out horse trailers in parking lots and to clean up horse waste			X	Phase 2	Phase 3*
Outreach at trailheads encouraging hikers to use restroom facilities			X	Phase 2	Phase 3*
Provide septic system (OWTS) pumpers and customers with septic system guides.	X			Phase 1	Phase 2
Increase coordination between agencies and environmental organizations in preparing outreach materials	X			Phase 1	Phase 1
Development Planning and Construction Program					
Further emphasize applicable existing BMPs in development planning and construction programs	X			Phase 2	Phase 2
Public Agency Activity Control Program					
Establish guidelines for optimizing frequency of cleaning cycles for drainage facilities	X			Phase 1	Phase 1
Caltrans-Malibu Joint Agency Activities			X	Phase 1	Phases 1 & 2
Structural Measures					
On-Site Options					
a) Cisterns			X	Phase 3	Phase 4*
b) Storage and Reuse			X	Phase 3	Phase 4*
c) Small Scale Infiltration			X	Phase 3	Phase 4*
d) On-Site Wastewater			X	Phase 3	Phase 4*

*if necessary

5.6 Trancas

5.6.1 Watershed-Specific Description

General Description

Trancas Canyon is a 6580-acre subwatershed that is bounded by Encinal Canyon to the northwest and Zuma to the southeast. Per SCAG (2000) land use data, it has 635 acres of residential development. Nearly 15 percent of the Trancas subwatershed is comprised of developed land uses. A mixture of land uses, including medium to high and low density residential, mixed urban, educational, commercial, and rural residential, is found in the western portion of the subwatershed. The middle region of the subwatershed is virtually undeveloped, whereas the upper portion has a scattering of land uses, including rural residential, golf course, governmental, and agricultural. Approximately 26 acres of land within the northeastern section of the subwatershed is classified as cropland and pasture. There are 3 mapped horse ranches within the subwatershed, with one of the ranches located relatively close to the shoreline. Nearly half of the shoreline is comprised of a beach park. Relatively small-sized parcels owned by the proposed for ownership by the SMMC are scattered throughout the subwatershed. Trancas has some land uses indicating a potential reuse opportunity, but the location of these potential opportunities did not appear to be feasible for this activity.

Estimate of Potential Total Runoff to Be Managed

Hypothetical target 24-hour operational storage and treatment volumes were developed should structural measures be eventually required within the subwatershed. The upper limit of this volume is 36 million gallons, though based on detailed hydrologic studies in adjacent subwatersheds, this volume could be reduced to 13 million gallons. For a subwatershed of this size, additional hydrologic studies are recommended prior to feasibility-level designs.

Specific/Historical Concerns

Trancas Canyon is considered a low priority subwatershed. Monitoring in the critical TMDL year did not show excessive exceedance days, and the source prioritization effort did not conclude that it was a high priority subwatershed.

5.6.2 Watershed-Specific Plan of Activities

The following matrix summarizes the activities specifically designated for this subwatershed. The basis for activities selected in this matrix is primarily the subwatershed priority status. Descriptions of general activities described below were provided in Section 5.1.1. Specifics regarding potential implementation scheduling are provided in Appendix B.

Trancas Best Management Practices	Commit	Pilot	Consider	Initiate Planning	Initiate Implementation*
Non-Structural Measures					
Public Information and Participation Programs					
Outreach to pet owners establishing a link between animal wastes and health issues and focus on point of contact or purchase	X			Phase 1	Phase 1
Locate areas with corralled animals and educate property owners on bacteria TMDLs		X		Phase 2	Phase 3
Post signs at County and City-owned trailheads designated for equestrian users to not clean out horse trailers in parking lots and to clean up horse waste			X	Phase 2	Phase 3*
Outreach at trailheads encouraging hikers to use restroom facilities			X	Phase 2	Phase 3*
Provide septic system (OWTS) pumpers and customers with septic system guides.	X			Phase 1	Phase 2
Increase coordination between agencies and environmental organizations in preparing outreach materials	X			Phase 1	Phase 1
Industrial/Commercial Facilities Control Programs					
Provide an outreach program for all commercial facilities with corralled animals, including equestrian centers			X	Phase 2	Phase 3*
Provide for regular BMP inspections for restaurants	X			Phase 1	Phase 1
Increase awareness of BMPs in restaurants by establishing a restaurant reward and recognition program		X		Phase 2	Phase 3
Conduct industry specific workshops	X			Phase 1	Phase 1
Investigate the possibility of increasing frequency of trash collection at restaurants	X			Phase 1	Phase 2
Development Planning and Construction Program					
Further emphasize applicable existing BMPs in development planning and construction programs	X			Phase 2	Phase 2
Public Agency Activity Control Program					
Establish guidelines for optimizing frequency of cleaning cycles for drainage facilities	X			Phase 1	Phase 1
Caltrans-Malibu Joint Agency Activities			X	Phase 1	Phases 1 & 2
Structural Measures					
On-Site Options					
a) Cisterns			X	Phase 3	Phase 4*
b) Storage and Reuse			X	Phase 3	Phase 4*
c) Small Scale Infiltration			X	Phase 3	Phase 4*
d) On-Site Wastewater			X	Phase 3	Phase 4*
Regional Solutions					
- Capture, Store, Treat, and Discharge			X	Phase 3	Phase 4*
- Capture, Store, Treat, and Reuse			X	Phase 3	Phase 4*
Treatment Options					
- Traditional Treatment/Small Package			X	Phase 3	Phase 4*
- SSF Wetlands			X	Phase 3	Phase 4*

*if necessary

5.7 Zuma

5.7.1 Watershed-Specific Description

General Description

Zuma Canyon is a 6290-acre subwatershed that is bounded by Trancas Canyon to the northwest and Ramirez to the southeast. It has 796 acres of residential development (13 percent of the total subwatershed). Developed land (including commercial, and mixed urban) comprises about 18 percent of the Zuma subwatershed, making Zuma subwatershed the third most developed subwatershed within the project area. It has the second highest proportion of commercial development. Low density residential development scattered with commercial, agricultural, horse ranch, and medium to high density residential development comprises the western portion of the subwatershed. Development is also found in the far upper portion of the subwatershed and is mostly characterized by rural residential and agricultural land uses. There are seven mapped horse ranches in this subwatershed, with two of the ranches located relatively close to the shoreline. A few, small parcels proposed for ownership by the SMMC are found in the mid- to upper regions of the subwatershed. A large proportion of the shoreline is comprised of a beach park (Zuma Beach). Based on the October 2004 field reconnaissance of the CSMP monitoring site, there are a number of restaurants and food facilities adjacent to and directly on Zuma Beach. In addition, several public restrooms were identified on Zuma Beach.

Estimate of Potential Total Runoff to Be Managed

Hypothetical target 24-hour operational storage and treatment volumes were developed should structural measures be eventually required within the subwatershed. The upper limit of this volume is 33 million gallons, though based on detailed hydrologic studies in adjacent subwatersheds, this volume could be reduced to 12 million gallons. For a subwatershed of this size, additional hydrologic studies are recommended prior to feasibility-level designs.

Specific/Historical Concerns

Zuma Canyon is considered a low priority subwatershed. Monitoring in the critical TMDL year did not show excessive exceedance days, and the source prioritization effort did not conclude that it was a high priority subwatershed.

5.7.2 Watershed-Specific Plan of Activities

The following matrix summarizes the activities specifically designated for this subwatershed. The basis for activities selected in this matrix is primarily the subwatershed priority status. Descriptions of general activities described below were provided in Section 5.1.1. Specifics regarding potential implementation scheduling are provided in Appendix B.

Zuma Best Management Practices	Commit	Pilot	Consider	Initiate Planning	Initiate Implementation*
Non-Structural Measures					
Public Information and Participation Programs					
Outreach to pet owners establishing a link between animal wastes and health issues and focus on point of contact or purchase	X			Phase 1	Phase 1
Locate areas with corralled animals and educate property owners on bacteria TMDLs		X		Phase 2	Phase 3
Identify horse stables in the region and implement pilot program		X		Phase 2	Phase 3
Post signs at County and City-owned trailheads designated for equestrian users to not clean out horse trailers in parking lots and to clean up horse waste			X	Phase 2	Phase 3*
Outreach at trailheads encouraging hikers to use restroom facilities			X	Phase 2	Phase 3*
Provide septic system (OWTS) pumpers and customers with septic system guides.	X			Phase 1	Phase 2
Increase coordination between agencies and environmental organizations in preparing outreach materials	X			Phase 1	Phase 1
Industrial/Commercial Facilities Control Programs					
Provide an outreach program for all commercial facilities with corralled animals, including equestrian centers			X	Phase 2	Phase 3*
Provide for regular BMP inspections for restaurants	X			Phase 1	Phase 1
Increase awareness of BMPs in restaurants by establishing a restaurant reward and recognition program		X		Phase 2	Phase 3
Conduct industry specific workshops	X			Phase 1	Phase 1
Investigate the possibility of increasing frequency of trash collection at restaurants	X			Phase 1	Phase 2
Development Planning and Construction Program					
Further emphasize applicable existing BMPs in development planning and construction programs	X			Phase 2	Phase 2
Public Agency Activity Control Program					
Establish guidelines for optimizing frequency of cleaning cycles for drainage facilities	X			Phase 1	Phase 1
Caltrans-Malibu Joint Agency Activities			X	Phase 1	Phases 1 & 2
Structural Measures					
On-Site Options					
a) Cisterns			X	Phase 3	Phase 4*
b) Storage and Reuse			X	Phase 3	Phase 4*
c) Small Scale Infiltration			X	Phase 3	Phase 4*
d) On-Site Wastewater			X	Phase 3	Phase 4*

*if necessary

5.8 Ramirez

5.8.1 Watershed-Specific Description

General Description

Ramirez Canyon is a 3350-acre subwatershed that is bounded by Zuma Canyon to the north and Escondido to the southeast. It has 318 acres of residential development, making Ramirez the most developed subwatershed within the project area, with about 27 percent of its land area characterized by non-open space uses. Nearly all of the development is within the lower portion of the subwatershed. Numerous land uses are represented in the developed portion of the subwatershed. Low density residential development comprises the greatest proportion of the developed land uses. Commercial land is located away from the shoreline. There is a 6-acre horse ranch located fairly close to the shoreline. The eastern portion of the subwatershed is planned for ownership by the SMMC.

Estimate of Potential Total Runoff to Be Managed

Hypothetical target 24-hour operational storage and treatment volumes were developed should structural measures be eventually required within the subwatershed. The upper limit of this volume is 21 million gallons, though based on detailed hydrologic studies in adjacent subwatersheds, this volume could be reduced to 8 million gallons. For a subwatershed of this size, additional hydrologic studies are recommended prior to feasibility-level designs.

Specific/Historical Concerns

Ramirez Canyon is considered a high priority subwatershed. Monitoring in the critical TMDL year showed excessive exceedance days, and the source prioritization effort confirmed that it was a high priority subwatershed.

5.8.2 Watershed-Specific Plan of Activities

The following matrix summarizes the activities specifically designated for this subwatershed. The basis for activities selected in this matrix is primarily the subwatershed priority status. Descriptions of general activities described below were provided in Section 5.1.1. Specifics regarding potential implementation scheduling are provided in Appendix B.

Ramirez Best Management Practices	Commit	Pilot	Consider	Initiate Planning	Initiate Implementation*
Non-Structural Measures					
Public Information and Participation Programs					
Outreach to pet owners establishing a link between animal wastes and health issues and focus on point of contact or purchase	X			Phase 1	Phase 1
Locate areas with corralled animals and educate property owners on bacteria TMDLs		X		Phase 2	Phase 3
Post signs at County and City-owned trailheads designated for equestrian users to not clean out horse trailers in parking lots and to clean up horse waste			X	Phase 2	Phase 3*
Outreach at trailheads encouraging hikers to use restroom facilities			X	Phase 2	Phase 3*
Provide septic system (OWTS) pumpers and customers with septic system guides.	X			Phase 1	Phase 2
Increase coordination between agencies and environmental organizations in preparing outreach materials	X			Phase 1	Phase 1
Industrial/Commercial Facilities Control Programs					
Provide an outreach program for all commercial facilities with corralled animals, including equestrian centers			X	Phase 2	Phase 3*
Provide for regular BMP inspections for restaurants	X			Phase 1	Phase 1
Increase awareness of BMPs in restaurants by establishing a restaurant reward and recognition program		X		Phase 2	Phase 3
Conduct industry specific workshops	X			Phase 1	Phase 1
Investigate the possibility of increasing frequency of trash collection at restaurants	X			Phase 1	Phase 2
Development Planning and Construction Program					
Further emphasize applicable existing BMPs in development planning and construction programs	X			Phase 2	Phase 2
Public Agency Activity Control Program					
Establish guidelines for optimizing frequency of cleaning cycles for drainage facilities	X			Phase 1	Phase 1
Caltrans-Malibu Joint Agency Activities			X	Phase 1	Phases 1 & 2
Structural Measures					
On-Site Options					
a) Cisterns	X			Phase 1 or 2	Phase 3
b) Storage and Reuse	X			Phase 1 or 2	Phase 3
c) Small Scale Infiltration	X			Phase 1 or 2	Phase 3
d) On-Site Wastewater			X	Phase 3	Phase 4*
Regional Solutions					
- Capture, Store, Treat, and Discharge		X		Phase 1	Phase 3
Treatment Options					
- Traditional Treatment/Small Package			X	Phase 3	Phase 4*
- Storm Water Filtration			X	Phase 3	Phase 4*
- Advanced Oxidation			X	Phase 3	Phase 4*

Ramirez Best Management Practices	Commit	Pilot	Consider	Initiate Planning	Initiate Implementation*
- Peracetic Acid/bactericides			X	Phase 3	Phase 4*
- SSF Wetlands			X	Phase 3	Phase 4*

*if necessary

5.8.3 Description of Potential Pilot Project

The following table describes a potential pilot project for this subwatershed. It includes a project target location, treatment measure, and preliminary budget estimate. As previously stated it is expected that features related to this pilot project may change.

Project Name	Paradise Cove Pretreatment and System Upgrade
Jurisdictional Lead	City of Malibu/County of Los Angeles
Project Description/Benefit	Provide pre-treatment pollutant removal and storage capacity to increase the functional capacity of existing bacteria treatment system and evaluate the potential for system upgrade. Potential significant improvements in treatment performance
Regional, Sub-Regional, or On-Site	Sub-Regional
Subwatershed and basis for selection	Ramirez Subwatershed High Priority based on Source Prioritization and TMDL exceedance days in critical year
Integrated Project Element	Multiple Pollutants
Candidate Locations	Storage facilities adjacent to or upstream of existing Clear Creek System. Approximate land required (note storage can be covered at additional expense): 1 to 2 acres
Candidate Target Volume	Drainage is 60% of total watershed (estimated) and utilizing lower volume estimate, and Potential treatment of 50% of volume Required operational storage is 2.4 MG (approx 7.4 acre-feet).

Permitting/ Environmental Issues	Potential private land ownership issues. This stipulation makes the feasibility of the proposed pilot project somewhat in question. Therefore the pilot project should be considered "conditional" of resolution of right-of-way issues. Large operational storage required
Budgetary Estimates	To be determined
Photo/Map: 	 Copyright © 2002-2004 Kenneth & Gabrielle Adelman, California Coastal Records Project, www.californiacoastline.org
Photo: Existing Channel	

Photo: Existing Outlet Structure	
Photo: Existing Parking Structure	

5.9 Escondido

5.9.1 Watershed-Specific Description

General Description

Escondido Canyon is a 2300-acre subwatershed that is bounded by Ramirez Canyon to the northwest and Latigo to the southeast. It has 318 acres of residential development. Rural residential development is found scattered throughout the subwatershed. Medium to high density residential development is found along the shoreline and low density residential development is found just east of the shoreline. About a third of the land area is within SMMC lands. About 43 acres of mapped horse ranches (representing about 2 percent of the subwatershed) are found fairly close to the shoreline. The proportion of horse ranches in this subwatershed is the highest within the project area. There is no coastal, public access from the Pacific Coast Highway (Route 1) to Escondido Beach; access is only via private properties and through two blocked gates.

Estimate of Potential Total Runoff to Be Managed

Hypothetical target 24-hour operational storage and treatment volumes were developed should structural measures be eventually required within the subwatershed. The upper limit of this volume is 9 million gallons, though based on detailed hydrologic studies in adjacent subwatersheds this volume could be reduced to 3 million gallons.

Specific/Historical Concerns

Escondido Canyon is considered a medium to high priority subwatershed. There was no monitoring in the critical TMDL year, but the source prioritization effort concluded that it was medium to high priority.

5.9.2 Watershed-Specific Plan of Activities

The following matrix summarizes the activities specifically designated for this subwatershed. The basis for activities selected in this matrix is primarily the subwatershed priority status. Descriptions of general activities described below were provided in Section 5.1.1. Specifics regarding potential implementation scheduling are provided in Appendix B.

Escondido Best Management Practices	Commit	Pilot	Consider	Initiate Planning	Initiate Implementation*
Non-Structural Measures					
Public Information and Participation Programs					
Outreach to pet owners establishing a link between animal wastes and health issues and focus on point of contact or purchase	X			Phase 1	Phase 1
Locate areas with corralled animals and educate property owners on bacteria TMDLs		X		Phase 2	Phase 3
Post signs at County and City-owned trailheads designated for equestrian users to not clean out horse trailers in parking lots and to clean up horse waste			X	Phase 2	Phase 3*
Outreach at trailheads encouraging hikers to use restroom facilities			X	Phase 2	Phase 3*
Provide septic system (OWTS) pumpers and customers with septic system guides.	X			Phase 1	Phase 2
Increase coordination between agencies and environmental organizations in preparing outreach materials	X			Phase 1	Phase 1
Industrial/Commercial Facilities Control Programs					
Provide an outreach program for all commercial facilities with corralled animals, including equestrian centers			X	Phase 2	Phase 3*
Development Planning and Construction Program					
Further emphasize applicable existing BMPs in development planning and construction programs	X			Phase 2	Phase 2
Public Agency Activity Control Program					
Establish guidelines for optimizing frequency of cleaning cycles for drainage facilities	X			Phase 1	Phase 1
Caltrans-Malibu Joint Agency Activities			X	Phase 1	Phases 1 & 2
Structural Measures					
On-Site Options					
a) Cisterns			X	Phase 3	Phase 4*
b) Storage and Reuse		X		Phase 2	Phase 3
c) Small Scale Infiltration		X		Phase 2	Phase 3
d) On-site Wastewater			X	Phase 3	Phase 4*

*if necessary

5.10 Latigo

5.10.1 Watershed-Specific Description

General Description

Latigo Canyon is the second smallest subwatershed in the J1/4 area, and is an 824-acre subwatershed that is bounded by Escondido Canyon to the northwest and Solstice to the southeast. Latigo has 80 acres of residential development, a substantial portion near the shoreline. Developed land within the Latigo subwatershed is characterized mostly by rural residential development in the central area of the subwatershed along the rim of Latigo Canyon and low and medium to high density residential development near the shoreline. Managed lands of the SMMC are found along the eastern border of the subwatershed.

Estimate of Potential Total Runoff to Be Managed

Hypothetical target 24-hour operational storage and treatment volumes were developed should structural measures be eventually required within the subwatershed. The upper limit of this volume is 4 million gallons, though based on detailed hydrologic studies in adjacent subwatersheds this volume could be reduced to 1 million gallons.

Specific/Historical Concerns

Latigo Canyon is considered a high priority subwatershed based on monitoring of exceedance days in the critical TMDL year.

5.10.2 Watershed-Specific Plan of Activities

The following matrix summarizes the activities specifically designated for this subwatershed. The basis for activities selected in this matrix is primarily the subwatershed priority status. Descriptions of general activities described below were provided in Section 5.1.1. Specifics regarding potential implementation scheduling are provided in Appendix B.

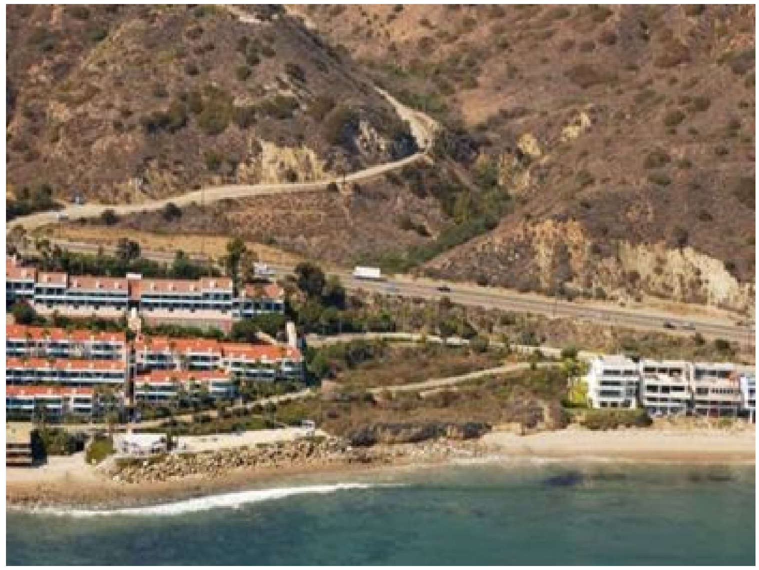
Latigo Best Management Practices	Commit	Pilot	Consider	Initiate Planning	Initiate Implementation*
Non-Structural Measures					
Public Information and Participation Programs					
Outreach to pet owners establishing a link between animal wastes and health issues and focus on point of contact or purchase	X			Phase 1	Phase 1
Locate areas with corralled animals and educate property owners on bacteria TMDLs		X		Phase 2	Phase 3
Post signs at County and City-owned trailheads designated for equestrian users to not clean out horse trailers in parking lots and to clean up horse waste			X	Phase 2	Phase 3*
Outreach at trailheads encouraging hikers to use restroom facilities			X	Phase 2	Phase 3*
Provide septic system (OWTS) pumpers and customers with septic system guides.	X			Phase 1	Phase 2
Increase coordination between agencies and environmental organizations in preparing outreach materials	X			Phase 1	Phase 1
Industrial/Commercial Facilities Control Programs					
Provide an outreach program for all commercial facilities with corralled animals, including equestrian centers			X	Phase 2	Phase 3*
Development Planning and Construction Program					
Further emphasize applicable existing BMPs in development planning and construction programs	X			Phase 2	Phase 2
Public Agency Activity Control Program					
Establish guidelines for optimizing frequency of cleaning cycles for drainage facilities	X			Phase 1	Phase 1
Caltrans-Malibu Joint Agency Activities			X	Phase 1	Phases 1 & 2
Structural Measures					
On-Site Options					
a) Cisterns	X			Phase 1 or 2	Phase 3
b) Storage and Reuse	X			Phase 1 or 2	Phase 3
c) Small Scale Infiltration	X			Phase 1 or 2	Phase 3
d) On-site Wastewater			X	Phase 3	Phase 4*
Regional Solutions					
- Capture, Store, Treat, and Discharge		X		Phase 1	Phase 3
Treatment Options					
- Traditional Treatment/Small Package			X	Phase 3	Phase 4*
- Storm Water Filtration			X	Phase 3	Phase 4*
- Advanced Oxidation			X	Phase 3	Phase 4*
- Peracetic Acid/bactericides			X	Phase 3	Phase 4*
- SSF Wetlands			X	Phase 3	Phase 4*

*if necessary

5.10.3 Description of Potential Pilot Project

The following table describes a potential pilot project for this subwatershed. It includes a project target location, treatment measure, and preliminary budget estimate. As previously stated it is expected that features related to this pilot project may change.

Project Name	Latigo Shores Subsurface Flow Wetland
Jurisdictional Lead	County of Los Angeles
Project Description/Benefit	Utilize vacant County Beaches and Harbors land, east of Tivoli Condominiums and south of PCH, for treatment of creek flows through subsurface flow wetland system. Project requires pretreatment screens for gross solids removal. Diversion of flows and temporary storage. Assume wetland system can be fed during dry season with nuisance flows from creek or treated septic leach sources. System to be encase in concrete box to mitigate slope stability issues.
Regional, Sub-Regional, or On-Site	Subregional
Subwatershed and basis for selection	Latigo High Priority based on TMDL exceedance days in critical year
Integrated Project Element	Multiple Pollutants and potential integrated water resources (treated septic leach source)
Candidate Locations	Adjacent to outlet in vacant parcel. Alternative site may be privately owned land north of PCH and west of creek. Approximate land required (note storage can be covered at additional expense): 1 acre
Candidate Target Volume	90% of area (estimated) 50% of reduced volume assumed, or Operational storage = 0.45 MGD
Permitting/ Environmental Issues	Groundwater/septic leach water usage Potential private land ownership issues for access: This stipulation makes the feasibility of the proposed pilot project somewhat in question. Therefore the pilot project should be considered "conditional" of resolution of right-of-way issues. Engineering issue: Potential slope stability issues must be addressed and investigated as part of preliminary design process.

Budgetary Estimates	To be determined
Photo/Map: 	 Copyright © 2002-2004 Kenneth & Gabrielle Adelman, California Coastal Records Project, www.californiacoastline.org
Photo: Candidate Site	

5.11 Solstice

5.11.1 Watershed-Specific Description

General Description

Solstice Canyon is a 2840-acre subwatershed that is bounded by Latigo Canyon to the northwest and Corral Canyon to the southeast. Development within Solstice subwatershed is limited to rural residential and horse ranch uses and a small commercial area near the coastline. Much of this subwatershed is proposed for ownership by SMMC. A field reconnaissance conducted in October 2004 noted that the commercial area on the east side of Pacific Coast Highway at Solstice Canyon Road is comprised of restaurants and a gas station.

Estimate of Potential Total Runoff to Be Managed

Hypothetical target 24-hour operational storage and treatment volumes were developed should structural measures be eventually required within the subwatershed. The upper limit of this volume is 35 million gallons, though based on detailed hydrologic studies in adjacent subwatersheds this volume could be reduced to 13 million gallons.

Specific/Historical Concerns

Solstice Canyon is considered a low priority subwatershed based on the source prioritization effort described previously

5.11.2 Watershed-Specific Plan of Activities

The following matrix summarizes the activities specifically designated for this subwatershed. The basis for activities selected in this matrix is primarily the subwatershed priority status. Descriptions of general activities described below were provided in Section 5.1.1. Specifics regarding potential implementation scheduling are provided in Appendix B.

Solstice Best Management Practices	Commit	Pilot	Consider	Initiate Planning	Initiate Implementation*
Non-Structural Measures					
Public Information and Participation Programs					
Outreach to pet owners establishing a link between animal wastes and health issues and focus on point of contact or purchase	X			Phase 1	Phase 1
Locate areas with corralled animals and educate property owners on bacteria TMDLs		X		Phase 2	Phase 3
Post signs at County and City-owned trailheads designated for equestrian users to not clean out horse trailers in parking lots and to clean up horse waste			X	Phase 2	Phase 3*
Outreach at trailheads encouraging hikers to use restroom facilities			X	Phase 2	Phase 3*
Provide septic system (OWTS) pumpers and customers with septic system guides.			X	Phase 2	Phase 3*
Increase coordination between agencies and environmental organizations in preparing outreach materials	X			Phase 1	Phase 1
Industrial/Commercial Facilities Control Programs					
Provide an outreach program for all commercial facilities with corralled animals, including equestrian centers			X	Phase 2	Phase 3*
Development Planning and Construction Program					
Further emphasize applicable existing BMPs in development planning and construction programs	X			Phase 2	Phase 2
Structural Measures					
On-Site Options					
b) Storage and Reuse			X	Phase 3	Phase 4*
c) Small Scale Infiltration			X	Phase 3	Phase 4*

*if necessary

5.12 Corral

5.12.1 Watershed-Specific Description

General Description

Corral Canyon is a 4,300-acre subwatershed that is bounded by Solstice Canyon to the northwest and Malibu Creek to the southeast. It includes 244 acres of residential development. Corral subwatershed hosts the approximate 180-acre campus of Pepperdine University which is located in the southwestern area of the subwatershed fairly close to the shoreline. Except for a concentrated area of rural residential development in the east, most of the developed area in the subwatershed is near the shoreline and surrounding the university. Most of the residential development near the shoreline is medium to high density. This subwatershed has the third highest proportion of commercial development within the project area, and by far the highest proportion of land designated as mixed urban/construction. There is a golf course located just east of Malibu Colony near the shoreline.

A significant drain within Corral is Marie Creek, which is located in the eastern portion of the subwatershed. Within yards of Marie Creek is an accessible creek that opens directly to the ocean. In the vicinity of this creek is a residential area with homes along the beach.

Estimate of Potential Total Runoff to Be Managed

Hypothetical target 24-hour operational storage and treatment volumes were developed should structural measures be eventually required within the subwatershed. The upper limit of this volume is 35 million gallons, though based on detailed hydrologic studies in adjacent subwatersheds this volume could be reduced to 13 million gallons. For a subwatershed of this size, additional hydrologic studies are recommended prior to feasibility-level designs.

Specific/Historical Concerns

Corral Canyon is considered a high priority subwatershed based on the source prioritization effort. While it also has a theoretical demand for some water reuse, there appears to be sufficient supply.

5.12.2 Watershed-Specific Plan of Activities

The following matrix summarizes the activities specifically designated for this subwatershed. The basis for activities selected in this matrix is primarily the subwatershed priority status. Descriptions of general activities described below were provided in Section 5.1.1.

Corral Best Management Practices	Commit	Pilot	Consider	Initiate Planning	Initiate Implementation*
Non-Structural Measures					
Public Information and Participation Programs					
Outreach to pet owners establishing a link between animal wastes and health issues and focus on point of contact or purchase	X			Phase 1	Phase 1
Post signs at County and City-owned trailheads designated for equestrian users to not clean out horse trailers in parking lots and to clean up horse waste			X	Phase 2	Phase 3*
Outreach at trailheads encouraging hikers to use restroom facilities			X	Phase 2	Phase 3*
Provide septic system (OWTS) pumpers and customers with septic system guides.	X			Phase 1	Phase 2
Coordinate outreach activities with Pepperdine University:	X			Phase 1	Phase 2
Increase coordination between agencies and environmental organizations in preparing outreach materials	X			Phase 1	Phase 1
Industrial/Commercial Facilities Control Programs					
Provide for regular BMP inspections for restaurants	X			Phase 1	Phase 1
Increase awareness of BMPs in restaurants by establishing a restaurant reward and recognition program		X		Phase 2	Phase 3
Conduct industry specific workshops	X			Phase 1	Phase 1
Investigate the possibility of increasing frequency of trash collection at restaurants	X			Phase 1	Phase 2
Development Planning and Construction Program					
Further emphasize applicable existing BMPs in development planning and construction programs	X			Phase 2	Phase 2
Public Agency Activity Control Program					
Establish guidelines for optimizing frequency of cleaning cycles for drainage facilities	X			Phase 1	Phase 1
Caltrans-Malibu Joint Agency Activities			X	Phase 1	Phases 1 & 2
Structural Measures					
On-Site Options					
a) Cisterns			X	Phase 3	Phase 4*
b) Storage and Reuse		X		Phase 2	Phase 3*
c) Small Scale Infiltration	X			Phase 1 or 2	Phase 3
d) On-site Wastewater			X	Phase 3	Phase 4*
Regional Solutions					
- Capture, Store, Treat, and Discharge			X	Phase 3	Phase 4*
- Capture, Store, Treat, and Reuse		X		Phase 1	Phase 3*
Treatment Options					
- Traditional Treatment/Small Package			X	Phase 3	Phase 4*
- Storm Water Filtration			X	Phase 3	Phase 4*
- Advanced Oxidation			X	Phase 3	Phase 4*
- Peracetic Acid/bactericides			X	Phase 3	Phase 4*

*if necessary

5.12.3 Description of Potential Pilot Project

The following table describes a potential pilot project for this subwatershed. It includes a project target location, treatment measure, and preliminary budget estimate. As previously stated it is expected that features related to this pilot project may change.

Project Name	Marie Canyon Drain Retrofit
Jurisdictional Lead	County of Los Angeles DPW
Project Description/Benefit	Provide upstream storage and diversion, with peracetic acid treatment and discharge back in to Marie Canyon Drain
Regional, Sub-Regional, or On-Site	Sub-Regional
Subwatershed and basis for selection	Corral High Priority based on Source Prioritization
Integrated Project Element	Multiple Pollutant removal
Candidate Locations	Potential reduced storage upstream of PCH
Candidate Target Volume	Assume Marie Canyon is 15% of Corral Drainage, Treat 50% of lowered target volume; Estimated required operational storage = 1 MG Approximate land required (note storage may be covered at additional expense): up to 1 acre
Permitting/ Environmental Issues	NPDES permitting with biocide addition Right of way Potential land acquisition upstream of PCH
Budgetary Estimates	To be determined

Photo/Map: 	 Copyright © 2002-2004 Kenneth & Gabrielle Adelman, California Coastal Records Project, www.californiacoastline.org
Photo: Upstream of Culvert	

Photo: Discharge Point	

5.13 Carbon

5.13.1 Watershed-Specific Description

General Description

Carbon Canyon is a 2310-acre subwatershed that is bounded by Malibu Creek to the northwest and Las Flores to the southeast. It has 315 acres of residential development (14 percent of the total area). This subwatershed has the highest proportion of commercial development (35 acres) of any of the J1/4 subwatersheds, and all of this development is near the shoreline along the east side of the Pacific Coast Highway. Rural residential development is found scattered within the eastern and western portions of the subwatershed. Medium to high density residential development is located on the west side of PCH, and low density residential development is found just east of PCH. A small beach park is found along the western shoreline. Carbon subwatershed is one of the most developed subwatersheds within the project area. Residential development is found near the CSMP monitoring station located in the Sweetwater Canyon area.

Estimate of Potential Total Runoff to Be Managed

Hypothetical target 24-hour operational storage and treatment volumes were developed should structural measures be eventually required within the subwatershed. The upper limit of this volume is 16 million gallons, though based on detailed hydrologic studies in adjacent subwatersheds this volume could be reduced to 6 million gallons.

Specific/Historical Concerns

Carbon Canyon is considered a medium priority subwatershed based on the source prioritization effort described previously

5.13.2 Watershed-Specific Plan of Activities

The following matrix summarizes the activities specifically designated for this subwatershed. The basis for activities selected in this matrix is primarily the subwatershed priority status. Descriptions of general activities described below were provided in Section 5.1.1. Specifics regarding potential implementation scheduling are provided in Appendix B.

Carbon Best Management Practices	Commit	Pilot	Consider	Initiate Planning	Initiate Implementation*
Non-Structural Measures					
Public Information and Participation Programs					
Outreach to pet owners establishing a link between animal wastes and health issues and focus on point of contact or purchase	X			Phase 1	Phase 1
Post signs at County and City-owned trailheads designated for equestrian users to not clean out horse trailers in parking lots and to clean up horse waste			X	Phase 2	Phase 3*
Outreach at trailheads encouraging hikers to use restroom facilities			X	Phase 2	Phase 3*
Provide septic system (OWTS) pumpers and customers with septic system guides.	X			Phase 1	Phase 2
Increase coordination between agencies and environmental organizations in preparing outreach materials	X			Phase 1	Phase 1
Industrial/Commercial Facilities Control Programs					
Provide for regular BMP inspections for restaurants	X			Phase 1	Phase 1
Increase awareness of BMPs in restaurants by establishing a restaurant reward and recognition program		X		Phase 2	Phase 3
Conduct industry specific workshops	X			Phase 1	Phase 1
Investigate the possibility of increasing frequency of trash collection at restaurants	X			Phase 1	Phase 2
Development Planning and Construction Program					
Further emphasize applicable existing BMPs in development planning and construction programs	X			Phase 2	Phase 2
Public Agency Activity Control Program					
Establish guidelines for optimizing frequency of cleaning cycles for drainage facilities	X			Phase 1	Phase 1
Caltrans-Malibu Joint Agency Activities			X	Phase 1	Phases 1 & 2
Structural Measures					
On-Site Options					
a) Cisterns			X	Phase 2	Phase 3*
b) Storage and Reuse			X	Phase 2	Phase 3*
c) Small Scale Infiltration			X	Phase 2	Phase 3*
d) On-site Wastewater			X	Phase 2	Phase 3*

*if necessary

5.14 Las Flores

5.14.1 Watershed-Specific Description

General Description

Las Flores Canyon is a 2921-acre subwatershed that is bounded by Carbon Canyon to the northwest and Piedra Gorda to the southeast. It has 282 acres of residential development. Within this subwatershed, medium to high density development flanks the shoreline along with commercial development. High density development is also found along the lower eastern and western boundaries of the subwatershed. Scattered low density development is found within the lower subwatershed; whereas, rural residential development is found scattered within the central and eastern areas of the subwatershed. A large proportion of the land is comprised of SMMC lands.

Estimate of Potential Total Runoff to Be Managed

Hypothetical target 24-hour operational storage and treatment volumes were developed should structural measures be eventually required within the subwatershed. The upper limit of this volume is 17 million gallons, though based on detailed hydrologic studies in adjacent subwatersheds this volume could be reduced to 6 million gallons.

Specific/Historical Concerns

The City of Malibu is currently engaged in restorations on the creek. These efforts have the potential to not only benefit riparian habitat and fluvial geomorphologic conditions, but also water quality.

Las Flores Canyon is considered a high priority subwatershed based on the critical year exceedances listed in the TMDL.

5.14.2 Watershed-Specific Plan of Activities

The following matrix summarizes the activities specifically designated for this subwatershed. The basis for activities selected in this matrix is primarily the subwatershed priority status. Descriptions of general activities described below were provided in Section 5.1.1.

Las Flores Best Management Practices	Commit	Pilot	Consider	Initiate Planning	Initiate Implementation*
Non-Structural Measures					
Public Information and Participation Programs					
Outreach to pet owners establishing a link between animal wastes and health issues and focus on point of contact or purchase	X			Phase 1	Phase 1
Locate areas with corralled animals and educate property owners on bacteria TMDLs		X		Phase 2	Phase 3
Post signs at County and City-owned trailheads designated for equestrian users to not clean out horse trailers in parking lots and to clean up horse waste			X	Phase 2	Phase 3*
Outreach at trailheads encouraging hikers to use restroom facilities			X	Phase 2	Phase 3*
Provide septic system (OWTS) pumpers and customers with septic system guides.	X			Phase 1	Phase 2
Increase coordination between agencies and environmental organizations in preparing outreach materials	X			Phase 1	Phase 1
Industrial/Commercial Facilities Control Programs					
Provide an outreach program for all commercial facilities with corralled animals, including equestrian centers			X	Phase 2	Phase 3*
Provide for regular BMP inspections for restaurants	X			Phase 1	Phase 1
Increase awareness of BMPs in restaurants by establishing a restaurant reward and recognition program		X		Phase 2	Phase 3
Conduct industry specific workshops	X			Phase 1	Phase 1
Development Planning and Construction Program					
Further emphasize applicable existing BMPs in development planning and construction programs	X			Phase 2	Phase 2
Public Agency Activity Control Program					
Establish guidelines for optimizing frequency of cleaning cycles for drainage facilities	X			Phase 1	Phase 1
Caltrans-Malibu Joint Agency Activities			X	Phase 1	Phases 1 & 2
Structural Measures					
On-Site Options					
a) Cisterns	X			Phase 1 or 2	Phase 3
b) Storage and Reuse	X			Phase 1 or 2	Phase 3
c) Small Scale Infiltration	X			Phase 1 or 2	Phase 3
d) On-site Wastewater			X	Phase 3	Phase 4*
Regional Solutions					
- Capture, Store, Treat, and Discharge		X		Phase 2	Phase 3
Treatment options					
- Traditional Treatment/Small Package			X	Phase 3	Phase 4*
- Storm Water Filtration			X	Phase 3	Phase 4*
- Advanced Oxidation			X	Phase 3	Phase 4*
- Peracetic Acid/bactericides			X	Phase 3	Phase 4*
- SSF Wetlands			X	Phase 3	Phase 4*

*if necessary

5.14.3 Description of Potential Pilot Project

The following table describes a potential pilot project for this subwatershed. It includes a project target location, treatment measure, and preliminary budget estimate. As previously stated it is expected that features related to this pilot project may change.

The potential creek restoration pilot project will improve riparian function and water quality through various instream habitat enhancement elements. Ancillary benefits include the reduction of flooding impacts, property damage or bank failure; improvement of creek form and function; and protection of fish and other wildlife. Public awareness, education and participation will be critical to the success of the pilot project and will help the water quality public education elements, as more people would be encouraged to value the restored natural environment. The physical attributes of Las Flores Creek will provide insight to potential solutions applicable to other sites. Hence, this potential pilot project can be used as a model for restoration and structural BMP projects.

Project Name	Las Flores Canyon Restoration and Water Quality Improvements
Jurisdictional Lead	City of Malibu
Project Description/Benefit	Restoration of Las Flores creek and acquisition of adjacent properties for biofiltration and infiltration prior to discharge to the creek.
Regional, Sub-Regional, or On-Site	Regional and sub-regional
Subwatershed and basis for selection	Las Flores High Priority based on TMDL exceedance days in critical year
Integrated Project Element	Multiple pollutants, biodiversity and habitat enhancement
Candidate Locations	Las Flores creek upstream of PCH
Candidate Target Volume	80-90% of watershed area 5 MGD total, smaller volumes in tributary drains
Permitting/ Environmental Issues	CDFG 1600 USACE 404 RWQCB 401
Budgetary Estimates	To be determined

Photo/Map: 	
Photo: Existing Creek	

Photo: Outlet to Bay	

5.15 Piedra Gorda

5.15.1 Watershed-Specific Description

General Description

Piedra Gorda is a 629-acre subwatershed that is bounded by Las Flores Canyon to the northwest and Pena to the southeast. About 80 percent of the land within this subwatershed is designated as open space, with the majority of that area proposed for ownership by SMMC. Even with this high percentage of undeveloped land, this subwatershed is threatened by contamination from development given that all remaining lands within the subwatershed are characterized by medium to high residential use, and these developed lands are located near the shoreline.

Estimate of Potential Total Runoff to Be Managed

Hypothetical target 24-hour operational storage and treatment volumes were developed should structural measures be eventually required within the subwatershed. The upper limit of this volume is 3 million gallons, though based on detailed hydrologic studies in adjacent subwatersheds this volume could be reduced to 1 million gallons.

Specific/Historical Concerns

Piedra Gorda Canyon is considered a high priority subwatershed based on the critical year exceedances listed in the TMDL.

5.15.2 Watershed-Specific Plan of Activities

The following matrix summarizes the activities specifically designated for this subwatershed. The basis for activities selected in this matrix is primarily the subwatershed priority status. Descriptions of general activities described below were provided in Section 5.1.1.

Piedra Gorda Best Management Practices	Commit	Pilot	Consider	Initiate Planning	Initiate Implementation*
Non-Structural Measures					
Public Information and Participation Programs					
Outreach to pet owners establishing a link between animal wastes and health issues and focus on point of contact or purchase	X			Phase 1	Phase 1
Post signs at County and City-owned trailheads designated for equestrian users to not clean out horse trailers in parking lots and to clean up horse waste			X	Phase 2	Phase 3*
Outreach at trailheads encouraging hikers to use restroom facilities			X	Phase 2	Phase 3*
Provide septic system (OWTS) pumpers and customers with septic system guides.	X			Phase 1	Phase 2
Increase coordination between agencies and environmental organizations in preparing outreach materials	X			Phase 1	Phase 1
Development Planning and Construction Program					
Further emphasize applicable existing BMPs in development planning and construction programs	X			Phase 2	Phase 2
Public Agency Activity Control Program					
Establish guidelines for optimizing frequency of cleaning cycles for drainage facilities	X			Phase 1	Phase 1
Caltrans-Malibu Joint Agency Activities			X	Phase 1	Phases 1 & 2
Structural Measures					
On-Site Options					
a) Cisterns	X			Phase 1 or 2	Phase 3
b) Storage and Reuse			X	Phase 3	Phase 4*
c) Small Scale Infiltration	X			Phase 1 or 2	Phase 3
d) On-site Wastewater			X	Phase 3	Phase 4*

*if necessary

5.16 Pena

5.16.1 Watershed-Specific Description

General Description

Pena Canyon is the smallest subwatershed area within the J1/4 jurisdictions, and is a 625-acre subwatershed that is bounded by Piedra Gorda to the northwest and Tuna to the southeast. About 96 percent of this subwatershed is represented by open space lands, and much of this area is proposed for acquisition by SMMC. Medium to high density residential development and beach park are the only other uses within the subwatershed and both of these uses are along the shoreline.

Estimate of Potential Total Runoff to Be Managed

Hypothetical target 24-hour operational storage and treatment volumes were developed should structural measures be eventually required within the subwatershed. The upper limit of this volume is 3 million gallons, though based on detailed hydrologic studies in adjacent subwatershed, this volume could be reduced to 1 million gallons.

Specific/Historical Concerns

Pena is considered a low priority subwatershed based on the source prioritization effort described previously

5.16.2 Watershed-Specific Plan of Activities

The following matrix summarizes the activities specifically designated for this subwatershed. The basis for activities selected in this matrix is primarily the subwatershed priority status. Descriptions of general activities described below were provided in Section 5.1.1. Specifics regarding potential implementation scheduling are provided in Appendix B.

Pena Best Management Practices	Commit	Pilot	Consider	Initiate Planning	Initiate Implementation*
Non-Structural Measures					
Public Information and Participation Programs					
Outreach to pet owners establishing a link between animal wastes and health issues and focus on point of contact or purchase	X			Phase 1	Phase 1
Post signs at County and City-owned trailheads designated for equestrian users to not clean out horse trailers in parking lots and to clean up horse waste			X	Phase 2	Phase 3*
Outreach at trailheads encouraging hikers to use restroom facilities			X	Phase 2	Phase 3*
Provide septic system (OWTS) pumpers and customers with septic system guides.	X			Phase 1	Phase 2
Increase coordination between agencies and environmental organizations in preparing outreach materials	X			Phase 1	Phase 1
Development Planning and Construction Program					
Further emphasize applicable existing BMPs in development planning and construction programs	X			Phase 2	Phase 2
Public Agency Activity Control Program					
Establish guidelines for optimizing frequency of cleaning cycles for drainage facilities	X			Phase 1	Phase 1
Caltrans-Malibu Joint Agency Activities			X	Phase 1	Phases 1 & 2
Structural Measures					
On-Site Options					
a) Cisterns			X	Phase 3	Phase 4*
b) Storage and Reuse			X	Phase 3	Phase 4*
c) Small Scale Infiltration			X	Phase 3	Phase 4*
d) On-site Wastewater			X	Phase 3	Phase 4*

*if necessary

5.17 Tuna

5.17.1 Watershed-Specific Description

General Description

Tuna Canyon is a 1007-acre subwatershed that is bounded by Pena Canyon to the northwest and Topanga Canyon to the east. It has 39 acres of residential development. This subwatershed is virtually undeveloped with the exception of a few scattered areas of rural residential development in the east and medium to high density and commercial development along the shoreline. Nearly the entire subwatershed is proposed for acquisition by SMMC.

Estimate of Potential Total Runoff to Be Managed

Hypothetical target 24-hour operational storage and treatment volumes were developed should structural measures be eventually required within the subwatershed. The upper limit of this volume is 4 million gallons, though based on detailed hydrologic studies in adjacent subwatersheds this volume could be reduced to 1 million gallons.

Specific/Historical Concerns

Tuna Canyon is considered a low priority subwatershed based on the source prioritization effort described previously

5.17.2 Watershed-Specific Plan of Activities

The following matrix summarizes the activities specifically designated for this subwatershed. The basis for activities selected in this matrix is primarily the subwatershed priority status. Descriptions of general activities described below were provided in Section 5.1.1. Specifics regarding potential implementation scheduling are provided in Appendix B.

Tuna Best Management Practices	Commit	Pilot	Consider	Initiate Planning	Initiate Implementation*
Non-Structural Measures					
Public Information and Participation Programs					
Outreach to pet owners establishing a link between animal wastes and health issues and focus on point of contact or purchase	X			Phase 1	Phase 1
Post signs at County and City-owned trailheads designated for equestrian users to not clean out horse trailers in parking lots and to clean up horse waste			X	Phase 2	Phase 3*
Outreach at trailheads encouraging hikers to use restroom facilities			X	Phase 2	Phase 3*
Provide septic system (OWTS) pumpers and customers with septic system guides.	X			Phase 1	Phase 2
Increase coordination between agencies and environmental organizations in preparing outreach materials	X			Phase 1	Phase 1
Industrial/Commercial Facilities Control Programs					
Provide for regular BMP inspections for restaurants	X			Phase 1	Phase 1
Increase awareness of BMPs in restaurants by establishing a restaurant reward and recognition program		X		Phase 2	Phase 3
Conduct industry specific workshops	X			Phase 1	Phase 1
Development Planning and Construction Program					
Further emphasize applicable existing BMPs in development planning and construction programs	X			Phase 2	Phase 2
Public Agency Activity Control Program					
Establish guidelines for optimizing frequency of cleaning cycles for drainage facilities	X			Phase 1	Phase 1
Caltrans-Malibu Joint Agency Activities			X	Phase 1	Phases 1 & 2
Structural Measures					
On-Site Options					
c) Small Scale Infiltration			X	Phase 3	Phase 4*

*if necessary

5.18 Topanga

5.18.1 Watershed-Specific Description

General Description

Topanga Canyon is the largest subwatershed within the J1/4 area. It is a 12,611-acre subwatershed that is bounded by Tuna Canyon to the northwest and represents the eastern boundary of the J1/4 jurisdictional area. Nearly every category of land use is represented within its borders. There is little development near the shoreline other than a beach park, a small commercial area, and a small (2-acre) industrial site. The central and eastern areas of the subwatershed are marked by rural residential, commercial, public, horse ranch, educational, and mixed urban/construction land uses. This subwatershed has a relatively high concentration of horse ranches; however these ranches are all in the upper subwatershed. In the CSMP monitoring site vicinity, the Pacific Coast Highway, at the corner of Topanga Creek Boulevard, is flanked by a number of restaurants and shops. Within 2 miles up from the Pacific Coast Highway, Topanga Creek Boulevard is primarily surrounded by residential development.

Estimate of Potential Total Runoff to Be Managed

Hypothetical target 24-hour operational storage and treatment volumes were developed should structural measures be eventually required within the subwatershed. The upper limit of this volume is 65 million gallons, though based on detailed hydrologic studies in adjacent subwatersheds this volume could be reduced to less than 24 million gallons. For a subwatershed of this size, additional hydrologic studies are recommended prior to feasibility-level designs.

Specific/Historical Concerns

Topanga Canyon is the largest and most complex subwatershed in the study area. It is considered a medium priority subwatershed based on both the TMDL exceedance day monitoring for the critical year and the source prioritization effort described previously.

5.18.2 Watershed-Specific Plan of Activities

The following matrix summarizes the activities specifically designated for this subwatershed. The basis for activities selected in this matrix is primarily the subwatershed priority status. Descriptions of general activities described below were provided in Section 5.1.1. Specifics regarding potential implementation scheduling are provided in Appendix B.

Topanga Best Management Practices	Commit	Pilot	Consider	Initiate Planning	Initiate Implementation*
Non-Structural Measures					
Public Information and Participation Programs					
Outreach to pet owners establishing a link between animal wastes and health issues and focus on point of contact or purchase	X			Phase 1	Phase 1
Locate areas with corralled animals and educate property owners on bacteria TMDLs		X		Phase 2	Phase 3
Identify horse stables in the region and implement pilot program		X		Phase 2	Phase 3
Post signs at County and City-owned trailheads designated for equestrian users to not clean out horse trailers in parking lots and to clean up horse waste			X	Phase 2	Phase 3*
Outreach at trailheads encouraging hikers to use restroom facilities			X	Phase 2	Phase 3*
Provide septic system (OWTS) pumpers and customers with septic system guides.	X			Phase 1	Phase 2
Increase coordination between agencies and environmental organizations in preparing outreach materials	X			Phase 1	Phase 1
Industrial/Commercial Facilities Control Programs					
Provide an outreach program for all commercial facilities with corralled animals, including equestrian centers			X	Phase 2	Phase 3*
Provide for regular BMP inspections for restaurants	X			Phase 1	Phase 1
Increase awareness of BMPs in restaurants by establishing a restaurant reward and recognition program		X		Phase 2	Phase 3
Conduct industry specific workshops	X			Phase 1	Phase 1
Investigate the possibility of increasing frequency of trash collection at restaurants	X			Phase 1	Phase 2
Development Planning and Construction Program					
Further emphasize applicable existing BMPs in development planning and construction programs	X			Phase 2	Phase 2
Public Agency Activity Control Program					
Establish guidelines for optimizing frequency of cleaning cycles for drainage facilities	X			Phase 1	Phase 1
Caltrans-Malibu Joint Agency Activities			X	Phase 1	Phases 1 & 2
Structural Measures					
On-Site Options					
a) Cisterns	X			Phase 1 or 2	Phase 3
b) Storage and Reuse	X			Phase 1 or 2	Phase 3
c) Small Scale Infiltration	X			Phase 1 or 2	Phase 3
d) On-site Wastewater			X	Phase 2	Phase 3*
Regional Solutions					
- Capture, Store, Treat, and Discharge			X	Phase 2	Phase 3*
- Capture, Store, Treat, and Reuse			X	Phase 2	Phase 3*
Treatment Options					
- Traditional Treatment/Small Package			X	Phase 2	Phase 3*
- Storm Water Filtration			X	Phase 3	Phase 3*
- Advanced Oxidation			X	Phase 2	Phase 3*

Topanga Best Management Practices	Commit	Pilot	Consider	Initiate Planning	Initiate Implementation*
- Peracetic Acid/bactericides			X	Phase 3	Phase 3*
- SSF Wetlands			X	Phase 2	Phase 3*

5.19 Integrated Water Resources Plan Elements

The Implementation Plan was developed consistent with an Integrated Water Resources Approach (IWRA) on the basis of a) multiple pollutants removed and b) integrated water resources benefits. For each recommended BMP, both the target pollutants and water resources benefits are listed. For discussion purposes, target pollutants are grouped in the following families:

- Bacteria
- Nutrients
- Metals
- Organics
- Pathogens
- Trash

Integrated water resources benefits listed include:

- Conservation
- Reuse/Recycling
- Habitat
- Geomorphology (Hydromodification)
- Hydrology (Stream)
- Flood Control

5.20 Performance Evaluation

Assessing the effectiveness of the management measures is also critical to tracking progress toward meeting full TMDL compliance. Two basic approaches, discussed in Section 3.6 are presented in the Final Plan: 1) a Presumptive Compliance Approach and 2) a Targeted Monitoring-Based Approach.

The Presumptive Compliance Approach (PCA) assumes that the implementation of structural and non-structural BMPs will lead directly to reductions of exceedance days and attempts to quantify this relationship.

The focused and targeted monitoring-based approach (TMBA) adopts some measures of presumptive compliance but incorporates monitoring data and attempts to normalize and extrapolate this monitoring data throughout the region. TMB results are presented in Interim Compliance Reports.

Other performance metrics include informational surveys, tracking of volumes of pollutants removed, and a comparison of expenditures relative to full implementation budgets.

The table below describes, for each recommended BMP, the performance evaluation measure and methods to be implemented to gage progress toward meeting TMDL targets.

Summary of Best Management Practices, Integrated Water Resources Approach, and Performance Evaluation Measures

Activity Number	BMPs and Activities	Water Quality Benefits: Multiple Pollutants	Additional Integrated Water Resources Benefits	Performance Evaluation Measure and Method
	TMDL Monitoring and Studies	B = Bacteria N = Nutrients M = Metals O = Organics P = Pathogens T = Trash	CONS = water conserv RE = reuse/recycling HAB = habitat GEO = geomorphology HYD = hydrology (stream) FLD = flood & volume	
1	TMDL Monitoring: Trancas	B,N,M,O	N/A	Monitoring Results
2	TMDL Monitoring: Solstice	B,N,M,O	N/A	Monitoring Results
3	TMDL Monitoring: Marie Canyon	B,N,M,O	N/A	Monitoring Results
4	TMDL Monitoring: Sweetwater Creek	B,N,M,O	N/A	Monitoring Results
5	TMDL Monitoring: Topanga Lagoon (sandbar)	B,N,M,O	N/A	Monitoring Results
6	TMDL Monitoring: Topanga Lagoon (bridge)	B,N,M,O	N/A	Monitoring Results
7	Hydrologic Loading Estimates	N/A	HYD, GEO	Study Results
8	Structural BMP Monitoring	B,N,M,O	N/A	Study Results
9	Identification of the Most Relevant Human Health Indicators Study	B,P	N/A	Study Results
10	Hydrology vs. Bacteria Loading	B	HYD, GEO	Study Results
11	Bacteria Seasonal Variation Study	B	N/A	Study Results
	Non-Structural Measures			
	Public Infiormation Participation Programs			
12	Outreach to pet owners establishing a link between animal wastes and health issues and focus on point of contact	B, N, P	N/A	Interim Compliance Reports, Information Surveys, PCA
13	Locate areas with corralled animals and educate property owners on bacteria TMDLs	B, N, P	N/A	Interim Compliance Reports, TMBA, PCA

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Summary of Best Management Practices, Integrated Water Resources Approach, and Performance Evaluation Measures

Activity Number	BMPs and Activities	Water Quality Benefits: Multiple Pollutants	Additional Integrated Water Resources Benefits	Performance Evaluation Measure and Method
	TMDL Monitoring and Studies	B = Bacteria N = Nutrients M = Metals O = Organics P = Pathogens T = Trash	CONS = water conserv RE = reuse/recycling HAB = habitat GEO = geomorphology HYD = hydrology (stream) FLD = flood & volume	
14	Identify horse stables in the region and implement pilot program	B, N, P	GEO	Interim Compliance Reports, TMBA, PCA
15	Post signs at County and City-owned trailheads designated for equestrian users to not clean out horse trailers in parking lots and to clean horse waste	B, N, P	N/A	Interim Compliance Reports, TMBA, PCA
16	Outreach at trailheads encouraging hikers to use restroom facilities	B, N, P	N/A	Information surveys, Interim Compliance Reports, TMBA
17	Coordinate outreach activities with Pepperdine University	B,N,M,O	CONS,RE	Interim Compliance Reports, TMBA, PCA
18	Increase coordination between agencies and environmental organizations in preparing outreach materials	B,N,M,O,P	CONS, RE, HAB, GEO, HYD, FLD	Interim Compliance Reports, Information Surveys
	Industrial/Commercial Facilities Control Programs			
19	Provide an outreach program for all commercial facilities with corralled animals, including equestrian centers	B, N, P	N/A	Interim Compliance Reports, TMBA, PCA
20	Provide for regular BMP inspections for restaurants	B, N, P	N/A	Information surveys, Interim Compliance

Summary of Best Management Practices, Integrated Water Resources Approach, and Performance Evaluation Measures

Activity Number	BMPs and Activities	Water Quality Benefits: Multiple Pollutants	Additional Integrated Water Resources Benefits	Performance Evaluation Measure and Method
	TMDL Monitoring and Studies	B = Bacteria N = Nutrients M = Metals O = Organics P = Pathogens T = Trash	CONS = water conserv RE = reuse/recycling HAB = habitat GEO = geomorphology HYD = hydrology (stream) FLD = flood & volume	
				Reports, TMBA
21	Increase awareness of BMPs in restaurants by establishing a restaurant reward and recognition program	B,N,P	N/A	Interim Compliance Reports, Information Surveys, TMBA, PCA
22	Conduct industry specific workshops	B,N,M,O,P,T	CONS, RE, HAB, GEO, HYD, FLD	Interim Compliance Reports, Information Surveys, PCA
23	Investigate the possibility of increasing frequency of trash collection at restaurants	B,N,M,O,P,T	N/A	Interim Compliance Reports
	Development Planning and Construction Programs			
24	Further emphasize applicable existing BMPs in development planning and construction programs	B,N,M,O,P,T	CONS, RE, HAB, GEO, HYD, FLD	Interim Compliance Reports
	Public Agency Activity Control Program			
25	Establish guidelines for optimizing frequency of cleaning cycles for drainage facilities and implement recommendations on Caltrans facilities	B,N,M,O,P,T	N/A	Volume and Expenditure Tracking

Summary of Best Management Practices, Integrated Water Resources Approach, and Performance Evaluation Measures

Activity Number	BMPs and Activities	Water Quality Benefits: Multiple Pollutants	Additional Integrated Water Resources Benefits	Performance Evaluation Measure and Method
	TMDL Monitoring and Studies	B = Bacteria N = Nutrients M = Metals O = Organics P = Pathogens T = Trash	CONS = water conserv RE = reuse/recycling HAB = habitat GEO = geomorphology HYD = hydrology (stream) FLD = flood & volume	
26	Caltrans-Malibu Joint Agency Activities	B,N,M,O,P,T	HAB	Interim Compliance Reports, Information Surveys
	Structural Measures			
	On-Site Options			
27	Residential Cisterns	B,N,M,O,P	CONS, RE, HAB, GEO, HYD, FLD	Interim Compliance Reports, Expenditure Tracking, Activities
28	On-site Storage and Reuse Projects	B,N,M,O,P	CONS, RE, HAB, GEO, HYD, FLD	Interim Compliance Reports, Expenditure Tracking, Activities
29	Small Scale Infiltration Projects	B,N,M,O,P	CONS, RE, HAB, GEO, HYD, FLD	Interim Compliance Reports, Expenditure Tracking, Activities
	Pilot Project Treatment Options			
30	Paradise Cove Pretreatment and System Upgrade	B,N,M,P		Monitoring results
32	Las Flores Canyon Restoration and Water Quality Improvements (Biofiltration and infiltration)	B,N,M,O,P	GEO, HYD, FLD	Monitoring results, Study Activities

Summary of Best Management Practices, Integrated Water Resources Approach, and Performance Evaluation Measures

	BMPs and Activities	Water Quality Benefits: Multiple Pollutants	Additional Integrated Water Resources Benefits	Performance Evaluation Measure and Method
Activity Number	TMDL Monitoring and Studies	B = Bacteria N = Nutrients M = Metals O = Organics P = Pathogens T = Trash	CONS = water conserv RE = reuse/recycling HAB = habitat GEO = geomorphology HYD = hydrology (stream) FLD = flood & volume	
33	Marie Canyon Drain Retrofit / Peracetic Acid/bactericides	B, N only		Monitoring results
34	Latigo Shores Subsurface Flow Wetlands	B,N,M,O,P	CONS, RE, HAB	Monitoring results

5.21 Target Exceedance Day Reductions

It is desired to provide a basis from which measured data can be compared for the purposes of documenting compliance milestones. The following table presents target reductions by phase and subwatershed of exceedance days based on the 90th percentile condition. It should be emphasized that this is a prediction based on the implementation approach described previously and very limited available data. It is presented for the purposes of quantifying potential improvements on a subwatershed basis. As previously discussed, these reductions are provided assuming the daily sampling protocol, and should weekly sampling be conducted appropriate scaling should be applied.

Table of Target Exceedance Days Reductions

Station	Description	90th Percentile Conditions	Allowable Exceedance Days	Total Required Day Reduction	Implementation Schedule			
					10%	25%	50%	100%
DHS010	Leo Carillo	17	17	0	0	0	0	0
DHS009	Nicholas	14	14	0	0	0	1	1
DHS010a	Broad Bch	15	15	0	0	0	1	1
DHS008	Trancas	19	17	2	1	2	2	3
DHS007	Westward, e. of Zuma	17	17	0	0	0	1	1
DHS006	Paradise Cove	23	17	6	1	2	4	6
DHS005	Latigo Canyon	33	17	16	2	4	8	16
DHS005a	Corral	17	17	0	1	1	1	3
DHS001a	Las Flores	29	17	12	1	3	6	12
DHS001	Big Rock	30	17	13	2	4	8	13
S2	Topanga	26	17	9	2	4	8	12
Target Totals				**60**	**10**	**20**	**40**	**68**
Minimum				**60**	**6**	**13**	**30**	**60**

6. Program Cost and Budget

6.1 Introduction

The following discussion on potential program budgets should be considered for preliminary programmatic budgetary planning only. The budget analysis does not consider those items that are to be considered, but not committed to or implemented on a pilot scale. In addition, specific allocation of budgets between jurisdictional agencies is not addressed in this Plan. Budgets are not being provided with the Draft Implementation Plan submittal, but the budgeting methodology is as follows.

Planning-level (order-of-magnitude) budget and staff resource (Full Time Equivalent, or FTE) estimates are estimated to the extent possible based on the preliminary concepts for projects and programs contained in Section 5. The estimates are intended to provide decision-makers with an order-of-magnitude sense of what expenditures and staff resources may be anticipated over the proposed 18-year implementation schedule. Given the iterative and adaptive nature of the implementation plan, and the many uncertainties associated with many of the programs and projects, the forecast for later phases are relatively speculative.

Budget estimates encompass in three broad categories:

- "Initial" budgets, for start up of non-structural programs, and planning, permitting, design and construction of structural measure;
- "Annual Operations and Maintenance (O&M)" budgets for ongoing expenditures of direct costs for conducting non-structural programs, or operating pilot or structural projects; and
- Annual full time equivalents (FTEs)" for potential staff resources for carrying out the program.

Some key assumptions made to develop the budget estimates for the committed and pilot projects are summarized below.

6.1.1 Non-Structural Programs (Commit and Pilot)

Budget estimates for committed non-structural programs include start-up or first year costs which may include a combination of staff and/or consultant labor, materials and other direct costs, workshops, etc. After the initial start-up year or period, a lower level of annual O&M budget, and an annual FTE level was estimated. It is assumed that all of the committed non-structural programs would continue at this level throughout the full implementation period.

Budget estimates for non-structural pilot programs include similar considerations as the committed programs during the pilot period. It is also assumed that all of the pilot programs with on exception as noted would prove sufficiently effective and be well enough defined to warrant continuing implementation, and annual O&M budgets and FTE's were estimated to continue at this level throughout the full implementation period. The one exception is with respect to increasing frequency of trash collection as restaurants. Initial budgets are shown to conduct the study, but the outcome cannot be predicted, and would not necessarily lead to increased costs to the local agencies, so no on-going budgets are shown.

6.1.2 On-Site Structural Solutions (Commit and Pilot)

Budgets for the implementation for on-site solutions assume that construction funding would be provided to assist those homeowners, commercial property owners willing to install and maintain accepted on-site measures including a potential mix of cisterns, on-site storage and reuse projects, and small scale infiltration projects. The budgets include planning and design, construction and long-term O&M plus a limited on-going staff effort (FTEs) to oversee, monitor and track the program implementation.

6.1.3 Regional and Sub-Regional Structural Solutions (Pilot)

The budget for implementing structural pilot projects was taken from the estimates developed and presented in Section 5. The initial budgets include the planning, engineering and construction, annual O&M are as shown in Section 5. For budgeting purposes, it is assumed that all four pilot projects will prove to be feasible and effective in helping reduce exceedances and will remain in place after the pilot program phase is over. Therefore, the annual O&M is carried forward throughout the remainder of the 18 year implementation period.

While it is possible that additional regional structural measures may be needed after assessing program results and progress after the first three phases, or, conversely, the one or more of the initial pilot projects may not be effective or necessary to continue. The budget estimate does not speculate on additional or expanded program elements beyond Phase 3.

6.1.4 Monitoring Budgets

Estimated costs to perform monitoring activities and special studies identified in Section 4 are also a key part of the cost estimate.

6.2 Total Budget by Year

Annual budgets will estimate capital, ongoing and FTE costs, beginning with the initial implementation period of FY 2005-06 and continuing through the end of the implementation period of 18 years. Initial budgets for various programs and projects will be spread over the implementation period, and annual O&M budgets and FTE's will be shown every year after the initial phase is complete. Total budgets (initial or O&M) and FTE's of each program/project will be totaled for each fiscal year throughout the implementation period, and depicted graphically.

7. Conclusions

The Implementation Plan discussed here presents an iterative, adaptive, and integrated approach to TMDL implementation for the North Santa Monica Bay Beaches J1/4 areas. This approach requires a review and emphasis on multiple beneficial uses and the targeting of multiple pollutants. Philosophically, the implementation approach balances of low risk (high cost), low cost (higher potential for exceedances), and high beneficial reuse to determine site specific implementation.

The following activities were conducted during the development of the Implementation Plan:

- Estimating and Establishing Baseline Conditions
- Developing a Menu of Potential Activities
- Identifying Implementation Considerations
- Selecting and Prioritizing
- Planning and Implementation during the next 18 Years

In order to most-effectively implement activities, different levels of commitment were established for this plan. These levels were:

- "commit"—the Agencies commit to this activity

- "pilot"—the Agencies are willing to commit to a pilot study to determine whether the proposed activity the preliminary design parameters are appropriate.

- "consider" – the Agencies will consider this effort, depending on the results of committed activities.

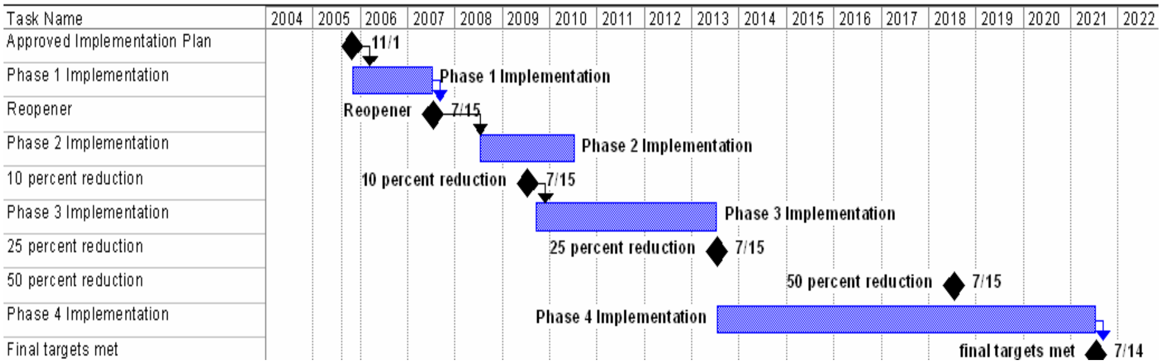
In order to prioritize subwatersheds, results of a source prioritization effort were combined with monitoring data from the TMDL-defined "critical year". This analysis resulted in the following categories:

- High Priority subwatersheds: Latigo, Corral, Las Flores, Piedra Gorda, and Ramirez
- Medium Priority subwatersheds: Carbon, Los Alisos, Topanga, and Escondido
- Low Priority subwatersheds: Nicholas, Encinal, Trancas, Zuma, Solstice, Pena, and Tuna

These priorities, in conjunction with subwatershed specific characteristics and the desired risk-cost-beneficial reuse relationship, contributed to the development of a unique suite of activities for each subwatershed.

The Implementation Plan was divided into four phases of activities. The activities consisted of implementation activities, as well as monitoring and additional studies that could be used to provide better information for future activities. To provide useful information, the additional studies will require extended development and implementation periods. Upon completion of these studies, it would be desirable to confirm, or adjust if necessary, the direction and requirements of the Implementation Plan. As such, the County of Los Angeles and J1/4 Agencies proposed the addition of appropriately timed re-evaluation milestones (re-openers). Implementation activities, suggested re-opener, and implementation milestones are illustrated below:

Santa Monica Bay Beaches Bacterial TMDL – J1/4



Implementation Plan Phasing

The general intent of what would be accomplished under each of the phases is as follows:

- Phase I – Conduct planning and initiate all committed non-structural activities and implement selected non--structural measures; initiate pre-feasibility studies for sub-regional pilot projects; develop inter-agency agreements for structural projects, initiate planning for on-site measures; initiate monitoring, additional studies, and source identification activities. The 2007 re-opener would follow Phase I. Note that Phase I is assumed to begin in November 2005, which is the basis of the proposed schedule. Should the initiation date change, the remaining implementation deadlines may change accordingly.

- Phase II – Continue implementation of committed non-structural activities; conduct non-structural pilot programs; continue planning for on-site measures; initiate planning and construction of pilot regional structural solutions; and continue and complete monitoring and source identification studies. A re-evaluation is proposed to follow Phase II and is intended to leverage results not only from additional studies in these jurisdictional areas, but also from advances in the technical, legal, and regulatory body of knowledge.

- Phase III – Refocus and reprioritize efforts as appropriate, and continue implementation of committed non-structural activities; implement successful piloted non-structural programs; begin implementation of on-site measures; and operate and evaluate pilot regional structural solutions.

- Phase IV – Refocus and reprioritize efforts as appropriate and continue implementation of non-structural solutions; continue or expand on-site measures; and continue, modify and/or initiate regional structural solutions.

Additional studies are proposed to support management and regulatory decision-making for the 2007 re-opener, as well as proposed additional re-openers. Upon completion of the initial two years of monitoring, an evaluation will be made to determine whether microbial source tracking activities are required. Rationale for recommending such studies could include, but not be limited to, the need for further source identification; site specific, objective data development; and potential health risk assessments. This may include an evaluation of the appropriateness of the TMDL indicator constituents of concern.

Studies that would contribute to more cost-effective implementation of the bacteria TMDL, and which could be included in the J1/4 implementation effort include:

- Identification of the Most Relevant Human Health Indicators Study (2007-2009)
- Hydrology vs. Bacteria Loading Study (2005-2010)
- Bacterial Seasonal Variation Study (2005-2008)

Potential program budgets are not provided, but would eventually be considered for preliminary programmatic budgetary planning only. An initial budget analysis did not include those activities that are *considered* for implementation, but do include activities that are committed to or implemented on a *pilot* scale. In addition, specific allocation of costs between jurisdictional agencies was not addressed in this Plan.

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APPENDIX A

State of California
California Regional Water Quality Control Board, Los Angeles Region

RESOLUTION NO. 2002-022
December 12, 2002

Amendment to the Water Quality Control Plan (Basin Plan) for the Los Angeles Region to Incorporate Implementation Provisions for the Region's Bacteria Objectives and to Incorporate a Wet-Weather Total Maximum Daily Load for Bacteria at Santa Monica Bay Beaches

WHEREAS, the California Regional Water Quality Control Board, Los Angeles Region, finds that:

1. The federal Clean Water Act (CWA) requires the California Regional Water Quality Control Board, Los Angeles Region (Regional Board) to develop water quality standards which include beneficial use designations and criteria to protect beneficial uses for each water body found within its region.

2. The Regional Board carries out its CWA responsibilities through California's Porter-Cologne Water Quality Control Act and establishes water quality objectives designed to protect beneficial uses contained in the Water Quality Control Plan for the Los Angeles Region (Basin Plan).

3. Section 303(d) of the CWA requires states to identify and to prepare a list of water bodies that do not meet water quality standards and then to establish load and waste load allocations, or a total maximum daily load (TMDL), for each water body that will ensure attainment of water quality standards and then to incorporate those allocations into their water quality control plans.

4. Many of the beaches along Santa Monica Bay were listed on California's 1998 section 303(d) list, due to impairments for coliform or for beach closures associated with bacteria generally. The beaches appeared on the 303(d) list because the elevated bacteria and beach closures prevented full support of the beaches' designated use for water contact recreation (REC-1).

5. A consent decree between the U.S. Environmental Protection Agency (USEPA), Heal the Bay, Inc. and BayKeeper, Inc. was approved on March 22, 1999. This court order directs the USEPA to complete TMDLs for all the Los Angeles Region's impaired waters within 13 years. A schedule was established in the consent decree for the completion of 29 TMDLs within 7 years, including completion of a TMDL to reduce bacteria at Santa Monica Bay beaches by March 2002. The remaining TMDLs will be scheduled by Regional Board staff within the 13-year period.

6. The elements of a TMDL are described in 40 CFR 130.2 and 130.7 and section 303(d) of the CWA, as well as in USEPA guidance documents (e.g., USEPA, 1991). A TMDL is defined as "the sum of the individual waste load allocations for point sources and load allocations for nonpoint sources and natural background" (40 CFR 130.2). Regulations further stipulate that TMDLs must be set at "levels necessary to attain and maintain the applicable narrative and numeric water quality standards with seasonal variations and a margin of safety that takes into account any lack of knowledge concerning the relationship between effluent limitations

and water quality" (40 CFR 130.7(c)(1)). The provisions in 40 CFR 130.7 also state that TMDLs shall take into account critical conditions for stream flow, loading and water quality parameters.

7. Upon establishment of TMDLs by the State or USEPA, the State is required to incorporate the TMDLs along with appropriate implementation measures into the State Water Quality Management Plan (40 CFR 130.6(c)(1), 130.7). The Basin Plan and applicable statewide plans serve as the State Water Quality Management Plans governing the watersheds under the jurisdiction of the Regional Board.

8. Santa Monica Bay is located in Los Angeles County, California. The proposed TMDL addresses documented bacteriological water quality impairments at 44 beaches from the Los Angeles/Ventura County line, to the northwest, to Outer Cabrillo Beach, just south of the Palos Verdes Peninsula.

9. The Regional Board is establishing the above-mentioned TMDL to preserve and enhance the water quality at Santa Monica Bay beaches and for the benefit of the 55 million beachgoers, on average, that visit these beaches each year. At stake is the health of swimmers and surfers and associated health costs as well as sizeable revenues to the local and state economy. Estimates are that visitors to Santa Monica Bay beaches spend approximately $1.7 billion annually.

10. The Regional Board's goal in establishing the above-mentioned TMDL is to reduce the risk of illness associated with swimming in marine waters contaminated with bacteria. Local and national epidemiological studies compel the conclusion that there is a causal relationship between adverse health effects, such as gastroenteritis and upper respiratory illness, and recreational water quality, as measured by bacteria indicator densities. The water quality objectives on which the TMDL numeric targets are based will ensure that the risk of illness to the public from swimming at Santa Monica Bay beaches generally will be no greater than 19 illnesses per 1,000 swimmers, which is defined by the US EPA as an "acceptable health risk"in marine recreational waters.

11. Interested persons and the public have had reasonable opportunity to participate in review of the amendment to the Basin Plan. Efforts to solicit public review and comment include staff presentations to the Santa Monica Bay Restoration Project's Bay Watershed Council and Technical Advisory Committee between May 1999 and October 2001 and creation of a Steering Committee in July 1999 to provide input on scientific and technical components of the TMDL with participation by the Southern California Coastal Water Research Project, City of Los Angeles, County of Los Angeles Department of Public Works, County Sanitation Districts of Los Angeles County, Heal the Bay, and Santa Monica Bay Restoration Project.

12. A first draft of the TMDL for bacteria at Santa Monica Bay beaches was released for public comment on November 9, 2001; an interim draft TMDL covering wet weather only was released on June 21, 2002, for discussion at a public workshop; and a public workshop on the draft Wet-Weather TMDL was held on June 27, 2002 at a regularly scheduled Regional Board meeting.

13. A final draft of the Wet-Weather TMDL along with a Notice of Hearing and Notice of Filing were published and circulated 45 days preceding Board action; Regional Board staff responded to oral and written comments received from the public; and the Regional Board

held a public hearing on September 26, 2002 to consider adoption of the Wet-Weather TMDL.

14. The Regional Board continued the item from the September 26, 2002 Board meeting to the December 12, 2002 Board meeting to give staff time to make revisions based on public comments and Board discussion at the September 26, 2002 Board meeting. Specifically, the Board wanted an implementation program that was reasonable and as short as practicable given the testimony on impairments to the REC-1 beneficial use.

15. The Regional Board recognizes that there are two broad approaches to implementing the TMDL. One approach is an integrated water resources approach that takes a holistic view of regional water resources management by integrating planning for future wastewater, storm water, recycled water, and potable water needs and systems; focuses on beneficial re-use of storm water, including groundwater infiltration, at multiple points throughout a watershed; and addresses multiple pollutants for which Santa Monica Bay or its watershed are listed on the CWA section 303(d) List as impaired. The other approach is a non-integrated water resources approach.

    Some responsible jurisdictions and agencies have indicated a preference to take an integrated water resources approach to realize the benefits of re-using storm water to preserve local groundwater resources and to reduce reliance on imported water. The Regional Board recognizes that an integrated water resources approach not only provides water quality benefits to the people of the Los Angeles Region, but also recognizes that the responsible jurisdictions implementing this TMDL can serve a variety of public purposes by adopting an integrated water resources approach. An integrated water resources approach will address multiple pollutants, and as a result, responsible jurisdictions can recognize cost-savings because capital expenses for the integrated approach will implement several TMDLs that address pollutants in storm water. In addition, jurisdictions serve multiple roles for their citizenry, and an integrated approach allows for the incorporation and enhancement of other public goals such as water supply, recycling and storage; environmental justice; parks, greenways and open space; and active and passive recreational and environmental education opportunities.

    The Regional Board acknowledges that a longer timeframe is reasonable for an integrated water resources approach because it requires more complicated planning and implementation such as identifying markets for the water and efficiently siting storage and transmission infrastructure within the watershed(s) to realize the multiple benefits of such an approach.

16. Therefore, after considering testimony, the Regional Board directed staff to adjust the implementation provisions of the TMDL to allow for a longer implementation schedule (up to 18 years) only when the responsible jurisdictions and agencies clearly demonstrate their intention to undertake an integrated water resources approach and justify the need for a longer implementation schedule. In contrast, testimony indicated that a shorter implementation schedule (up to 10 years) is reasonable and practicable for non-integrated approaches because the level of planning is not as complicated.

17. A revised draft of the Basin Plan amendment and Tentative Resolution were circulated 45 days preceding Board action. Regional Board staff responded to oral and written comments received from the public on the revised draft. The Regional Board held a second public hearing on December 12, 2002 to consider adoption of the Wet-Weather TMDL.

18. On October 25, 2001, the Regional Board adopted Resolution 2001-018 establishing revised bacteriological water quality objectives for the Water Contact Recreation (REC-1) beneficial use, and the TMDL is intended to accompany and to implement the revised water quality objectives. The State Water Resources Control Board approved the Regional Board's Basin Plan amendment on July 18, 2002 in State Board Resolution 2002-0142, the Office of Administrative Law approved it on September 19, 2002 in OAL File No. 02-0807-01-S, and the US EPA approved it on September 25, 2002.

19. Under certain circumstances and through the TMDL development process, the Regional Board proposes to implement the aforementioned revised bacteria objectives using either a 'reference system/anti-degradation approach' or a 'natural sources exclusion approach.' As required by the CWA and Porter-Cologne Water Quality Control Act, the Basin Plan includes beneficial uses of waters, water quality objectives to protect those uses, an anti-degradation policy, collectively referred to as water quality standards, and other plans and policies necessary to implement water quality standards. This TMDL and its associated waste load allocations, which will be incorporated into relevant permits, are the vehicles for implementation of the bacteria standards as required under Water Code section 13242.

20. Both the 'reference system/anti-degradation approach' and the 'natural sources exclusion approach' recognize that there are natural sources of bacteria that may cause or contribute to exceedances of the single sample objectives.

21. The Regional Board's intent in implementing the bacteria objectives using a 'reference system/anti-degradation approach' is to ensure that bacteriological water quality is at least as good as that of a reference site and that no degradation of existing bacteriological water quality is permitted where existing bacteriological water quality is better than that of a reference site. The Regional Board's intent in implementing the bacteria objectives using a 'natural sources exclusion approach' is to ensure that all anthropogenic sources of bacteria are controlled such that they do not cause an exceedance of the single sample objectives. These approaches are consistent with state and federal anti-degradation policies (State Board Resolution No. 68-16 and 40 C.F.R. 131.12), while acknowledging that it is not the intent of the Regional Board to require treatment or diversion of natural coastal creeks or to require treatment of natural sources of bacteria from undeveloped areas. While treatment and diversion of natural sources may fully address the impairment of the water contact recreation beneficial use, such an approach may adversely affect valuable aquatic life and wildlife beneficial uses in the Region.

22. For the Wet-Weather and Dry-Weather Bacteria TMDLs at Santa Monica Bay beaches, Leo Carrillo Beach and its associated drainage area, Arroyo Sequit Canyon, were selected as the local reference system until other reference sites or approaches are evaluated and the necessary data collected to support the use of alternative reference sites or approaches when the TMDL is revised four years after the effective date. Leo Carrillo Beach was selected as the interim reference site because it best met the three criteria for selection of a reference system. Specifically, its drainage is the most undeveloped subwatershed in the larger Santa Monica Bay watershed, the subwatershed has a freshwater outlet (i.e., creek) to the beach, and adequate historical shoreline monitoring data were available. It is the intent of the Regional Board to re-evaluate the use of Leo Carrillo Beach due to potential problems arising from the heavy recreational use of the beach and the close proximity of two campgrounds.

23. Northern Bay beach monitoring sites are fewer in number and provide less comprehensive data than the extensive shoreline monitoring network elsewhere in Santa Monica Bay.

24. The numeric targets in this TMDL are not water quality objectives and do not create new bases for enforcement against dischargers apart from the water quality objectives they translate. The targets merely establish the bases through which load allocations and wasteload allocations (WLAs) are calculated. WLAs are only enforced for a dicharger's own discharges, and then only in the context of it National Pollutant Discharge Elimination System (NPDES) permit, which must be consistent with the assumptions and requirements of the WLA. The Regional Board will develop permit requirements through a subsequent permit action that will allow all interested persons, including but not limited to municipal storm water dischargers, to provide comments on how the waste load allocations will be translated into permit requirements.

25. The Regional Board has the authority to authorize compliance schedules through the basin planning process. In this Basin Plan amendment, the Regional Board establishes a schedule for implementation that affords the responsible jurisdictions and agencies up to ten or eighteen years, depending on the implementation approaches pursued, to implement this Wet-Weather Bacteria TMDL.

26. Previously, the Regional Board adopted a Dry-Weather Bacteria TMDL for the Santa Monica Bay Beaches. The Dry-Weather TMDL includes implementation provisions contained in Table 7-4.3 of the Basin Plan, including a provision to reconsider two years after the effective date the Dry-Weather TMDL and specifically the reference beach(es) used. Because that effort overlaps with reconsideration of the reference beach(es) anticipated by this Wet-Weather TMDL, the Regional Board proposes to coordinate the reconsiderations of the reference beach approach to assure efficiency and consistency in implementing the two Santa Monica Beaches TMDLs.

27. The basin planning process has been certified as functionally equivalent to the California Environmental Quality Act requirements for preparing environmental documents (Public Resources Code, Section 21000 et seq.) and as such, the required environmental documentation and CEQA environmental checklist have been prepared.

28. The proposed amendment results in no potential for adverse effect (de minimis finding), either individually or cumulatively, on wildlife.

29. The regulatory action meets the "Necessity" standard of the Administrative Procedures Act, Government Code, section 11353, subdivision (b).

30. The Basin Plan amendment incorporating a TMDL for bacteria at Santa Monica Bay beaches must be submitted for review and approval by the State Water Resources Control Board (State Board), the State Office of Administrative Law (OAL), and the USEPA. The Basin Plan amendment will become effective upon approval by OAL and USEPA. A Notice of Decision will be filed.

THEREFORE, be it resolved that pursuant to Section 13240 and 13242 of the Water Code, the Regional Board hereby amends the Basin Plan as follows:

1. Pursuant to sections 13240 and 13242 of the California Water Code, the Regional Board, after considering the entire record, including oral testimony at the hearing, hereby adopts the amendments to Chapters 3 and 7 of the Water Quality Control Plan for the Los Angeles Region, as set forth in Attachment A hereto, to incorporate the elements of the Santa Monica

Bay Beaches Bacteria TMDL for wet weather and to implement the water quality objectives for bacteria set to protect the water contact recreation beneficial use.

2. Pursuant to sections 13240 and 13242 of the California Water Code, the Regional Board, after considering the entire record, including oral testimony at the hearing, hereby adopts the amendments to Chapter 7 of the Water Quality Control Plan for the Los Angeles Region, as set forth in Attachment B hereto, to amend Table 7-4.3 of the Santa Monica Bay Beaches Bacteria TMDL for dry weather to change the date for revision of the TMDL from two years after the effective date to four years after the effective date [of the Wet-Weather TMDL] to achieve consistency in scheduling between the Dry-Weather and Wet-Weather TMDLs.

3. The Executive Officer is directed to exercise authority under Water Code section 13267, or other applicable law, to require additional monitoring data in the northern Bay beach regions to ensure that wet weather bacteria exposure is adequately quantified before the TMDL is reconsidered in four years.

4. The Executive Officer is directed to forward copies of the Basin Plan amendment to the State Board in accordance with the requirements of section 13245 of the California Water Code.

5. The Regional Board requests that the State Board approve the Basin Plan amendment in accordance with the requirements of sections 13245 and 13246 of the California Water Code and forward it to OAL and the USEPA.

6. If during its approval process the State Board or OAL determines that minor, non-substantive corrections to the language of the amendment are needed for clarity or consistency, the Executive Officer may make such changes, and shall inform the Board of any such changes.

7. The Executive Officer is authorized to sign a Certificate of Fee Exemption.

I, Dennis A. Dickerson, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of a resolution adopted by the California Regional Water Quality Control Board, Los Angeles Region, on December 12, 2002.

ORIGINAL SIGNED BY
Dennis A. Dickerson
Executive Officer

Attachment A to Resolution No. 2002-022

Amendment to the Water Quality Control Plan – Los Angeles Region to incorporate Implementation Provisions for the Region's Bacteria Objectives and to incorporate the Santa Monica Bay Beaches Wet-Weather Bacteria TMDL

Adopted by the California Regional Water Quality Control Board, Los Angeles Region on December 12, 2002.

Amendments:

List of Figures, Tables and Inserts

Add under Chapter 7, Section 7-4 (Santa Monica Bay Beaches Bacteria TMDL):
Tables

Chapter 3. Water Quality Objectives, "Bacteria, Coliform"

Add under "Implementation Provisions for Water Contact Recreation Bacteria Objectives"

The single sample bacteriological objectives shall be strictly applied except when provided for in a Total Maximum Daily Load (TMDL). In all circumstances, including in the context of a TMDL, the geometric mean objectives shall be strictly applied. In the context of a TMDL, the Regional Board may implement the single sample objectives in fresh and marine waters by using a 'reference system/antidegradation ap□roach' or 'natural sources exclusion approach' as discussed below. A reference system is defined as an area and associated monitoring point that is not impacted by human activities that potentially affect bacteria densities in the receiving water body.

These approaches recognize that there are natural sources of bacteria, which may cause or contribute to exceedances of the single sample objectives for bacterial indicators. They also acknowledge that it is not the intent of the Regional Board to require treatment or diversion of natural water bodies or to require treatment of natural sources of bacteria from undeveloped areas. Such requirements, if imposed by the Regional Board, could adversely affect valuable aquatic life and wildlife beneficial uses supported by natural water bodies in the Region.

Under the reference system/antidegradation implementation procedure, a certain frequency of exceedance of the single sample objectives above shall be permitted on the basis of the observed exceedance frequency in the selected reference system or the targeted water body, whichever is less. The reference system/anti-degradation approach ensures that bacteriological water quality is at least as good as that of a reference system and that no degradation of existing bacteriological water quality is permitted where existing bacteriological water quality is better than that of the selected reference system.

Under the natural sources exclusion implementation procedure, after all anthropogenic sources of bacteria have been controlled such that they do not cause or contribute to an exceedance of the single sample objectives and natural sources have been identified and quantified, a certain frequency of exceedance of the single sample objectives shall be permitted based on the residual exceedance frequency in the specific water body. The residual exceedance frequency shall define the background level of exceedance due to natural sources. The 'natural sources exclusion' approach may be used if an appropriate reference system cannot be identified due to unique characteristics of the target water body. These approaches are consistent with the State Antidegradation Policy (State Board Resolution No. 68-16) and with federal antidegradation requirements (40 CFR 131.12).

The appropriateness of these approaches and the specific exceedance frequencies to be permitted under each will be evaluated within the context of TMDL development for a specific water body, at which time the Regional Board may select one of these approaches, if appropriate.

These implementation procedures may only be implemented within the context of a TMDL addressing municipal storm water, including the municipal storm water requirements of the Statewide Permit for Storm Water Discharges from the State of California Department of Transportation (Caltrans), and non-point sources discharges. These implementation provisions do not apply to NPDES discharges other than MS4 discharges.[1]

Chapter 7. Total Maximum Daily Loads (TMDLs) Summaries, Section 7-4 (Santa Monica Bay Beaches Bacteria TMDL)

Santa Monica Bay Beaches Bacteria TMDL (Wet Weather Only)*

This TMDL was adopted by the Regional Water Quality Control Board on December 12, 2002.

This TMDL was approved by:

The State Water Resources Control Board on [Insert Date].
The Office of Administrative Law on [Insert Date].
The U.S. Environmental Protection Agency on [Insert Date].

The following table summarizes the key elements of this TMDL.

[1] Municipal storm water discharges in the Los Angeles Region are those with permits under the Municipal Separate Storm Sewer System (MS4) NPDES Program. For example, the MS4 permits at the time of this amendment are the Los Angeles County Municipal Storm Water NPDES Permit, Ventura County Municipal Storm Water NPDES Permit, City of Long Beach Municipal Storm Water NPDES Permit, and elements of the statewide storm water permit for the California Department of Transportation (Caltrans).

Table 7-4.4. Santa Monica Bay Beaches Bacteria TMDL (Wet Weather Only): Elements

Element	Key Findings and Regulatory Provisions
Problem Statement	Elevated bacterial indicator densities are causing impairment of the water contact recreation (REC-1) beneficial use at many Santa Monica Bay (SMB) beaches. Swimming in waters with elevated bacterial indicator densities has long been associated with adverse health effects. Specifically, local and national epidemiological studies compel the conclusion that there is a causal relationship between adverse health effects and recreational water quality, as measured by bacterial indicator densities.
Numeric Target *(Interpretation of the numeric water quality objective, used to calculate the waste load allocations)*	The TMDL has a multi-part numeric target based on the bacteriological water quality objectives for marine water to protect the water contact recreation (REC-1) use. These targets are the most appropriate indicators of public health risk in recreational waters. These bacteriological objectives are set forth in Chapter 3 of the Basin Plan, as amended by the Regional Board on October 25, 2001. The objectives are based on four bacterial indicators and include both geometric mean limits and single sample limits. The Basin Plan objectives that serve as numeric targets for this TMDL are: 1. Rolling 30-day Geometric Mean Limits a. Total coliform density shall not exceed 1,000/100 ml. b. Fecal coliform density shall not exceed 200/100 ml. c. Enterococcus density shall not exceed 35/100 ml. 2. Single Sample Limits a. Total coliform density shall not exceed 10,000/100 ml. b. Fecal coliform density shall not exceed 400/100 ml. c. Enterococcus density shall not exceed 104/100 ml. d. Total coliform density shall not exceed 1,000/100 ml, if the ratio of fecal-to-total coliform exceeds 0.1. These objectives are generally based on an acceptable health risk for marine recreational waters of 19 illnesses per 1,000 exposed individuals as set by the US EPA (US EPA, 1986). The targets apply throughout the year. The final compliance point for the targets is the wave wash[2] where there is a freshwater outlet (i.e., publicly-owned storm drain or natural creek) to the beach, or at ankle depth at beaches without a freshwater outlet. Implementation of the above bacteria objectives and the associated TMDL numeric targets is achieved using a 'reference system/anti-degradation approach' rather than the alternative 'natural sources exclusion approach' or strict application of the single sample objectives. As required by the CWA and Porter-Cologne Water Quality Control Act, Basin Plans include beneficial uses of waters, water quality objectives to protect those uses, an anti-degradation policy, collectively referred to as water quality standards, and other plans and policies necessary to implement water quality standards. This TMDL and its associated waste load allocations, which shall be incorporated into relevant permits, are the vehicles for implementation of the Region's

[2] The wave wash is defined as the point at which the storm drain or creek empties and the effluent from the storm drain initially mixes with the receiving ocean water.

Element	Key Findings and Regulatory Provisions
	standards. The 'reference system/anti-degradation approach' means that on the basis of historical exceedance levels at existing shoreline monitoring locations, including a local reference beach within Santa Monica Bay, a certain number of daily exceedances of the single sample bacteria objectives are permitted. The allowable number of exceedance days is set such that (1) bacteriological water quality at any site is at least as good as at a designated reference site within the watershed and (2) there is no degradation of existing shoreline bacteriological water quality. This approach recognizes that there are natural sources of bacteria that may cause or contribute to exceedances of the single sample objectives and that it is not the intent of the Regional Board to require treatment or diversion of natural coastal creeks or to require treatment of natural sources of bacteria from undeveloped areas. The geometric mean targets may not be exceeded at any time. The rolling 30-day geometric means will be calculated on each day. If weekly sampling is conducted, the weekly sample result will be assigned to the remaining days of the week in order to calculate the daily rolling 30-day geometric mean. For the single sample targets, each existing shoreline monitoring site is assigned an allowable number of exceedance days during wet weather, defined as days with 0.1 inch of rain or greater and the three days following the rain event. (A separate amendment incorporating the Santa Monica Bay Beaches Dry-Weather Bacteria TMDL addressed the allowable number of summer and winter dry-weather exceedance days.)
Source Analysis	With the exception of isolated sewage spills, storm water runoff conveyed by storm drains and creeks is the primary source of elevated bacterial indicator densities to SMB beaches during wet weather. Because the bacterial indicators used as targets in the TMDL are not specific to human sewage, storm water runoff from undeveloped areas may also be a source of elevated bacterial indicator densities. For example, storm water runoff from natural areas may convey fecal matter from wildlife and birds or bacteria from soil. This is supported by the finding that, at the reference beach, the probability of exceedance of the single sample targets during wet weather is 0.22.
Loading Capacity	Studies show that bacterial degradation and dilution during transport from the watershed to the beach do not significantly affect bacterial indicator densities at SMB beaches. Therefore, the loading capacity is defined in terms of bacterial indicator densities, which is the most appropriate for addressing public health risk, and is equivalent to the numeric targets, listed above. As the numeric targets must be met in the wave wash and throughout the day, no degradation allowance is provided.
Waste Load Allocations *(for point sources)*	Waste load allocations are expressed as the number of sample days at a shoreline monitoring site that may exceed the single sample targets identified under "Numeric Target." Waste load allocations are expressed as allowable exceedance days because the bacterial density and frequency of single sample exceedances are the most relevant to public health protection.

Element	Key Findings and Regulatory Provisions
	For each shoreline monitoring site and corresponding subwatershed, an allowable number of exceedance days is set for wet weather. The allowable number of exceedance days for a shoreline monitoring site for each time period is based on the lesser of two criteria (1) exceedance days in the designated reference system and (2) exceedance days based on historical bacteriological data at the monitoring site. This ensures that shoreline bacteriological water quality is at least as good as that of a largely undeveloped system and that there is no degradation of existing shoreline bacteriological water quality. All responsible jurisdictions and responsible agencies[3] within a subwatershed are jointly responsible for complying with the allowable number of exceedance days for each associated shoreline monitoring site identified in Table 7-4.5 below. The three Publicly Owned Treatment Works (POTWs), the City of Los Angeles' Hyperion Wastewater Treatment Plant, Los Angeles County Sanitation Districts' Joint Water Pollution Control Plant, and the Las Virgenes Municipal Water Districts' Tapia Wastewater Reclamation Facility, discharging to Santa Monica Bay are each given individual WLAs of zero (0) days of exceedance during wet weather.

[3] For the purposes of this TMDL, "responsible jurisdictions and responsible agencies" are defined as: (1) local agencies that are responsible for discharges from a publicly owned treatment works to the Santa Monica Bay watershed or directly to the Bay, (2) local agencies that are permittees or co-permittees on a municipal storm water permit, (3) local or state agencies that have jurisdiction over a beach adjacent to Santa Monica Bay, and (4) the California Department of Transportation pursuant to its storm water permit.

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Element	Key Findings and Regulatory Provisions
Load Allocations (for nonpoint sources)	Because all storm water runoff to SMB beaches is regulated as a point source, load allocations of zero days of exceedance are set in this TMDL. If a nonpoint source is directly impacting shoreline bacteriological quality and causing an exceedance of the numeric target(s), the permittee(s) under the Municipal Storm Water NPDES Permits are not responsible through these permits. However, the jurisdiction or agency adjacent to the shoreline monitoring location may have further obligations as described under "Compliance Monitoring" below.
Implementation	The regulatory mechanisms used to implement the TMDL will include primarily the Los Angeles County Municipal Storm Water NPDES Permit (MS4 Permit), the Caltrans Storm Water Permit, the three NPDES permits for the POTWs, the authority contained in sections 13267 and 13263 of the Water Code, and regulations to be adopted pursuant to section 13291 of the Water Code. Each NPDES permit assigned a waste load allocation shall be reopened or amended at reissuance, in accordance with applicable laws, to incorporate the applicable waste load allocation(s) as a permit requirement. The implementation schedule will be determined on the basis of the implementation plan(s), which must be submitted to the Regional Board by responsible jurisdictions and agencies within two years of the effective date of the TMDL (see Table 7-4.7). After considering the implementation plan(s), the Regional Board shall amend the TMDL at a public hearing and, in doing so, will adopt an individual implementation schedule for each jurisdictional group (described in paragraph 3 below) that is as short as possible taking into account the implementation approach being undertaken. Responsible jurisdictions and agencies must clearly demonstrate in the above-mentioned plan whether they intend to pursue an integrated water resources approach.[4] If an integrated water resources approach is pursued, responsible jurisdictions and agencies may be allotted up to an 18-year implementation timeframe, based on a clear demonstration of the need for a longer schedule in the implementation plan, in recognition of the additional planning and time needed to achieve the multiple benefits of this approach. Otherwise, at most a 10-year implementation timeframe will be allotted, depending upon a clear demonstration of the time needed in the implementation plan. The subwatersheds associated with each beach monitoring location may

[4] An integrated water resources approach is one that takes a holistic view of regional water resources management by integrating planning for future wastewater, storm water, recycled water, and potable water needs and systems; focuses on beneficial re-use of storm water, including groundwater infiltration, at multiple points throughout a watershed; and addresses multiple pollutants for which Santa Monica Bay or its watershed are listed on the CWA section 303(d) List as impaired. Because an integrated water resources approach will address multiple pollutants, responsible jurisdictions can recognize cost-savings because capital expenses for the integrated approach will implement several TMDLs that address pollutants in storm water. An integrated water resources approach shall not only provide water quality benefits to the people of the Los Angeles Region, but it is also anticipated that an integrated approach will incorporate and enhance other public goals. These may include, but are not limited to, water supply, recycling and storage; environmental justice; parks, greenways and open space; and active and passive recreational and environmental education opportunities.

Element	Key Findings and Regulatory Provisions
	include multiple responsible jurisdictions and responsible agencies. Therefore, a "primary jurisdiction," defined as the jurisdiction comprising greater than fifty percent of the subwatershed land area, is identified for each subwatershed (see Table 7-4.6).[5] Seven primary jurisdictions are identified within the Santa Monica Bay watershed, each with a group of associated subwatersheds and beach monitoring locations. These are identified as "jurisdictional groups" (see Table 7-4.6). The primary jurisdiction of each "jurisdictional group" shall be responsible for submitting the implementation plan described above, which will determine the implementation timeframe for the subwatershed. A jurisdictional group may change its primary jurisdiction by submitting a joint, written request, submitted by the current primary jurisdiction and the proposed primary jurisdiction, to the Executive Officer requesting a reassignment of primary responsibility. Two jurisdictional groups may also choose to change the assignment of monitoring locations between the two groups by submitting a joint, written request, submitted by the current primary jurisdiction and the proposed primary jurisdiction, to the Executive Officer requesting a reassignment of the monitoring location. If an integrated water resources approach is pursued, the jurisdictional group(s) must achieve a 10% cumulative percentage reduction from the total exceedance-day reduction required for the group of beach monitoring locations within 6 years, a 25% reduction within 10 years, and a 50% reduction within 15 years of the effective date of the TMDL. These interim milestones for the jurisdictional group(s) will be re-evaluated, considering planning, engineering and construction tasks, based on the written implementation plan submitted to the Regional Board two years after the effective date of the TMDL (see Table 7-4.7). If an integrated water resources approach is not pursued, the jurisdictional group(s) must achieve a 25% cumulative percentage reduction from the total exceedance-day reduction required for the group of beach monitoring locations within 6 years, and a 50% reduction within 8 years of the effective date of the TMDL (see Table 7-4.7). For those beach monitoring locations subject to the antidegradation provision, there shall be no increase in exceedance days during the implementation period above that estimated for the beach monitoring location in the critical year as identified in Table 7-4.5. The final implementation targets in terms of allowable wet-weather exceedance days must be achieved at each individual beach location no later than 18 years after the TMDL's effective date if an integrated water resources approach is pursued, or no later than 10 years after the TMDL's effective date if an integrated water resources approach is not pursued. In addition, the geometric mean targets must be achieved for each individual beach location no later than 18 years or 10 years after the effective date, respectively, depending on whether a integrated

[5] Primary jurisdictions are not defined for the Ballona Creek subwatershed or the Malibu Creek subwatershed, since separate bacteria TMDLs are being developed for these subwatersheds.

Element	Key Findings and Regulatory Provisions
	water resources approach is pursued or not.

Element	Key Findings and Regulatory Provisions
Margin of Safety	The TMDL is set at levels that are exactly equivalent to the applicable water quality standards along with the proposed reference system/antidegradation implementation procedure. An implicit margin of safety is included in the supporting water quality model by assuming no dilution between the storm drain and the wave wash, the point of compliance. This is a conservative assumption since studies have shown that there is a high degree of variability in the amount of dilution between the storm drain and wave wash temporally, spatially and among indicators, ranging from 100% to 0%.
Seasonal Variations and Critical Conditions	Seasonal variations are addressed by developing separate waste load allocations for three time periods (wet weather, summer dry weather and winter dry weather) based on public health concerns and observed natural background levels of exceedance of bacterial indicators. (The two dry-weather periods are addressed in the Santa Monica Bay Beaches Dry-Weather Bacteria TMDL.) The critical condition for this bacteria TMDL is wet weather generally, when historic shoreline monitoring data for the reference beach indicate that the single sample bacteria objectives are exceeded on 22% of the wet-weather days sampled. To more specifically identify a critical condition within wet weather in order to set the allowable exceedance days shown in Tables 7-4.5 and 7-4.6, the 90th percentile 'storm year'[6] in terms of wet days is used as the reference year. Selecting the 90th percentile year avoids a situation where the reference beach is frequently out of compliance. It is expected that because responsible jurisdictions and agencies will be planning for this 'worst-case' scenario, there will be fewer exceedance days than the maximum allowed in drier years. Conversely, in the 10% of wetter years, it is expected that there may be more than the allowable number of exceedance days.
Compliance Monitoring	Responsible jurisdictions and agencies as defined in Footnote 2 shall conduct daily or systematic weekly sampling in the wave wash at all major drains[7] and creeks or at existing monitoring stations at beaches without storm drains or freshwater outlets to determine compliance.[8] At all locations, samples shall be taken at ankle depth and on an incoming wave. At locations where there is a freshwater outlet, during wet weather, samples should be taken as close as possible to the wave wash, and no further away than 10 meters down current of the storm drain or outlet.[9] At locations where there is a freshwater outlet, samples shall be taken when the freshwater outlet is flowing into the surf zone. If the number of exceedance days is greater than the allowable number of exceedance days for any jurisdictional group at the interim implementation milestones the responsible jurisdictions and agencies

[6] For purposes of this TMDL, a 'storm year' means November 1 to October 31. The 90th percentile storm year was 1993 with 75 wet days at the LAX meteorological station.
[7] Major drains are those that are publicly owned and have measurable flow to the beach during dry weather.
[8] The frequency of sampling (i.e., daily versus weekly) will be at the discretion of the implementing agencies. However, the number of sample days that may exceed the objectives will be scaled accordingly.
[9] Safety considerations during wet weather may preclude taking a sample in the wave wash.

Element	Key Findings and Regulatory Provisions
	shall be considered out-of-compliance with the TMDL. If the number of exceedance days exceeds the allowable number of exceedance days for a target beach at the final implementation deadline, the responsible jurisdictions and agencies within the contributing subwatershed shall be considered out-of-compliance with the TMDL. Responsible jurisdictions or agencies shall not be deemed out of compliance with the TMDL if the investigation described in the paragraph below demonstrates that bacterial sources originating within the jurisdiction of the responsible agency have not caused or contributed to the exceedance. If a single sample shows the discharge or contributing area to be out of compliance, the Regional Board may require, through permit requirements or the authority contained in Water Code section 13267, daily sampling in the wave wash or at the existing open shoreline monitoring location (if it is not already) until all single sample events meet bacteria water quality objectives. Furthermore, if a beach location is out-of-compliance as determined in the previous paragraph, the Regional Board shall require responsible agencies to initiate an investigation, which at a minimum shall include daily sampling in the wave wash or at the existing open shoreline monitoring location until all single sample events meet bacteria water quality objectives. If bacteriological water quality objectives are exceeded in any three weeks of a four-week period when weekly sampling is performed, or, for areas where testing is done more than once a week, 75% of testing days produce an exceedence of bacteria water quality objectives, the responsible agencies shall conduct a source investigation of the subwatershed(s) pursuant to protocols established under Water Code 13178. If a beach location without a freshwater outlet is out-of-compliance or if the outlet is diverted or being treated, the adjacent municipality, County agency(s), or State or federal agency(s) shall be responsible for conducting the investigation and shall submit its findings to the Regional Board to facilitate the Regional Board exercising further authority to regulate the source of the exceedance in conformance with the Porter-Cologne Water Quality Control Act.

Note: The complete staff report for the TMDL is available for review upon request.

Attachment A to Resolution No. 2002-022

Table 7-4.5. Final Allowable Wet-Weather Exceedance Days by Beach Location

Beach Monitoring Location	Estimated no. of wet weather exceedance days in critical year (90th percentile)*	Final allowable no. of wet weather exceedance days (daily sampling)*
DHS 010 - Leo Carrillo Beach, at 35000 PCH	17	17
DHS 009 - Nicholas Beach- 100 feet west of lifeguard tower	14	14
DHS 010a - Broad Beach	15	15
DHS 008 - Trancas Beach entrance, 50 yards east of Trancas Bridge	19	17
DHS 007 - Westward Beach, east of Zuma Creek	17	17
DHS 006 - Paradise Cove, adjacent to west side of Pier	23	17
DHS 005 - Latigo Canyon Creek entrance	33	17
DHS 005a - Corral State Beach	17	17
DHS 001a - Las Flores Beach	29	17
DHS 001 - Big Rock Beach, at 19900 PCH	30	17
DHS 003 - Malibu Point	18	17
DHS 003a - Surfrider Beach (second point)- weekly	45	17
S1 - Surfrider Beach (breach point)- daily	47	17
DHS 002 - Malibu Pier- 50 yards east	45	17
S2 - Topanga State Beach	26	17
DHS 101 - PCH and Sunset Bl.- 400 yards east	25	17
DHS 102 - 16801 Pacific Coast Highway, Bel Air Bay Club (chain fence)	28	17
S3 - Pulga Canyon storm drain- 50 yards east	23	17
DHS 103 - Will Rogers State Beach- Temescal Canyon (25 yrds. so. of drain)	31	17
S4 - Santa Monica Canyon, Will Rogers State Beach	25	17
DHS 104a - Santa Monica Beach at San Vicente Bl.	34	17
DHS 104 - Santa Monica at Montana Av. (25 yrds. so. of drain)	31	17
DHS 105 - Santa Monica at Arizona (in front of the drain)	31	17
S5 - Santa Monica Municipal Pier- 50 yards southeast	35	17
S6 - Santa Monica Beach at Pico/Kenter storm drain	42	17
DHS 106 - Santa Monica Beach at Strand St. (in front of the restrooms)	36	17
DHS 106a - Ashland Av. storm drain- 50 yards north	39	17
S7 - Ashland Av. storm drain- 50 yards south	22	17
DHS 107 - Venice City Beach at Brooks Av. (in front of the drain)	40	17

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Beach Monitoring Location	Estimated no. of wet weather exceedance days in critical year (90th percentile)*	Final allowable no. of wet weather exceedance days (daily sampling)*
S8 - Venice City Beach at Windward Av.- 50 yards north	13	13
DHS 108 - Venice Fishing Pier- 50 yards south	17	17
DHS 109 - Venice City Beach at Topsail St.	38	17
S11 - Dockweiler State Beach at Culver Bl.	23	17
DHS 110 - Dockweiler State Beach- south of D&W jetty	30	17
S12 - Imperial HWY storm drain- 50 yards north	17	17
DHS 111 - Hyperion Treatment Plant One Mile Outfall	18	17
DHS 112 - Dockweiler State Beach at Grand Av. (in front of the drain)	25	17
S10 - Ballona Creek entrance- 50 yards south	34	17
S13 - Manhattan State Beach at 40th Street	4	4
S14 - Manhattan Beach Pier- 50 yards south	5	5
DHS 114 - Hermosa City Beach at 26th St.	12	12
S15 - Hermosa Beach Pier- 50 yards south	8	8
DHS 115 - Herondo Street storm drain- (in front of the drain)	19	17
S16 - Redondo Municipal Pier- 50 yards south	14	14
DHS 116 - Redondo State Beach at Topaz St. - north of jetty	19	17
S17 - Redondo State Beach at Avenue I	6	6
S18 - Malaga Cove, Palos Verdes Estates-daily	3	3
LACSDM - Malaga Cove, Palos Verdes Estates-weekly	14	14
LACSDB - Palos Verdes (Bluff) Cove, Palos Verdes Estates	0	0
LACSD1 - Long Point, Rancho Palos Verdes	5	5
LACSD2 - Abalone Cove Shoreline Park	1	1
LACSD3 - Portuguese Bend Cove, Rancho Palos Verdes	2	2
LACSD5 - Royal Palms State Beach	6	6
LACSD6 - Wilder Annex, San Pedro	2	2
LACSD7 - Cabrillo Beach, oceanside	3	3

Notes: * The compliance targets are based on existing shoreline monitoring data and assume daily sampling. If systematic weekly sampling is conducted, the compliance targets will be scaled accordingly. These are the compliance targets until additional shoreline monitoring data are collected prior to revision of the TMDL. Once additional shoreline monitoring data are available, the following will be re-evaluated when the TMDL is revised 1) estimated number of wet-weather exceedance days in the critical year at all beach locations, including the reference system(s) and 2) final allowable wet-weather exceedance days for each beach location.

Table 7-4.6. Interim Compliance Targets by Jurisdictional Group

Jurisdiction Group	Primary Jurisdiction	Additional Responsible Jurisdictions & Agencies	Subwatershed(s)	Monitoring Site(s)***	Interim Compliance Targets as Maximum Allowable Exceedance Days during Wet Weather*,**		
					10% Reduction Milestone	25% Reduction Milestone	50% Reduction Milestone
1	County of Los Angeles	Caltrans Malibu City of Los Angeles (Topanga only) Calabasas (Topanga only)	Arroyo Sequit	DHS 010	221	212	197
			Carbon Canyon	none			
			Corral Canyon	DHS 005a			
			Encinal Canyon	DHS 010a#			
			Escondido Canyon	none			
			Las Flores Canyon	DHS 001a			
			Latigo Canyon	DHS 005			
			Los Alisos Canyon	none			
			Pena Canyon	none			
			Piedra Gorda Canyon	DHS 001			
			Ramirez Canyon	DHS 006			
			Solstice Canyon	none			
			Topanga Canyon	S2			
			Trancas Canyon	DHS 008			
			Tuna Canyon	none			
			Zuma Canyon	DHS 007			
2	City of Los Angeles	Caltrans County of Los Angeles El Segundo (DW only) Manhattan Beach (DW only) Culver City (MDR only) Santa Monica	Castlerock	none	342	324	294
			Dockweiler	S11, DHS 110, S12, DHS 111, DHS 112			
			Marina del Rey	DHS 107, S8#, DHS 108, DHS 109			
			Pulga Canyon	S3, DHS 103			
			Santa Monica Canyon	S4			
			Santa Ynez Canyon	DHS 101, DHS 102			

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Jurisdiction Group	Primary Jurisdiction	Additional Responsible Jurisdictions & Agencies	Subwatershed(s)	Monitoring Site(s)***	Interim Compliance Targets as Maximum Allowable Exceedance Days during Wet Weather*,***		
					10% Reduction Milestone	25% Reduction Milestone	50% Reduction Milestone
3	Santa Monica	Caltrans City of Los Angeles County of Los Angeles	Santa Monica	DHS 104a, DHS 104, DHS 105, S5, S6, DHS 106, DHS 106a, S7	257	237	203
4	Malibu	Caltrans County of Los Angeles	Nicholas Canyon	DHS 009#	14	14	14
5	Manhattan Beach	Caltrans El Segundo Hermosa Beach Redondo Beach	Hermosa	S13#, S14#, DHS 114#, S15#	29	29	29
6	Redondo Beach	Caltrans Hermosa Beach Manhattan Beach Torrance County of Los Angeles	Redondo	DHS 115, S16#, DHS 116, S17#	58	57	56

Jurisdiction Group	Primary Jurisdiction	Additional Responsible Jurisdictions & Agencies	Subwatershed(s)	Monitoring Site(s)***	Interim Compliance Targets as Maximum Allowable Exceedance Days during Wet Weather*,**		
					10% Reduction Milestone	25% Reduction Milestone	50% Reduction Milestone
7	Rancho Palos Verdes	Caltrans City of Los Angeles Palos Verdes Estates Redondo Beach Rolling Hills Rolling Hills Estates Torrance County of Los Angeles	Palos Verdes Peninsula	S18#, LACSDM#, LACSDB#, LACSD1#, LACSD2#, LACSD3#, LACSD5#, LACSD6#, LACSD7#	36	36	36

Notes: *Interim milestones will be re-calculated during the revision of the TMDL based on shoreline monitoring data collected from the wave wash and a re-evaluation of the most appropriate reference system and reference year. Furthermore, if an integrated water resources approach is pursued, as demonstrated by the implementation plans to be submitted to the Regional Board by the primary jurisdictions within two years of the effective date of the TMDL, the interim milestones will be re-evaluated on the basis of the implementation plan, considering planning, engineering and construction tasks. **Interim milestones for the Malibu and Ballona shoreline monitoring locations will be identified in subsequent bacteria TMDLs to be developed for these two watersheds. ***Monitoring sites are those shoreline locations currently monitored by the City of Los Angeles, County Sanitation Districts of Los Angeles County, and the Los Angeles County Department of Health Services at the time of adoption of this TMDL by the Regional Board. This list does not preclude the establishment of additional monitoring stations. For those subwatersheds without an existing shoreline monitoring site, responsible jurisdictions and agencies must establish a shoreline monitoring site if there is measurable flow from a creek or publicly owned storm drain to the beach during dry weather. # For those beach monitoring locations subject to the antidegradation provision, there shall be no increase in exceedance days during the implementation period above that estimated for the beach monitoring location in the critical year as identified in Table 7-4.5.

Attachment A to Resolution No. 2002-022

Table 7-4.7. Santa Monica Bay Beaches Bacteria TMDL (Wet Weather Only): Significant Dates

Date	Action
120 days after the effective date of the TMDL	Pursuant to a request from the Regional Board, responsible jurisdictions and responsible agencies must submit coordinated shoreline monitoring plan(s) to be approved by the Executive Officer, including a list of new sites* and/or sites relocated to the wave wash at which time responsible jurisdictions and responsible agencies shall select between daily or systematic weekly shoreline sampling.
20 months after the effective date of the TMDL	Responsible jurisdictions and agencies shall provide a draft written report to the Regional Board outlining how each intends to cooperatively (through Jurisdictional Groups) achieve compliance with the TMDL. The report shall include implementation methods, an implementation schedule, and proposed milestones.
Two years after effective date of TMDL	Responsible jurisdictions and agencies shall provide a written report to the Regional Board outlining how each intends to cooperatively (through Jurisdictional Groups) achieve compliance with the TMDL. The report shall include implementation methods, an implementation schedule, and proposed milestones. Under no circumstances shall final compliance dates exceed 10 years for non-integrated approaches or 18 years for integrated water resources approaches. Regional Board staff shall bring to the Regional Board the aforementioned plans as soon as possible for consideration.
4 years after effective date of TMDL	The Regional Board shall reconsider the TMDL to: (1) refine allowable wet weather exceedance days based on additional data on bacterial indicator densities in the wave wash and an evaluation of site-specific variability in exceedance levels, (2) re-evaluate the reference system selected to set allowable exceedance levels, including a reconsideration of whether the allowable number of exceedance days should be adjusted annually dependent on the rainfall conditions and an evaluation of natural variability in exceedance levels in the reference system(s), (3) re-evaluate the reference year used in the calculation of allowable exceedance days, and (4) re-evaluate whether there is a need for further clarification or revision of the geometric mean implementation provision.

Date	Action
Significant Dates for Responsible Jurisdictions and Agencies *Not* Pursuing an Integrated Water Resources Approach	
6 years after effective date of the TMDL	Each defined jurisdictional group must achieve a 25% cumulative percentage reduction from the total exceedance-day reductions required for that jurisdictional group as identified in Table 7-4.6.
8 years after effective date of the TMDL	Each defined jurisdictional group must achieve a 50% cumulative percentage reduction from the total exceedance-day reductions required for that jurisdictional group as identified in Table 7-4.6.
10 years after effective date of the TMDL	Final implementation targets in terms of allowable wet-weather exceedance days must be achieved at each individual beach as identified in Table 7-4.5. In addition, the geometric mean targets must be achieved for each individual beach location.
Significant Dates for Responsible Jurisdictions and Agencies Pursuing an Integrated Water Resources Approach to Implementation	
6 years after effective date of the TMDL	Each defined jurisdictional group must achieve a 10% cumulative percentage reduction from the total exceedance-day reductions required for that jurisdictional group as identified in Table 7-4.6.
10 years after effective date of the TMDL	Each defined jurisdictional group must achieve a 25% cumulative percentage reduction from the total exceedance-day reductions required for that jurisdictional group as identified in Table 7-4.6.
15 years after effective date of the TMDL	Each defined jurisdictional group must achieve a 50% cumulative percentage reduction from the total exceedance-day reductions required for that jurisdictional group as identified in Table 7-4.6.
18 years after effective date of the TMDL	Final implementation targets in terms of allowable wet-weather exceedance days must be achieved at each individual beach as identified in Table 7-4.5. In addition, the geometric mean targets must be achieved for each individual beach location.

Notes: *For those subwatersheds without an existing shoreline monitoring site, responsible jurisdictions and agencies must establish a shoreline monitoring site if there is measurable flow from a creek or publicly owned storm drain to the beach during dry weather.

APPENDIX B

Santa Monica Bay Wet-Weather Bacteria TMDL
Jurisdictions 1 and 4 Implementation Schedule

Activity ID	Activity Description
Implementation Plan	
210	Draft Implementation Plan
215	Final Implemenation Plan
220	Assumed Implementation
Non-Structural BMP's	
Non-Structural Committed BMP's	
0003	Non-Structural Committed BMPs
0004	OUTREACH TO PET OWNERS
0005	Start-up
0006	Operation of Program
0007	PROVIDE SEPTIC SYSTEM (OWTS)
0008	Start up
0009	Operation of Program
0010	INCREASE COORDINATION BETWEEN
0011	Start up
0012	Operation of Program
0013	COORDINATE OUTREACH ACTIVITIES
0014	Start-up
0015	Operation of Program
0016	PROVIDE FOR REGULAR BMP
0017	Start-up
0018	Operation of Program
0019	CONDUCT INDUSTRY SPECIFIC
0020	Start-up
0021	Operation of Program
0022	ESTABLISH GUIDELINES FOR
0023	Start-up
0024	Operation of Program
0025	FURTHER EMPHASIZE APPLICABLE
0026	Start-up
0027	Operation of Program
Non-Structural BMP Pilot Programs	
0028	Non-Structural BMP Pilot Programs
0029	LOCATE AREAS WITH CORRALLED
0030	Start-up
0031	Operation of Program
0032	IDENTIFY HORSE STABLES IN THE
0033	Start-up
0034	Operation of Program
0035	INCREASE AWARENESS OF BMPS IN
0036	Start-up
0037	Operation of Program
0038	INVESTIGATE THE POSSIBILITY OF
0039	Start-up
Onsite Structural Programs	
Residential Cisterns	
.	
0041	Residential Cisterns
0042	Start-up
0043	Operation of Incentive Program
Piedra Gorda	
0045	Piedra Gorda
0046	Planning (Feasibility Study, Site Acquisition,
0047	Design
0048	Construction Bid and Award

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Start Date	15MAR05	LAX5	Sheet 1 of 5
Finish Date	19JUL21		
Data Date	10OCT05		
Run Date	23AUG05 09:34		

Date	Revision	Checked	Approved

Activity ID	Activity Description
0049	Construction
0050	Project Acceptance
0051	Project Operation
Escondido	
0052	Escondido
0053	Planning (Feasibility Study, Site Acquisition,
0054	Design
0055	Construction Bid and Award
0056	Construction
0057	Project Acceptance
0058	Project Operation
Topanga	
0059	Topanga
0060	Planning (Feasibility Study, Site Acquisition,
0061	Design
0062	Construction Bid and Award
0063	Construction
0064	Project Acceptance
0065	Project Operation
Latigo	
0066	Latigo
0067	Planning (Feasibility Study, Site Acquisition,
0068	Design
0069	Construction Bid and Award
0070	Construction
0071	Project Acceptance
0072	Project Operation
Las Flores	
0073	Las Flores
0074	Planning (Feasibility Study, Site Acquisition,
0075	Design
0076	Construction Bid and Award
0077	Construction
0078	Project Acceptance
0079	Project Operation
Ramirez	
0080	Ramirez
0081	Planning (Feasibility Study, Site Acquisition,
0082	Design
0083	Construction Bid and Award
0084	Construction
0085	Project Acceptance
0086	Project Operation
Corral	
0087	Corral
0088	Planning (Feasibility Study, Site Acquisition,
0089	Design
0090	Construction Bid and Award
0091	Construction
0092	Project Acceptance
0093	Project Operation
Other Watersheds	
0113	Planning
Storage and Reuse/Small Scale Infiltration	
0094	Storage and Reuse
0095	FIRST 3
0096	Planning (Feasibility Study, Site Acquisition,
0097	Design

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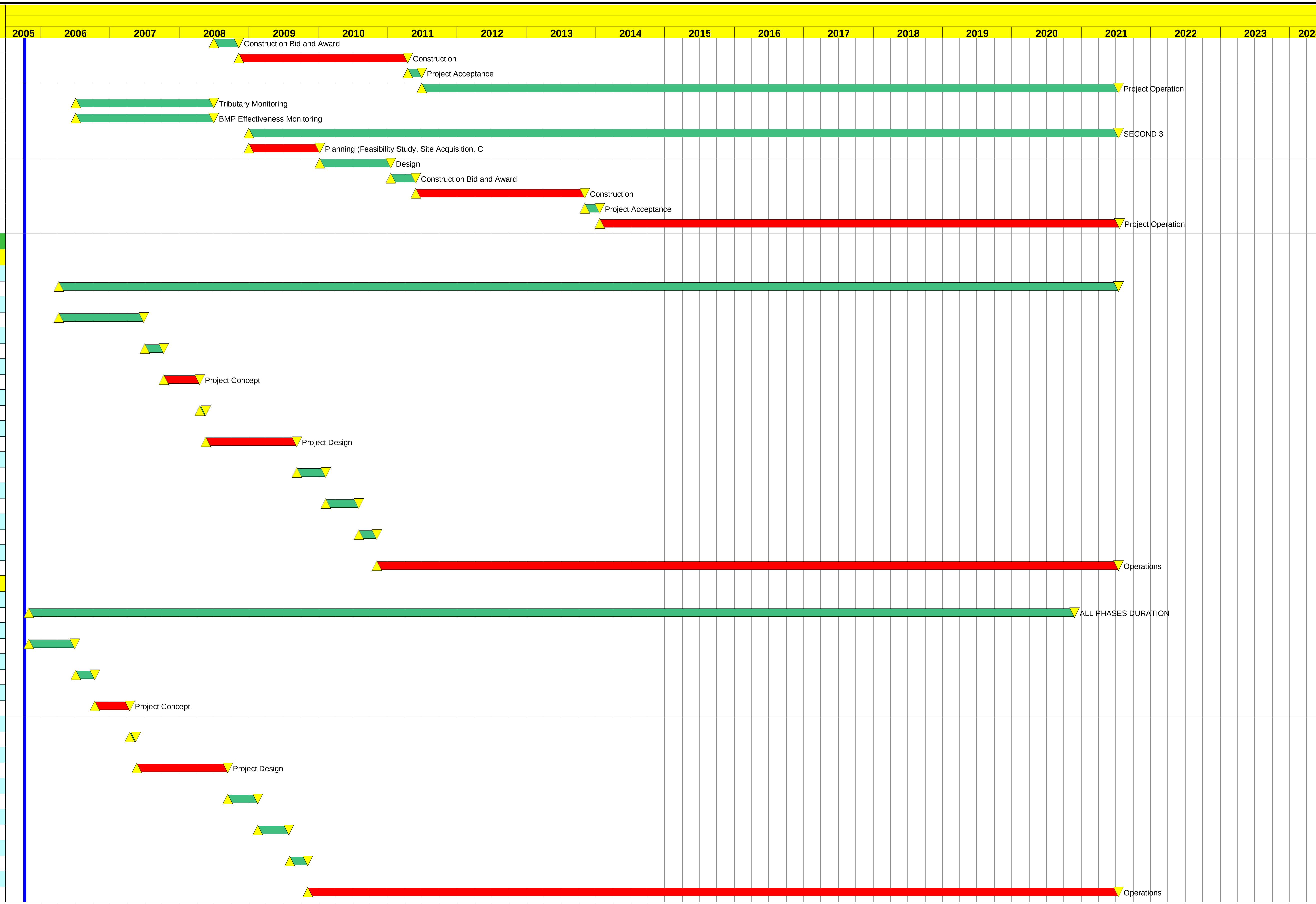
9-1673

Start Date	15MAR05	LAX5	Sheet 2 of 5
Finish Date	19JUL21		
Data Date	10OCT05		
Run Date	23AUG05 09:34		

Santa Monica Bay Wet-Weather Bacteria TMDL
Jurisdictions 1 and 4 Implementation Schedule

Date	Revision	Checked	Approved

Activity ID	Activity Description
0098	Construction Bid and Award
0099	Construction
0100	Project Acceptance
0101	Project Operation
0102	Tributary Monitoring
0103	BMP Effectiveness Monitoring
0104	SECOND 3
0105	Planning (Feasibility Study, Site Acquisition,
0106	Design
0107	Construction Bid and Award
0108	Construction
0109	Project Acceptance
0110	Project Operation
Regional Structural Pilots Prgrams	
Paradise Cove Pre-Treatment and System Upgrade	
+ Duration	
+ Pre-Feasibility Study	
+ Feasibility Study	
Project Concept	
46800	Project Concept
+ Construction	
Project Design	
42800	Project Design
+ Construction Bid and Award	
+ Construction Process	
+ Project Acceptance	
Operations	
18610	Operations
Las Flores Canyon Restoration	
Duration	
10500	ALL PHASES DURATION
+ Pre-Feasibility Study	
+ Feasibility Study	
Project Concept	
16700	Project Concept
+ Construction	
Project Design	
12800	Project Design
+ Construction Bid and Award	
+ Construction Process	
+ Project Acceptance	
Operations	
18610	Operations



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9-1674

Start Date 15MAR05
Finish Date 19JUL21
Data Date 10OCT05
Run Date 23AUG05 09:34

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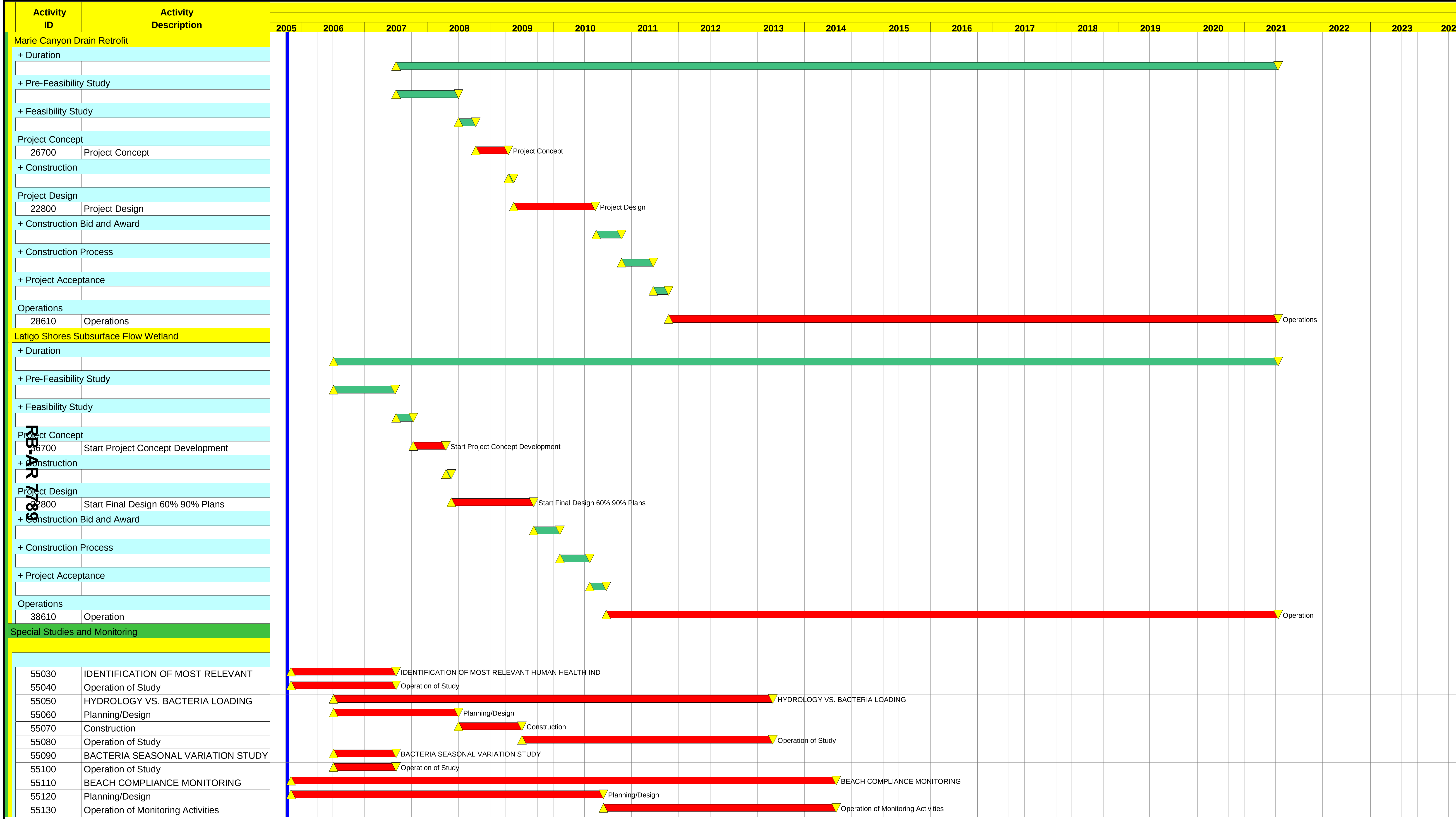
Sheet 3 of 5

Santa Monica Bay Wet-Weather Bacteria TMDL
Jurisdictions 1 and 4 Implementation Schedule

Date	Revision	Checked	Approved



RB-AR 7789

9-1675

Start Date 15MAR05
Finish Date 19JUL21
Data Date 10OCT05
Run Date 23AUG05 09:34

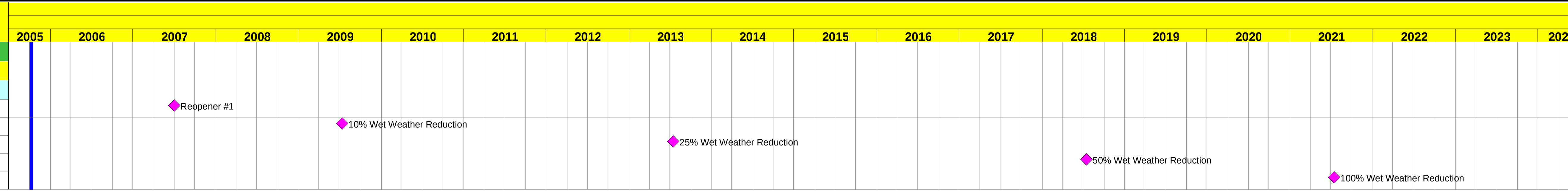
LAX5

Sheet 4 of 5

Santa Monica Bay Wet-Weather Bacteria TMDL
Jurisdictions 1 and 4 Implementation Schedule

Date	Revision	Checked	Approved

Activity ID	Activity Description
Other	
0120	Reopener #1
0121	10% Wet Weather Reduction
0122	25% Wet Weather Reduction
0123	50% Wet Weather Reduction
0124	100% Wet Weather Reduction



RB-AR 7790

9-1676

Start Date	15MAR05
Finish Date	19JUL21
Data Date	10OCT05
Run Date	23AUG05 09:34

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Sheet 5 of 5

Santa Monica Bay Wet-Weather Bacteria TMDL
Jurisdictions 1 and 4 Implementation Schedule

Date	Revision	Checked	Approved

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CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

QUANTITATIVE ASSESSMENT SANTA MONICA BAY BACTERIA TMDL IMPLEMENTATION PLAN

JURISDICTIONAL GROUPS 1 & 4

Submitted by

County of Los Angeles: Lead Agency, Jurisdictional Group 1

City of Malibu: Lead Agency, Jurisdictional Group 4

California Department of Transportation

QUANTITATIVE ASSESSMENT SANTA MONICA BAY BACTERIA TOTAL MAXIMUM DAILY LOAD IMPLEMENTATION PLAN JURISDICTIONAL GROUPS 1 & 4

Prepared for

County of Los Angeles: Lead Agency, Jurisdiction 1
City of Malibu: Lead Agency, Jurisdiction 4
California Department of Transportation

January 2007

Prepared by

PSOMAS
GEOSYNTEC CONSULTANTS

Project Number: LA0131

TABLE OF CONTENTS

1 INTRODUCTION

1.1 Purpose and Scope

The purpose of this study is to develop a "quantification assessment" of the water quality benefits of the structural and non-structural BMPs recommended in the Santa Monica Bay Beaches Bacteria Total Maximum Daily Load (TMDL) Implementation Plan for wet weather in Jurisdictional Groups 1 and 4 in accordance with requirements described in California Regional Water Quality Control Board, Los Angeles Region, Resolution No. 2006-005.

1.2 Report Organization

This report is organized as follows:

Overview of Approach

Establishment of Water Quality Targets

Estimate of Water Quality Benefits, and

Estimate of Integrated Water Resources Benefits

1.3 Background

On August 30, 2005, the County of Los Angeles (Lead Agency for Jurisdiction 1), the City of Malibu (Lead Agency for Jurisdiction 4) and the California Department of Transportation submitted the *Santa Monica Bay Beaches Wet-Weather Bacteria Total Maximum Daily Load Implementation Plan: Jurisdictional Groups 1 and 4* (J1/4 IP). On April 6, 2006, the California Regional Water Quality Control Board, Los Angeles Region (LARWQCB) issued Resolution No. 2006-005 *Statement of support for the efforts of responsible jurisdictions and agencies in Jurisdictional Groups 1 and 4 to utilize an integrated water resources approach to achieve full compliance with the Santa Monica Bay Beaches Bacteria Wet Weather TMDL in the shortest possible timeframe and no later than July 2021.* This resolution is included in Appendix A.

Resolution No. 2006-005 required that the responsible jurisdiction submit quantifiable analyses to demonstrate that "(1) the proposed plan will meet the interim and final WLAs" [Waste Load Allocations] and "(2) the proposed implementation actions will achieve multiple water quality benefits and other public goals". This resolution also stipulated that this information be submitted within nine months, which ends in January 2007.

The purpose of this investigation is to provide quantifiable estimates of the integrated water resources benefits of the structural and non-structural BMPs recommended in the J1/4 IP, in terms of exceedance day reductions, based on an approach discussed with LARWQCB staff.

2 OVERVIEW OF APPROACH

2.1 Basin Plan Objectives

The TMDL is based on numeric targets for bacteriological water quality objectives for Water Contact Recreation (REC-1) as revised by Regional Board Resolution 2001-018 (amending its Basin Plan on October 25, 2001). This Basin Plan amendment received final approval from the EPA on September 25, 2002[1]. These water quality objectives are based on four bacterial indicators and include both geometric mean limits and single sample limits:

1. Geometric Mean (GM) Limits
   a. Total coliform density shall not exceed 1,000/100 ml.
   b. Fecal coliform density shall not exceed 200/100 ml.
   c. Enterococcus density shall not exceed 35/100 ml.
2. Single Sample (SS) Limits
   a. Total coliform density shall not exceed 10,000/100 ml.
   b. Fecal coliform density shall not exceed 400/100 ml.
   c. Enterococcus density shall not exceed 104/100 ml.
   d. Total coliform density shall not exceed 1,000/100 ml, if the ratio of fecal-to-total coliform exceeds 0.1.

Based on a reference watershed/antidegradation approach, the TMDL specifies wet weather Waste Load Allocations (WLAs), in the form of (single sample) exceedance days, for the various subwatersheds, as shown in Table 1. No exceedances of the geometric mean limits are allowed.

Because the TMDL 10% and 25% interim targets relate exclusively to SS exceedance days, GM exceedances are not evaluated as part of this Quantitative Assessment report.

[1]) Resolution No. 2002-022, Finding 18.

Table 1. Final Allowable Wet-Weather (Single Sample-based) Exceedance Days WLAs by Beach Location

Beach Location	Estimated No. of Exceedance Days Critical Year (1993)	Final Allowable Number of Exceedance Days
Leo Carrillo Beach, at 35000 PCH (Reference Watershed)	17	17
Nicholas Beach, 100 feet west of lifeguard tower (J4)	14	14
Broad Beach	15	15
Trancas Beach entrance, 50 yards east of Trancas Bridge	19	17
Westward Beach, east of Zuma Creek	17	17
Paradise Cove, adjacent to west side of pier	23	17
Latigo Canyon Creek entrance	33	17
Corral State Beach	17	17
Las Flores Beach	29	17
Big Rock Beach, at 19900 PCH	30	17
Topanga State Beach	26	17

Based on the J1/4 IP, which assumes consideration for integrated water resources approaches (as submitted), schedules for TMDL compliance are:

- Re-Open TMDL (re-evaluation): 2007
- 10% reduction: 2009
- 25% reduction: 2013
- 50% reduction: 2018
- Final targets: 2021

2.2 Exceedance day enumeration approach

The following steps were followed in order to compute the number of exceedance days within the J1/4 area based on monitoring data collected during the 2004/05 storm year (November 1 to October 31). The approach was developed in conjunction with representatives from other jurisdictional groups within the Santa Monica Bay Beaches area. For purposes of consistency, the same approach is presented here and is the basis for this analysis. Details of this analysis are provided in section 3.1:

- Compile monitoring data.
- Screen "wet" sampling data for single sample analyses.
- Compare with single sample limits (each single sample limit/parameter).
- Remove allowable single sample exceedance days from dataset.

2.3 Quantitative water quality assessment

The following steps were followed in order to estimate the water quality benefits associated with the J1/4 IP, based on the monitoring data collected during the 2004/05 Storm Year:

- Identify phase-specific non-structural and structural (on-site and regional) BMP activities for each subwatershed from the J1/4 IP.
- Estimate effectiveness for each BMP activity, in terms of percent bacteria concentration reduction. Percent (by area) implementation was assumed in some cases.
- For on-site and regional structural BMP activities, estimate BMP percent bacteria load removal by subwatershed, and assume equal to percent concentration reduction.
- For non-structural BMP activities, estimate percent concentration reductions from outreach program and relevant bacteria source tracking studies.
- Compute total percent reductions for all BMP activities for each subwatershed for Phases I/II (combined) and Phase III, which are scheduled to correspond with the 10% and 25% interim targets, respectively.
- Apply the total percent reductions for each subwatershed to the monitoring results, and re-compute exceedance days as described earlier.

- Determine reduction in exceedance days by comparing existing exceedance days with post-implementation exceedance days, and compare with the 10% and 25% interim targets, to assess anticipated effectiveness of the J1/4 IP.

2.4 Quantitative Integrated Water Resources Assessment Approach

Resolution No. 2006-005 states that "a longer implementation schedule… shall be granted if there is a clear demonstration that an integrated water resources approach will be pursued…. This demonstration shall provide numeric estimates of the benefits, including the reductions in other pollutants, groundwater recharged, acres of multi-use projects, and water (e.g., stormwater, runoff, wastewater) beneficially reused among other integrated water resources criteria…" The following thresholds were established to be the criteria related to quantifiable (numeric) estimates.

Threshold for reductions of pollutants. For interim target deadlines, each subwatershed will implement BMPs that address targeted pollutant groups. These pollutant groups (excluding bacteria) are nutrients, metals, total suspended sediment (TSS), and trash. Because target reductions have not been established in TMDL Implementation Plans, it is assumed that significant load reductions will constitute a clear demonstration of quantified benefits.

Groundwater recharged. Groundwater recharge opportunities are limited due to soil types and steep slope conditions, and groundwater is not a water supply resource locally. For onsite measures, the thresholds for demonstration of groundwater-related on-site BMPs are percentages of watersheds in which small-scale BMPs are implemented and the volume of potential water captured.

Water reused. Water reuse BMPs include residential cisterns and onsite storage and reuse projects. The thresholds for a clear demonstration of water reuse-related on-site BMPs are also the percentages of implementation in watersheds and the volume of potential water captured.

Other benefits. The implementation plan also described other beneficial uses, some of which are not described in the TMDL, but may still have significant value to the region: habitat development, geomorphology and hydrology considerations, and flood control

The thresholds for these measures are limited to an accounting of the number (and fraction) of the subwatersheds where these benefits are anticipated.

Acres of project. Managed and natural open spaces comprise 88% of the total jurisdictional areas. Acreage for project implementation will be limited to partial utilization on specific parcels, and selected regional facilities. In most cases, the regional facilities that provide any direct integrated benefits are already open space. Therefore, acres of project are not discussed in terms of a metric for quantifying integrated benefits.

Extent of integrated water resources activities within subwatersheds. The following table quantifies the extent of compliance of integrated water resources elements based on spatial distribution and subwatershed implementation.

Integrated Water Resources (IWR) Elements	Percentage of subwatersheds implementing	
	10 Percent Bacteria Target	*25 Percent Bacteria Target*
Multiple Pollutants Addressed	100%	*100%*
Groundwater Recharged	Planning only	*44% (7 of 16)*
Water reused	Planning only	*44% (7 of 16)*
Other benefits	*100%*	*100%*

Volumetric analysis. The following table summarizes percentages of volumes of water meeting multiple objectives.

Integrated Water Resources (IWR) Elements	Average percentages for subwatersheds	
	10 Percent Bacteria Target	*25 Percent Bacteria Target*
Multi-Pollutants Addressed	[Non-structural multi-pollutant and IWR benefits assessed qualitatively]	
Nutrients		*Onsite: 0-1% load reduction Regional: 30-81% load reduction*
Metals		*Onsite: 2% load reduction Regional: 30-81% load reduction*
TSS		*Onsite: 2% load reduction Regional: 50-81% load reduction*
Trash		*Onsite: 2% load reduction Regional: 24-90% load reduction*
Water Reused		*0.6% volume reduction*
Groundwater Recharged		*0.3% volume reduction*
Other benefits		*Habitat, Recreation, Education, Hydrology, Flood Control, Geomorphology/Hydromod*

3 ESTABLISH WATER QUALITY TARGETS

3.1 Exceedance Day Enumeration Approach

The first step in the quantitative assessment was to determine the number of exceedances from the J1/4 2004/05 storm year monitoring data. This exceedance day enumeration analysis was conducted as follows:

3.1.1 Compile monitoring data

Daily and weekly indicator bacteria monitoring results were compiled for the 2004/05 monitoring year. Indicators parameters here include: total coliform (TC), fecal coliform (FC), and enterococcus (EN). This monitoring data constitutes a blend of point zero and open beach sampling data.

3.1.2 Screen baseline data to conduct single sample (SS) analyses

For the subwatershed-specific analysis of SS exceedances (subwatersheds designated 1-18 in the Coordinated Shoreline Monitoring Plan), daily monitoring data were first synthesized to be representative of weekly data for consistency.[2] Then for all sites, weekly monitoring data were screened to only include "wet" days, defined as days having more than 0.1 inch of rain for the subject day, plus the subsequent 3 days. The Los Angeles County Department of Public Works (LACDPW) gage #482 (USC) was

[2] It should be noted that by screening daily monitoring data (available for subwatershed 1-18 only) to weekly (by selecting data from the predominant sampling weekdays only) in this step – which was done in order to render all the subwatershed datasets consistent – 1 SS weekly exceedance day was lost, as follows. Based on daily data, 45 exceedance days were identified, or 28 days beyond the allowable 17. 28 days translates to 4 weekly exceedance days, which is one more than was computed for site 1-18 (Topanga) based on weekly monitoring data analysis. This close result confirms that weekly monitoring data, as opposed to daily monitoring data, is adequate (in terms of temporal resolution) for estimating total number of exceedance days, and that daily/weekly-based exceedance days, and even allowable exceedance days (or WLAs), are translatable[0].[0]

used for this analysis as this was provided along with the monitoring data from LADPW, and for consistency with the November 1, 2004 LARWQCB monitoring clarification letter to the City of Los Angeles. Follow-up monitoring data (i.e., 48/96 hour tests which were collected following exceedances) for all sites were also removed from the weekly monitoring datasets for the identification of SS exceedances.

3.1.3 Compare data with SS limits

Wet weather results were compared with SS indicator bacteria limits (including the TC:FC ratio requirement), with all wet weather SS exceedances identified. Censored data (e.g., where results were greater or less than laboratory detection limits) were assumed to be equal to their detection limits. It is important therefore to recognize that percent reductions required to meet the TMDL may be larger than stated for some data points (i.e., those described as greater than the test limits). However, this assumption should not significantly affect the 2004/05 J1/4 water quality benefits analysis since all "greater than" results were for TC, and in most cases, events with TC exceedances also had exceedances for other indicators.

3.1.4 Remove allowable SS exceedance days from evaluated dataset.

Allowable SS exceedance days were removed from the dataset. Allowable exceedance day removal priority was given to dates with the highest number of exceedances among the three constituents. Among those dates, when ambiguity arose regarding which of two dates to remove or to retain, removal priority was given to the date with exceedances occurring for more than one constituent. (Wet-weather exceedances in total or fecal coliform concentration were usually accompanied by enterococcus exceedances.) An alternative removal priority approach being used for other jurisdictional groups was to remove dates with the highest percent reductions.

The number of allowable exceedance days was determined from the wet weather TMDL Waste Load Allocations (WLAs), translated from the 17 allowable exceedance days (based on TMDL modeling for the reference watershed, Arroyo Sequit), to a number that is comparable with weekly monitoring data. For most subwatersheds, this meant dividing the allowable 17 days by 7, and rounding the remainder week fraction up, resulting in 3 allowable weekly monitoring day exceedances. For subwatershed 4-1 (Nicholas), where 14 exceedance days are allowed, 2 allowable weekly exceedance days were assumed.

3.2 2004/05 Storm Year

The 2004/05 monitoring season (defined in the TMDL as November 1 to October 31 to be consistent with AB-411 implementing regulations) had 81 wet-weather days[3] at the USC rain gage, compared to 75 in 1993, or the 90th percentile year (in terms of wet-weather days) used in the TMDL. This USC rain gauge was used for this analysis to discriminate wet weather monitoring days consistent with LARWQCB recommendation from their November 1, 2004 letter to the City of Los Angeles.

3.3 Single Sample Exceedance Day Enumeration Results

Table 2 summarizes the wet weather exceedance days for each subwatershed, and for J1/4 total. Weekly exceedance days above allowable, computed by the method outlined above, are shown here. These weekly sampling results were multiplied by 7[4] to summarize the total number of estimated exceedance days for 2004/05, as shown in the 3rd column. After accounting for weekly monitoring frequency, these results were compared with estimated final wet weather exceedance day reductions from the TMDL.[5] Based on this comparison, significantly more exceedances were observed in

[3] Wet-weather days are defined in the TMDL as days having >=0.1 inches of rain plus the 3 days following.

[4] This is based on the assumption that each weekly grab sample concentration is actually representative of 7 days. Note that this may be a conservative assumption for the estimation of total exceedance days as 48 and 96 hour follow up sampling often demonstrates that the sample locations have returned to compliance.

[5] Note that there is little correlation observed between estimated/predicted exceedance day reductions from the TMDL and those based on 2004/05 monitoring results.

2004/05 than were estimated in the TMDL (which is based on modeling predictions for the 90th percentile wet year).

Table 2. 2004/2005 Single Sample Wet Weather Exceedance Days Summary

Subwatershed	Weekly Exceedance Days Above Allowable	Total Est. Exceedance Days Above Allowable	Est. Final Exceedance Day Reduction from TMDL[6]
Arroyo Sequit (ref. watershed)	1	7	0
Los Alisos	0	0	NA
Encinal	0	0	NA
Trancas	2	14	2
Zuma	4	28	0
Ramirez (2 monitoring sites)	4	28	6
Escondido	2	14	NA
Latigo	1	7	16
Solstice	2	14	NA
Corral (2 monitoring sites)	6	42	0
Carbon	3	21	NA
Las Flores	4	28	NA
Piedra Gorda	0	0	13
Pena	0	0	NA
Tuna	0	0	NA
Topanga	3	21	9
Nicholas	0	0	0
Total (excluding ref. watershed)	31	217	46+

Figure 1 below summarizes the number of exceedances days (beyond allowable) by subwatershed, with comparison to the priority categories established in the J1/4 IP. It

[6] *Existing* monitoring sites are shown with numbers of predicted exceedance day reductions for comparison with 2004-05 monitoring results. All existing monitoring sites have been moved to "point zero" with the exception of Piedra Gorda, which remains an open beach monitoring site. *New* monitoring sites (all located at point zero, with the exception of Los Alisos and Encinal) are shown with NA (not applicable) since they were not modeled in the TMDL.

should be noted that the number of exceedance days does not necessarily track priority as well as might be expected. Combined with the results of the comparison with estimated exceedance day reductions from the TMDL shown in Table 2, this chart demonstrates the unpredictable nature of indicator bacteria exceedances.

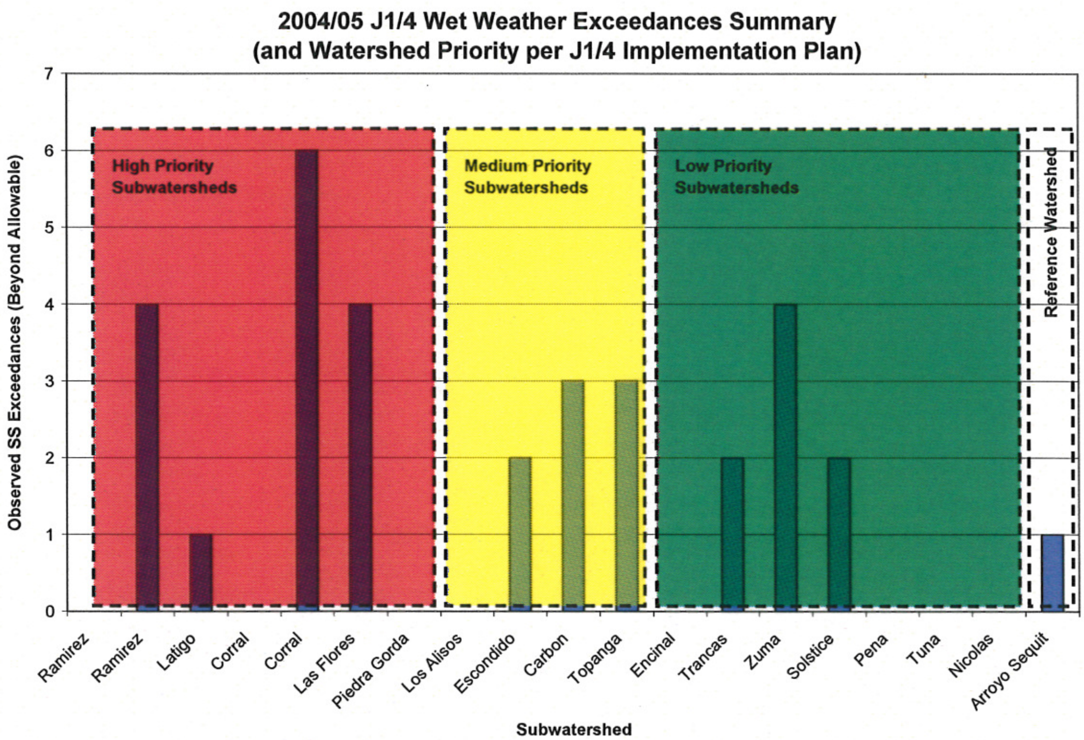

Figure 1. 2004/05 single sample exceedance days summary, compared with IP subwatershed priority categories.

Charts are provided in Appendix B summarizing the measured indicator bacteria concentrations, with allowable exceedances removed, for example subwatersheds 1-1 (Arroyo Sequit; reference watershed), 1-5 (Zuma), and 1-9 (Latigo). Total exceedance days at each site are as follows: Arroyo Sequit – 1, Zuma – 4, Latigo – 1. All of these exceedance days are due, at least in part, to enterococcus.

3.4 Concentration Reduction Results

Estimated concentration reductions required to attain final compliance with the TMDL exceedance day WLAs were computed. Table 3 summarizes the results relative to the single sample limits for each site. Concentration reductions were generally greatest for enterococcus; required reductions were also most frequent for this indicator.

Table 3. Summary of single sample maximum exceedance concentrations (beyond allowable) and final percent reduction targets, for each indicator for each site.

			Total Coliform SS Std: 10,000		Fecal Coliform SS Std: 400		Enterococcus SS Std: 104	
Location	Subwatershed	Type	Max.	% Red.	Max	% Red.	Max	% Red.
SMB-1-1	Arroyo Sequit	Point Zero	2359	---	189	---	175	41%
SMB-1-2	Los Alisos	Open Beach	910	---	67	---	42	---
SMB-1-3	Encinal	Open Beach	1400	---	<67	---	53	---
SMB-1-4	Trancas	Point Zero	2046	---	399	---	213	51%
SMB-1-5	Zuma	Point Zero	3448	---	386	---	443	77%
SMB-1-6	Ramirez	Point Zero	7300	---	130	---	99	---
SMB-1-7	Ramirez	Point Zero	6488	---	173	---	496	79%
SMB-1-8	Escondido	Point Zero	6300	---	1100	64%	340	69%
SMB-1-9	Latigo	Point Zero	1576	---	74	---	121	14%
SMB-1-10	Solstice	Point Zero	>13000	>23%	130	---	250	58%
SMB-1-11	Corral	Point Zero	218	---	52	---	74	---
SMB-1-12	Corral	Point Zero	>13000	>23%	280	---	560	81%
SMB-1-13	Carbon	Point Zero	4400	---	130	---	360	71%
SMB-1-14	Las Flores	Point Zero	>13000	>23%	580	31%	740	86%
SMB-1-15	Piedra Gorda	Open Beach	122	---	41	---	52	---
SMB-1-16	Pena	Point Zero	4900	---	210	---	99	---
SMB-1-17	Tuna	Point Zero	5900	---	67	---	42	---
SMB-1-18	Topanga	Point Zero	>13000	>23%	500	20%	1000	90%
SMB-4-1	Nicolas	Point Zero	738	---	226	---	97	---

3.5 Interim Compliance

31 total non-allowable exceedance days (TED) were identified for all J1/4 sites in 2004/05, based on the single sample limits and the TMDL WLAs (or allowable SS exceedance days).

Therefore, the interim targets[7], in terms of TED reductions, are as follows:

- 10% target – 3 TED reduction by 2009
- 25% target – 8 TED reduction by 2013

An analysis of the SS limit-based exceedance days demonstrated that the minimum percent concentration reductions required to achieve compliance with the 10% and 25% TED reduction targets are 23% and 69%, respectively. Therefore, these concentration reductions will be a minimum goal for the J1/4 IP activities.

3.6 Additional Observations

The following observations further emphasize the unpredictability of exceedance days (which may have implications regarding the potentially uncontrollable nature of exceedance days), the uncertain nature of the reference watershed condition, and the conservatism of the analysis (since even the reference watershed's exceedance days were beyond the WLA). One possible solution to this for the LARWQCB would be to make the reference watershed-based limits a moving target (i.e., defined by each year's data).

- Exceedance frequencies did not correlate well with either subwatershed priority (from the J1/4 IP) or predicted exceedance day reductions (from the TMDL).

- Enterococcus (most common indicator exceedance) concentrations were not correlated to rain depth (either 1 day or 4 day totals).

---

[7] The scope of this quantitative assessment only includes an analysis relative to the 10% and 25% interim targets.

- Wet-weather day exceedance probabilities were not statistically different than dry-weather day exceedance probabilities.

- Arroyo Sequit, the reference watershed, exceeded the SS limits on 4 days (based on weekly monitoring data), or 1 more than estimated in the TMDL. Stated differently, SS limits were exceeded 28 days (4 weeks x 7 days/week), or 11 beyond the allowable 17 from the TMDL.

4 ESTIMATE WATER QUALITY BENEFITS

The J1/4 IP categorizes activities as "commit", "pilot", and "consider". The purpose of this task is to quantify benefits of "committed" and "piloted" activities, in terms of total exceedance day (TED) reductions for the entire J1/4 area, for comparison with 10% and 25% interim targets. This analysis is referred to as the "quantitative assessment" portion of the report.

To accomplish this, J1/4 IP activities for Phases I-III (corresponding to the 10% and 25% interim target deadlines, respectively) were identified, conservatively translated into anticipated bacteria concentration reductions, and converted into TEDs as described in the approach outlined earlier in this report.

4.1 Approach

The basic rationale for the quantitative assessment is that BMP activities have predictable percent bacteria concentration reductions associated with them. It is further assumed that the reductions can be calculated based on outreach program effectiveness and bacteria source loads, in the case of non-structural activities, or based on BMP percent removal and area treated, in the case of structural activities. This approach is based in part on the quantitative assessment approaches implemented for other Santa Monica Bay Jurisdictions.

The quantitative assessment analysis was conducted as follows:

1. Non-structural and structural (on-site and regional) BMP activities for each subwatershed were determined from the J1/4 IP. Table 4 is an example subwatershed-specific BMP planning summary from the J1/4 IP.
2. Effectiveness was estimated for each BMP activity, in terms of percent bacteria concentration reduction. Percent (by area) implementation was assumed in some cases. Low and high effectiveness scenarios were simulated for comparison.
    a. For regional structural BMP activities: Percent concentration reductions were calculated based on estimated BMP percent removal and treated area (as percent of total watershed area). Estimated BMP percent

removal values are as follows: 99% for capture/reuse and disinfection/discharge BMPs, 90% for subsurface wetland, and 25% for creek restoration/biofiltration projects. These estimates assume that BMPs will be sized to the appropriate capture volume, so bypass discharges will only contribute to *allowable* exceedances (i.e., bypass frequencies will correspond to the allowable probability of exceedance).

   b. For on-site structural BMP activities: For areas that are not treated by regional structural BMPs, percent concentration reductions were assumed equal to BMP percent load reductions, which were calculated based on percent volume removal (80% based on SUSMP sizing), treated area (2.5% of total residential area), and reported residential runoff coefficients and fecal coliform event mean concentration values.

   c. For non-structural BMP activities: For areas that are not treated by structural BMPs, percent concentration reductions were calculated based on estimated program effectiveness (based on surveys for the Los Angeles County focused study) and targeted source percent contributions (based on relevant bacteria source tracking studies).

3. Total percent reductions (or reduction ranges) were computed for all BMP activities for each subwatershed. These percents were compiled for Phases I/II (combined) and Phase 3, since these were scheduled to correspond with the 10% and 25% interim targets, respectively, in the J1/4 IP. This quantitative assessment scope is for these two initial interim targets only.

4. The total percent reductions for each subwatershed were applied to the monitoring results, and single sample exceedance days were recomputed as described earlier.

5. The reduction in exceedance days were determined by comparing existing exceedance days with post-implementation exceedance days, and compared with the 10% and 25% interim targets, to assess anticipated effectiveness of the J1/4 IP.

Table 4. Example subwatershed-specific implementation plan

Latigo Best Management Practices	Commit	Pilot	Consider	Initiate Planning	Initiate Implementation*
Non-Structural Measures					
Public Information and Participation Programs					
Outreach to pet owners establishing a link between animal wastes and health issues and focus on point of contact or purchase	X			Phase 1	Phase 1
Locate areas with corralled animals and educate property owners on bacteria TMDLs		X		Phase 2	Phase 3
Post signs at County and City-owned trailheads designated for equestrian users to not clean out horse trailers in parking lots and to clean up horse waste			X	Phase 2	Phase 3*
Outreach at trailheads encouraging hikers to use restroom facilities			X	Phase 2	Phase 3*
Provide septic system (OWTS) pumpers and customers with septic system guides.	X			Phase 1	Phase 2
Increase coordination between agencies and environmental organizations in preparing outreach materials	X			Phase 1	Phase 1
Industrial/Commercial Facilities Control Programs					
Provide an outreach program for all commercial facilities with corralled animals, including equestrian centers			X	Phase 2	Phase 3*
Development Planning and Construction Program					
Further emphasize applicable existing BMPs in development planning and construction programs	X			Phase 2	Phase 2
Public Agency Activity Control Program					
Establish guidelines for optimizing frequency of cleaning cycles for drainage facilities	X			Phase 1	Phase 1
Caltrans-Malibu Joint Agency Activities			X	Phase 1	Phases 1 & 2
Structural Measures					
On-Site Options					
a) Cisterns	X			Phase 1 or 2	Phase 3
b) Storage and Reuse	X			Phase 1 or 2	Phase 3
c) Small Scale Infiltration	X			Phase 1 or 2	Phase 3
d) On-site Wastewater			X	Phase 3	Phase 4*
Regional Solutions					
- Capture, Store, Treat, and Discharge		X		Phase 1	Phase 3
Treatment Options					
- Traditional Treatment/Small Package			X	Phase 3	Phase 4*
- Storm Water Filtration			X	Phase 3	Phase 4*
- Advanced Oxidation			X	Phase 3	Phase 4*
- Peracetic Acid/bactericides			X	Phase 3	Phase 4*
- SSF Wetlands			X	Phase 3	Phase 4*

*if necessary

4.2 Assumptions

The assumptions inherent to this quantitative assessment approach are as follows:

- BMP percent concentration reductions are the same for each indicator group.
- Bacteria concentrations in stormwater are not a function of rainfall or runoff volume or intensity. Based on a regression analysis between rainfall depths (both 1 day and 4 day totals) and enterococcus concentrations (the most common cause of exceedance days at J1/4 sites in 2004/05), no correlation could be found, thus supporting this assumption.
- Bacteria source contributions (in terms of percent of total load) are not a function of rainfall or runoff volume or intensity (e.g., humans contribute x% of the total bacteria load regardless of whether there is a small or large storm).
- For regional structural BMP effectiveness estimates:
    - BMP designs will adhere to sizing criteria which are based on discharge frequencies equal to the reference watershed number of allowable yearly exceedances, therefore bypass or overflow conditions are assumed to correspond to allowable discharges.
    - BMP treatment area (in terms of percent of total developed area) and BMP effectiveness (in terms of anticipated influent vs effluent concentration reduction) can be multiplied to estimate percent bacteria concentration reductions at the subwatershed outlet.
- For regional and on-site structural BMP effectiveness estimates:
    - BMP percent concentration reduction is constant, is not a function of raw influent concentration, and is a sufficiently robust and predictable statistic for estimating BMP performance.
- For non-structural BMP effectiveness estimates:
    - Surveys for the Los Angeles County focused study on willingness to change pollutant-causing behaviors, which demonstrated approximately 50% implementation in response to outreach activities, are applicable for various outreach types (e.g., targeting pet, equestrian, or human sources) and for various demographics and coastal areas within the LA region.

- Source load percentages reported in relevant bacteria source tracking studies can be used to estimate maximum concentration reductions achievable.

4.3 J1/4 IP Activities

Subwatershed-specific BMPs that were modeled for this quantitative assessment analysis are summarized in Tables 5 and 6. Table 5 summarizes those activities planned for implementation in Phases I and II (which corresponds to the 10% interim target deadline), and Table 6 summarizes those activities planned for implementation in Phase III (which corresponds to the 25% interim target deadline.

Table 5. J1/4 IP Phase I/II BMP activities summary (for 10% interim target)

Subwatershed Priority Category	Key Non-Structural Activities Modeled	On-site Structural BMPs	Regional Structural BMPs
High Ramirez Latigo Corral Las Flores Piedra Gorda	Septic guidance, Pet owner outreach	None	None
Medium Los Alisos Escondido Carbon Topanga	Septic guidance, Pet owner outreach	None	None
Low Encinal Trancas Zuma Solstice Pena Tuna Nicolas	Septic guidance, Pet owner outreach	None	None

Table 6. J1/4 IP Phase III BMP activities summary (for 25% interim target)

<table>
<tr><th>Subwatershed</th><th>Priority Category</th><th>Key Non-Structural Activities Modeled</th><th>On-site Structural BMPs</th><th>Regional Structural BMPs</th></tr>
<tr><td>Arroyo Sequit</td><td>Reference Watershed</td><td>N/A</td><td>N/A</td><td>N/A</td></tr>
<tr><td>Nicholas</td><td>Low</td><td rowspan="16">Septic guidance,
Pet owner outreach,
Corralled animal owner outreach*,
Equestrian outreach & signage**</td><td>None</td><td>None</td></tr>
<tr><td>Los Alisos</td><td>Medium</td><td>Cisterns**
Storage/reuse**
Infiltration**
On-site wastewater**</td><td>None</td></tr>
<tr><td>Encinal</td><td>Low</td><td>None</td><td>None</td></tr>
<tr><td>Trancas</td><td>Low</td><td>None</td><td>None</td></tr>
<tr><td>Zuma</td><td>Low</td><td>None</td><td>None</td></tr>
<tr><td>Ramirez</td><td>High</td><td>Cisterns
Storage/reuse
Infiltration</td><td>Capture/store/ treat/discharge (disinfection)*</td></tr>
<tr><td>Escondido</td><td>Medium to High</td><td>Storage/reuse*
Infiltration*</td><td>None</td></tr>
<tr><td>Latigo</td><td>High</td><td>Cisterns
Storage/reuse
Infiltration</td><td>Capture/store/ treat/discharge (subsurface wetlands)*</td></tr>
<tr><td>Solstice</td><td>Low</td><td>None</td><td>None</td></tr>
<tr><td>Corral</td><td>High</td><td>Storage/reuse*
Infiltration</td><td>Capture/store/ treat/discharge (disinfection)*</td></tr>
<tr><td>Carbon</td><td>Medium</td><td>Cisterns**
Storage/reuse**
Infiltration**
On-site wastewater**</td><td>None</td></tr>
<tr><td>Las Flores</td><td>High</td><td>Cisterns
Storage/reuse
Infiltration</td><td>Creek restoration & biofiltration*</td></tr>
<tr><td>Piedra Gorda</td><td>High</td><td>Cisterns
Infiltration</td><td>None</td></tr>
<tr><td>Pena</td><td>Low</td><td>None</td><td>None</td></tr>
<tr><td>Tuna</td><td>Low</td><td>None</td><td>None</td></tr>
<tr><td>Topanga</td><td>Medium</td><td>Septic guidance,
Pet owner outreach,
Horse & corralled animal owner</td><td>Cisterns
Storage/reuse
Infiltration
On-site</td><td>Capture/store/ treat/discharge**
Capture/store/ treat/reuse**</td></tr>
</table>

		outreach*, Equestrian outreach & signage**	wastewater**	Various tmt. options**

* A *piloted* BMP according to the J1/4 IP's subwatershed specific BMP summary matrices.

** A *considered* and "if necessary" BMP according to the J1/4 IP's subwatershed specific BMP summary matrices. These BMPs were not modeled for the quantitative assessment.

4.3.1 Regional structural BMPs

For the J1/4 quantitative assessment analysis, only "commit" and "pilot" BMP activities were included. To conservatively assess water quality benefits of the J1/4 IP, "consider" activities were not assumed to be implemented. Regional structural BMPs here include capture, store, treat, and discharge or reuse projects. These BMPs are planned for 4 of the 5 high priority subwatersheds only, according to the J1/4 IP.

No regional structural BMPs are planned for Phase I/II, therefore no regional BMP effectiveness is assumed for Phase I/II. Regional structural BMP effectiveness, in terms of bacteria concentration reduction for Phase III, is summarized in Table 7 for those subwatersheds with plans for implementing regional pilot projects.

Table 7. Summary of Regional BMP Pilot Projects and Estimated Effectiveness Values

Subwatershed	Regional BMP Pilot Project Type	Est. BMP Effectiveness (in terms of percent removal)	Area Treated (as percent of total drainage area) per J1/4 IP	Total Conc. Reduction Assumed for Quantitative Assessment
Ramirez (SMB-1-7)	Storage/ Disinfection	99%	100%	99%
Latigo	Subsurface Wetlands	90%	90%	81%
Corral (SMB-1-12)	Storage/ Disinfection	99%	100%	99%
Las Flores	Creek restoration and biofiltration	25%	80%	20%

No regional structural BMP effectiveness is assumed for Phase III at other subwatersheds, which do not have plans for regional BMPs.

4.3.2 On-site structural BMPs

For the J1/4 quantitative assessment analysis, only "commit" and "pilot" BMP activities were included. To conservatively assess water quality benefits of the J1/4 IP, "consider" activities were not assumed to be implemented. On-site structural BMPs here include cisterns, storage/reuse, small scale infiltration, and on-site wastewater treatment systems. These BMPs are planned for the medium and high priority subwatersheds only, according to the J1/4 IP.

All on-site BMPs were assumed to have 100% effectiveness (since there would not be discharge below the design volume) and treated area coverages equal to 2.5% of the residential areas. 2.5% is based on an assumption that half of the cistern implementation target reported in the J1/4 IP (5-10% of total residential areas) will be achieved by the end of Phase III. Based on percent of total developed areas (i.e., dividing 2.5% of the residential area by total residential and commercial area), this rounds to 2% for all subwatersheds with plans for implementing on-site measures in Phase III.

Table 8 summarizes the land use profiles for each subwatershed, with those subwatersheds with plans for implementing on-site measures highlighted in bold. Residential/educational land use ranges from 10-25% for these subwatersheds. This table also summarizes the treated residential land use area as a percent of the total developed area for each subwatershed.

No on-site structural BMPs are planned for Phase I/II, therefore no on-site BMP effectiveness is assumed for Phase I/II. On-site structural BMP effectiveness, in terms of bacteria concentration reduction, for Phase III is estimated based on fecal coliform load reduction (approach described below) for those subwatersheds with plans for implementing on-site measures. No on-site structural BMP effectiveness is assumed for Phase III at the non-highlighted subwatersheds.

Table 8. Subwatershed land use summary for on-site BMP effectiveness analysis (Subwatersheds in bold are those with residential on-site BMPs planned for Phase III)

Sub-watershed	J1/4 IP Priority	Land Uses				Total Area (acres)
		Res/ Educ	Ind/ Comm	Managed Open Space	Natural Open Space	
Arroyo Sequit	**Reference**					
Los Alisos	Medium	11%	0%	1%	88%	2,377
Encinal	Low	10%	0%	1%	89%	1,826
Trancas	Low	10%	1%	3%	86%	6,580
Zuma	Low	12%	1%	3%	84%	6,256
Ramirez	**High**	**25%**	**1%**	**1%**	**73%**	**3,350**
Escondido	**Medium**	**14%**	**1%**	**2%**	**84%**	**2,300**
Latigo	**High**	**10%**	**0%**	**0%**	**90%**	**824**
Solstice	Low	3%	0%	0%	96%	2,836
Corral	**High**	**10%**	**2%**	**1%**	**87%**	**4,297**
Carbon	Medium	14%	2%	0%	84%	2,310
Las Flores	**High**	**10%**	**1%**	**0%**	**90%**	**2,920**
Piedra Gorda	**High**	**19%**	**0%**	**0%**	**81%**	**628**
Pena	Low	3%	0%	0%	97%	624
Tuna	Low	4%	0%	0%	96%	1,007
Topanga	**Medium**	**11%**	**0%**	**1%**	**88%**	**12,586**
Nicolas	Low	6%	0%	2%	92%	1,221

Using the modified rational method, land use areas from Table 8, and runoff coefficients from Ackerman & Schiff (2003) – also reported in the Los Angeles County-wide BMP Prioritization Methodology (Geosyntec, 2006) – total runoff volumes, normalized for precipitation (i.e., volumes per unit rainfall), were computed for each subwatershed. BMP capture volumes (again normalized) were then estimated for on-site structural BMPs based on assumptions for percent residential implementation (2.5%) and percent volume reduction per site (80% average annual volume capture assumed, consistent with SUSMP-based design criteria).

The percent volume capture formula is as follows:

$$V_B = PA_R * A_R * C_R * PV_R$$

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Where:

V_B = BMP Volume Capture (sum for on-site BMPs), per unit rain depth
PA_R = BMP Implementation as Percent of Total Residential Area
A_R = Total Residential Area
C_R = Residential Runoff Coefficient
PV_R = BMP Percent Volume Capture

Table 9 summarizes the land use runoff coefficients used. Table 10 summarizes the estimated volume capture values for all on-site BMPs.

Table 9. Land Use Runoff Coefficients (Ackerman & Schiff, 2003)

Land Use	**Runoff Coefficient**
Commercial	0.61
Open	0.06
Residential	0.39

Table 10. On-site Volume Capture Summary

Subwatershed	Total BMP Treatment Area (ac)	Residential Runoff Coefficient	Total BMP Volume Capture
Ramirez	21.4	0.39	6.7
Escondido	8.0	0.39	2.5
Latigo	2.0	0.39	0.6
Corral	10.6	0.39	3.3
Las Flores	7.1	0.39	2.2
Piedra Gorda	3.0	0.39	0.9
Topanga	35.2	0.39	11.0

Using the BMP volume capture estimates from above, plus average stormwater pollutant event mean concentration (EMC) values reported in the BMP Methodology (Geosyntec, 2006), percent fecal coliform load removal estimates were made for on-site structural BMPs is as follows:

$$PLC = \frac{V_B * EMC_R}{\sum_i A_i * C_i * EMC_i}$$

Where:

PLC = Cumulative On-site BMP Percent Pollutant Load Capture
V_B = BMP Volume Capture (sum for on-site BMPs), per unit rain depth
EMC_R = Average Event Mean Concentration (EMC) for Residential
i = Land Use Category
A_i = Total Area for Land Use i
C_i = Runoff Coefficient for Land Use i
EMC_i = Average EMC for Land Use i

Table 11 summarizes the land use average fecal coliform EMC values used. Table 12 summarizes the percent fecal coliform load capture estimates for on-site BMPs, by subwatershed. These load percents were then assumed to directly translate to percent bacteria concentration reductions based on the simplifying assumption that total subwatershed runoff volume reductions were negligible (otherwise this translation would require adjustment for total reduced volume); this approach is consistent with the method employed for other jurisdictions. Therefore Table 12 reports the final on-site BMP effectiveness estimates used for this Quantitative Assessment analysis.

Table 11. Average Fecal Coliform EMCs by Land Use (Geosyntec, 2006)

Land Use	Fecal Coliform, MPN/100ml
Commercial/ Educational	72,035
Open	255
HDSF Residential	98,272

Table 12. On-site Fecal Coliform Load Capture Summary (as percent of total load)

Subwatershed	Bacteria (Fecal Coliform)
Ramirez	1.9%
Escondido	1.9%
Latigo	2.0%
Corral	1.6%
Las Flores	1.9%
Piedra Gorda	2.0%
Topanga	1.9%

4.3.3 Non-structural BMPs

For the J1/4 quantitative assessment analysis, only "commit" and "pilot" BMP activities were included. To conservatively assess water quality benefits of the J1/4 IP, "consider" activities were not assumed to be implemented. Non-structural BMPs here include outreach activities to pet owners, corralled animal owners, equestrian hobbyists, and septic system owners. These BMPs are planned for all priority subwatersheds, according to the J1/4 IP.

Non-structural BMPs were assumed to be 50% effective (in terms of behavior change) based on Los Angeles County surveys on willingness to change pollutant-causing behavior.

Humans and pets (addressed in all subwatersheds in Phase I/II) were assumed to contribute 22% of the total source load, based on minimum values reported by relevant bacteria source tracking studies conducted in similar watersheds, in terms of land uses (i.e., low urbanization) and region (i.e., central/southern California). Corralled animals (addressed in all subwatersheds in Phase III) were assumed to contribute a negligible portion of the total source. Horses (addressed only in the Topanga subwatershed, during Phase III) were assumed to contribute 2% of the total source load. Table 13 summarizes the source contributions reported in the referenced studies.

Non-structural BMP effectiveness for Phase I/II is estimated at 11%, in terms of bacteria concentration reduction. This is based on 50% implementation effectiveness multiplied by 22% human and pet source contributions. No addition non-structural BMP effectiveness is assumed for all subwatersheds other than Topanga for Phase III due to negligible source contributions reported for corralled animals in analogous watersheds. Phase III non-structural reduction at Topanga is estimated at 12% since horse control measures are also proposed here for pilot implementation. Reductions associated with equestrian BMPs are not included in the reduction estimates for other subwatersheds since their equestrian-related non-structural activities are included as "to be considered" or "if necessary" BMPs in the J1/4 IP.

Table 13. Bacteria source tracking studies used for the J1/4 quantitative assessment.

Watershed:	Rincon Watershed*	Morro Bay**	San Lorenzo River	Value Used for Quant. Assessment
Year of Report:	1999	2002	2006	NA
CA County:	Ventura	San Louis Obispo	Santa Cruz	NA
Primary Land Uses:	Open, agriculture, residential (on septic, near lagoon mouth)	Open, agriculture, rangeland, urban near watershed outlets	Open, some agriculture (incl. livestock), some urban (incl. rural residential on septic)	NA
Percent contributions, by source:				
Human:	35%	13-19%	25%	13%
Domestic Pets (cat/dog):	13%	13-18%	9%	9%
Corralled Animals (cow/sheep):	3%	8-32%	1%	0%
Horse:	6%	2-4%	4%	2%

* Results shown for point zero (surf zone at lagoon outlet) sampling site.
** Results shown for Los Osos and Chorro Creeks.

4.4 Estimated Water Quality Benefits

Estimated bacteria percent concentration reductions, by subwatershed, are summarized in Table 14 for Phase I/II (corresponding to the 10% interim target deadline), and in Table 15 for Phase III (corresponding to the 25% interim target deadline). To avoid double counting, for Phase III subwatersheds where multiple BMPs are planned, total concentration reductions were estimated by the following steps:

1. For Latigo and Las Flores subwatersheds: On-site structural BMP effectiveness estimates were summed with the regional BMP effectiveness estimates based on the assumption that on-site BMPs can be located upstream of these subsurface wetland and creek restoration/biofiltration projects, and their benefits still be realized. It was also assumed that estimated on-site BMP effectiveness values were small enough, and estimation methods conservative enough, that double-counting impacts would be negligible. Non-structural BMP effectiveness estimates were multiplied by the area not treated by these regional projects (10% and 20% for Latigo and Las Flores, respectively), and this scaled-down effectiveness was added to the on-site/regional effectiveness total.

2. For Ramirez (SMB-1-7) and Corral (SMB-1-12) subwatersheds: On-site structural and non-structural BMP effectiveness estimates were not included due to the significant effectiveness (99%) already estimated for these disinfection regional BMP projects.

3. For Ramirez (SMB-1-6), Corral (SMB-1-11), Escondido, Piedra Gorda, and Topanga subwatersheds: No regional BMPs proposed for these subwatersheds. On-site BMP effectiveness estimates were simply summed with non-structural BMP effectiveness estimates. It was assumed that estimated on-site BMP effectiveness values were small enough, and estimation methods conservative enough, that double-counting impacts would be negligible.

4. For all other subwatersheds: Only non-structural BMPs apply here.

Table 14. J1/4 IP Phase I/II Estimated Percent Concentration Reduction Benefits (for 10% interim target)

Subwatershed Priority Category	Non-Structural BMPs	On-site Structural BMPs	Regional Structural BMPs
High Ramirez Latigo Corral Las Flores Piedra Gorda	11% (based on 50% reduction of pet, human contributions)	None	None
Medium Los Alisos Escondido Carbon Topanga	11% (based on 50% reduction of pet, human contributions)	None	None
Low Encinal Trancas Zuma Solstice Pena Tuna Nicolas	11% (based on 50% reduction of pet, human contributions)	None	None

Table 15. J1/4 IP Phase III Estimated Bacteria Concentration Reduction Benefits (for 25% interim target)

Subwatershed	Priority Category	Non-Structural BMPs	On-site Structural BMPs	Regional Structural BMPs	Total Concentration Reduction
Arroyo Sequit	Reference Watershed	N/A	N/A	N/A	N/A
Nicholas	Low	11% (based on 50% reduction of pet, human, and corralled animal contributions)	0%	0%	11%
Los Alisos	Medium		0%	0%	11%
Encinal	Low		0%	0%	11%
Trancas	Low		0%	0%	11%
Zuma	Low		0%	0%	11%
Ramirez (SMB-1-6)	High		2%	0%	13%
Ramirez (SMB-1-7)	High		0%	99%	99%
Escondido	Medium to High		2%	0%	13%
Latigo	High		2%	81%	84%
Solstice	Low		0%	0%	11%
Corral (SMB-1-11)	High		2%	0%	13%
Corral (SMB-1-12)	High		0%	99%	99%
Carbon	Medium		0%	0%	11%
Las Flores	High		2%	20%	24%
Piedra Gorda	High		2%	0%	13%
Pena	Low		0%	0%	11%
Tuna	Low		0%	0%	11%
Topanga	Medium	12% (including equestrian BMPs)	2%	0%	14%

4.5 Comparison to Interim Targets

Computed SS exceedance day reductions, based on estimated bacteria percent concentration reductions and 2004/05 monitoring data, are summarized in Table 12.

These results demonstrate that total estimated exceedance day reductions for Phase I/II of the J1/4 IP do not meet the 10% interim target, although the total estimated exceedance day reductions for Phase III of the J1/4 IP do meet the 25% interim target.

4.6 Table 16. J1/4 Estimated SS Exceedance Day Reductions (based on 2004/05 monitoring data)

Subwatershed	2004/05 Weekly SS Exceedance Days Above Allowable	2004/05 Weekly SS Exceedance Days Above Allowable **at 10% IT Deadline**	2004/05 Weekly SS Exceedance Days Above Allowable **at 25% IT Deadline**
Arroyo Sequit (ref. watershed)	1	1	1
Los Alisos	0	0	0
Encinal	0	0	0
Trancas	2	2	2
Zuma	4	4	4
Ramirez (SMB-1-6)	0	0	0
Ramirez (SMB-1-7)	4	4	0
Escondido	2	2	2
Latigo	1	1	0
Solstice	2	2	2
Corral (SMB-1-11)	0	0	0
Corral (SMB-1-12)	6	6	0
Carbon	3	2	2
Las Flores	4	4	4
Piedra Gorda	0	0	0
Pena	0	0	0
Tuna	0	0	0
Topanga	3	2	2
Nicholas	0	0	0
Total (Excluding Ref. Watershed, Arroyo Sequit)	**31**	**29**	**18**
No. of Exceedance Day Reductions		**2**	**13**
Percentage Effectiveness		**6%**	**42%**

5 ESTIMATE INTEGRATED WATER RESOURCES BENEFITS

5.1 Thresholds for Quantified Benefits

Resolution No. 2006-005, item 6 states that "a longer implementation schedule… shall be granted if there is a clear demonstration that an integrated water resources approach will be pursued…. The types of approaches coupled with quantifiable estimates of the integrated water resources benefits of the proposed structural and non-structural BMPs included in the Implementation Plan would provide the obligatory demonstration that an integrated water resources approach is being pursued. This demonstration shall provide numeric estimates of the benefits, including the reductions in other pollutants, groundwater recharged, acres of multi-use projects, and water (e.g., stormwater, runoff, wastewater) beneficially reused among other integrated water resources criteria…"

In order to provide a clear demonstration of integrated water resources, the following thresholds were established to be the criteria related to quantifiable (numeric) estimates.

5.1.1 Threshold for reductions of pollutants

For the first (10 percent) interim target deadline, each subwatershed will implement BMPs that address targeted pollutant groups. These pollutant groups are consistent with the Los Angeles County-Wide BMP Prioritization Methodology (Geosyntec, 2006) jointly established by the County of Los Angeles, City of Los Angeles and Heal the Bay, funded by the State Water Resources Control Board, and administered by the Regional Water Quality Control Board. These pollutant groups (excluding bacteria) are nutrients, metals, total suspended sediment (TSS), and trash.

For the second (25 percent) interim target deadline, numeric reductions in pollutant loads and concentrations will, on a limited basis, mimic the spatial patterns of the anticipated bacteria load reductions. Because target reductions have not been established in TMDL Implementation Plans, it is assumed that significant load reductions will constitute a clear demonstration of quantified benefits.

5.1.2 Groundwater recharged

As discussed in the Implementation Plan, groundwater recharge opportunities are limited due to soil types and steep slope conditions. Furthermore, groundwater is not a water supply resource locally, and infiltration near onsite wastewater systems may cause undesired impacts to water quality. Therefore, regional groundwater recharge (exclusive of limited onsite site-design measures) was not considered an integrated water resource benefit that should be implemented or quantified.

Implementation of groundwater-related on-site measures will be implemented as part of the 25 percent interim target deadline and coordinated with water reuse measures. The thresholds for a clear demonstration of groundwater-related on-site BMPs are twofold: 1) the percentages of watersheds in which small-scale BMPs are implemented (with a target equal to the 25% interim exceedance day reduction target), and 2) the volume of potential water captured.

5.1.3 Water reused

Water reuse BMPs include residential cisterns and onsite storage and reuse projects. The thresholds for a clear demonstration of water reuse-related on-site BMPs are twofold: 1) the percentages of watersheds in which cisterns and onsite project BMPs are implemented (with a target equal to the 25% interim exceedance day reduction target), and 2) the volume of potential water captured.

5.1.4 Other benefits

The implementation plan also described other beneficial uses, some of which are not described in the TMDL, but may still have significant value to the region. These additional benefits are habitat development, geomorphology and hydrology considerations, and flood control The thresholds for these measures are limited to an accounting of the number (and fraction) of the subwatersheds where these benefits are anticipated.

5.1.5 Acres of project

As described in the Implementation Plan the following describes current land use in the J1/4 jurisdictional areas. Managed and natural open spaces comprise 88% of the total jurisdictional areas. Acreage for project implementation will be limited to partial utilization on specific parcels, and selected regional facilities. In most cases, the regional facilities that provide any direct integrated benefits (such as the subsurface wetlands in Latigo and stream restoration in Las Flores) are already open space. Therefore, because any changes in land use acreage would not change the land use distribution, acres of project are not discussed in terms of a metric for quantifying integrated benefits.

Land Use	Acres	Percentage
Residential/Educational	5,983	11%
Industrial/Commercial	398	1%
Managed Open Space	609	1%
Natural Open Space	47,650	87%
Total	54,640	100 %

5.2 Potential for compliance with interim thresholds based on watershed implementation

The following table quantifies the extent of compliance of integrated water resources elements based on spatial distribution and subwatershed implementation.

Integrated Water Resources (IWR) Elements	Percentage of subwatersheds implementing	
	10 Percent Bacteria Target	*25 Percent Bacteria Target*
Multiple Pollutants Addressed	100%	*100%*
Groundwater Recharged	Planning only	*44% (7 of 16)*
Water reused	Planning only	*44% (7 of 16)*
Other benefits	*100%*	*100%*

Tables 17-20 summarize, for each recommended BMP and for each subwatershed, both the target pollutants and the water resources benefits.

Table 17. Multi-Pollutant Benefits Summary Matrix

Phase I/II - Water Quality - 10% Interim Targets	Water Quality Benefits: Multiple Pollutants - Committed and Piloted BMPs															
BMPs and Activities					B = Bacteria	N = Nutrients	M = Metals	O = Organics	P = Pathogens	T = Trash						
Non-Structural Measures	**Nicholas**	**Los Alisos**	**Encinal**	**Trancas**	**Zuma**	**Ramirez**	**Escondido**	**Latigo**	**Solstice**	**Corral**	**Carbon**	**Las Flores**	**Piedra Gorda**	**Pena**	**Tuna**	**Topanga**
Public Information Participation Programs																
Outreach to pet owners establishing a link between animal wastes and health issues and focus on point of contact	B, N, P	B, N, P	B, N, P	B, N, P	B, N, P	B, N, P	B, N, P	B, N, P	B, N, P	B, N, P	B, N, P	B, N, P	B, N, P	B, N, P	B, N, P	B, N, P
Locate areas with corralled animals and educate property owners on bacteria TMDLs	B, N, P			B, N, P	B, N, P	B, N, P	B, N, P	B, N, P	B, N, P			B, N, P				B, N, P
Identify horse stables in the region and implement pilot program	B, N, P				B, N, P											B, N, P
Coordinate outreach activities with Pepperdine										B, N, M, O						
Increase coordination between agencies and environmental organizations in preparing outreach materials	B, N, M, O, P	B, N, M, O, P	B, N, M, O, P	B, N, M, O, P	B, N, M, O, P	B, N, M, O, P	B, N, M, O, P	B, N, M, O, P		B, N, M, O, P	B, N, M, O, P	B, N, M, O, P	B, N, M, O, P	B, N, M, O, P	B, N, M, O, P	B, N, M, O, P
Industrial / Commercial Facilities Control Programs																
Provide for regular BMP inspections for restaurants				B, N, P	B, N, P	B, N, P				B, N, P	B, N, P	B, N, P			B, N, P	B, N, P
Increase awareness of BMPs in restaurants by establishing a restaurant reward and recognition program										B, N, P	B, N, P				B, N, P	B, N, P
Conduct industry-specific workshops				B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T				B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T			B, N, M, O, P, T	B, N, M, O, P, T
Investigate the possibility of increasing frequency of trash collection at restaurants				B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T				B, N, M, O, P, T	B, N, M, O, P, T					B, N, M, O, P, T
Development Planning and Construction Programs																
Further emphasize applicable existing BMPs in development planning and construction programs	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T

Table 17 – cont.

Phase I/II - Water Quality - 10% Interim Targets	Water Quality Benefits: Multiple Pollutants - Committed and Piloted BMPs															
BMPs and Activities					B = Bacteria	N = Nutrients	M = Metals	O = Organics	P = Pathogens	T = Trash						
Non-Structural Measures – cont.	**Nicholas**	**Los Alisos**	**Encinal**	**Trancas**	**Zuma**	**Ramirez**	**Escondido**	**Latigo**	**Solstice**	**Corral**	**Carbon**	**Las Flores**	**Piedra Gorda**	**Pena**	**Tuna**	**Topanga**
Public Agency Activity Control Program																
Establish guidelines for optimizing frequency of cleaning cycles for drainage facilities and implement recommendations on Caltrans facilities	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T		B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T
Structural Measures*																
On-Site Options																
Residential Cisterns																
On-site Storage and Reuse Projects																
Small Scale Infiltration Projects																

*Structural Measures will not be implemented during Phase I/II

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Table 18. Multi-Pollutant Benefits Summary Matrix

Phase III - Water Quality - 25% Interim Target	Water Quality Benefits: Multiple Pollutants - Committed and Piloted BMPs															
BMPs and Activities					B = Bacteria	N = Nutrients	M = Metals	O = Organics	P = Pathogens	T = Trash						
Non-Structural Measures	**Nicholas**	**Los Alisos**	**Encinal**	**Trancas**	**Zuma**	**Ramirez**	**Escondido**	**Latigo**	**Solstice**	**Corral**	**Carbon**	**Las Flores**	**Piedra Gorda**	**Pena**	**Tuna**	**Topanga**
Public Information Participation Programs																
Outreach to pet owners establishing a link between animal wastes and health issues and focus on point of contact	B, N, P	B, N, P	B, N, P	B, N, P	B, N, P	B, N, P	B, N, P	B, N, P	B, N, P	B, N, P	B, N, P	B, N, P	B, N, P	B, N, P	B, N, P	B, N, P
Locate areas with corralled animals and educate property owners on bacteria TMDLs	B, N, P			B, N, P	B, N, P	B, N, P	B, N, P	B, N, P	B, N, P			B, N, P				B, N, P
Identify horse stables in the region and implement pilot program	B, N, P				B, N, P											B, N, P
Coordinate outreach activities with Pepperdine University										B, N, M, O						
Increase coordination between agencies and environmental organizations in preparing outreach materials	B, N, M, O, P	B, N, M, O, P	B, N, M, O, P	B, N, M, O, P	B, N, M, O, P	B, N, M, O, P	B, N, M, O, P	B, N, M, O, P		B, N, M, O, P	B, N, M, O, P	B, N, M, O, P	B, N, M, O, P	B, N, M, O, P	B, N, M, O, P	B, N, M, O, P
Industrial / Commercial Facilities Control Programs																
Provide for regular BMP inspections for restaurants				B, N, P	B, N, P	B, N, P				B, N, P	B, N, P	B, N, P			B, N, P	B, N, P
Increase awareness of BMPs in restaurants by establishing a restaurant reward and recognition program										B, N, P	B, N, P				B, N, P	B, N, P
Conduct industry-specific workshops				B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T				B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T			B, N, M, O, P, T	B, N, M, O, P, T

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Table 18 – Cont.

Phase III - Water Quality - 25% Interim Target	Water Quality Benefits: Multiple Pollutants - Committed and Piloted BMPs															
BMPs and Activities					B = Bacteria	N = Nutrients	M = Metals	O = Organics	P = Pathogens	T = Trash						
Industrial / Commercial Facilities Control Programs – cont.	Nicholas	Los Alisos	Encinal	Trancas	Zuma	Ramirez	Escondido	Latigo	Solstice	Corral	Carbon	Las Flores	Piedra Gorda	Pena	Tuna	Topanga
Investigate the possibility of increasing frequency of trash collection at restaurants				B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T				B, N, M, O, P, T	B, N, M, O, P, T					B, N, M, O, P, T
Development Planning and Construction Programs																
Further emphasize applicable existing BMPs in development planning and construction programs	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T
Public Agency Activity Control Program																
Establish guidelines for optimizing frequency of cleaning cycles for drainage facilities and implement recommendations on facilities	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T		B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T	B, N, M, O, P, T
Structural Measures																
On-Site Options																
Residential Cisterns						B, N, M, O, P		B, N, M, O, P				B, N, M, O, P	B, N, M, O, P			B, N, M, O, P
On-site Storage and Reuse Projects						B, N, M, O, P	B, N, M, O, P	B, N, M, O, P				B, N, M, O, P				B, N, M, O, P
Small Scale Infiltration Projects						B, N, M, O, P	B, N, M, O, P	B, N, M, O, P		B, N, M, O, P		B, N, M, O, P	B, N, M, O, P			B, N, M, O, P
Pilot Project Treatment Options																
Paradise Cove Pretreatment and System Upgrade						B, N, M, P										
Las Flores Canyon Restoration and Water Quality Improvements (Biofiltration and infiltration)												B, N, M, O, P				
Marie Canyon Drain Retrofit / Perocetic Acid/bactericides										B, N only						
Latigo Shores Subsurface Flow Wetlands								B, N, M, O, P								

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Table 19. IWR Benefits Summary Matrix

Phase I/II - Integrated Water Resources - 10% Interim Target

Integrated Water Resources Activities - Committed and Piloted BMPs

BMPs and Activities

CONS = water conserve | RE = reuse/recycling | HAB = habitat | GEO = geomorphology | HYD = hydrology | FLD = flood & volume

Non-Structural Measures	Nicholas	Los Alisos	Encinal	Trancas	Zuma	Ramirez	Escondido	Latigo	Solstice	Corral	Carbon	Las Flores	Piedra Gorda	Pena	Tuna	Topanga
Public Information Participation Programs																
Identify horse stables in the region and implement pilot program	GEO	N/A	N/A	N/A	GEO	N/A	GEO	GEO	GEO	GEO	GEO	GEO	GEO	GEO	GEO	GEO
Coordinate outreach activities with Pepperdine University	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	CONS, RE	N/A	N/A	N/A	N/A	N/A	N/A
Increase coordination between agencies and environmental organizations in preparing outreach materials	CONS, RE,HAB, GEO, HYD, FLD	CONS, RE,HAB, GEO, HYD, FLD	CONS, RE,HAB, GEO, HYD, FLD	CONS, RE,HAB, GEO, HYD, FLD	CONS, RE,HAB, GEO, HYD, FLD	CONS, RE,HAB, GEO, HYD, FLD	CONS, RE,HAB, GEO, HYD, FLD	CONS, RE,HAB, GEO, HYD, FLD	CONS, RE,HAB, GEO, HYD, FLD	CONS, RE,HAB, GEO, HYD, FLD	CONS, RE,HAB, GEO, HYD, FLD	CONS, RE,HAB, GEO, HYD, FLD	CONS, RE,HAB, GEO, HYD, FLD	CONS, RE,HAB, GEO, HYD, FLD	CONS, RE,HAB, GEO, HYD, FLD	CONS, RE,HAB, GEO, HYD, FLD
Industrial / Commercial Facilities Control Programs																
Conduct industry-specific workshops	N/A	N/A	N/A	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	N/A	N/A	N/A	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	N/A	N/A	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD
Development Planning and Construction Programs																
Further emphasize applicable existing BMPs in development planning and construction programs	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD

Table 20. IWR Benefits Summary Matrix

Phase III - Integrated Water Resources - 25% Interim Target

Integrated Water Resources Activities - Committed and Piloted BMPs

BMPs and Activities

CONS = water conserve; RE = reuse/recycling; HAB = habitat; GEO = geomorphology; HYD = hydrology; FLD = flood & volume

Non-Structural Measures	Nicholas	Los Alisos	Encinal	Trancas	Zuma	Ramirez	Escondido	Latigo	Solstice	Corral	Carbon	Las Flores	Piedra Gorda	Pena	Tuna	Topanga
Public Information Participation Programs																
Identify horse stables in the region and implement pilot program	GEO	N/A	N/A	N/A	GEO	N/A	GEO	GEO	GEO	GEO	GEO	GEO	GEO	GEO	GEO	GEO
Increase coordination between agencies and environmental organizations in preparing outreach materials	CONS, RE,HAB, GEO, HYD, FLD	CONS, RE,HAB, GEO, HYD, FLD	CONS, RE,HAB, GEO, HYD, FLD	CONS, RE,HAB, GEO, HYD, FLD	CONS, RE,HA B, GEO, HYD, FLD	CONS, RE,HAB, GEO, HYD, FLD	CONS, RE,HAB, GEO, HYD, FLD	CONS, RE,HA B, GEO, HYD, FLD	CONS, RE,HAB, GEO, HYD, FLD	CONS, RE,HAB, GEO, HYD, FLD	CONS, RE,HAB, GEO, HYD, FLD	CONS, RE,HAB, GEO, HYD, FLD	CONS, RE,HAB, GEO, HYD, FLD	CONS, RE,HA B, GEO, HYD, FLD	CONS, RE,HA B, GEO, HYD, FLD	CONS, RE,HAB, GEO, HYD, FLD
Industrial / Commercial Facilities Control Programs																
Conduct industry-specific workshops	N/A	N/A	N/A	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	N/A	N/A	N/A	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	N/A	N/A	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD
Development Planning and Construction Programs																
Further emphasize applicable existing BMPs in development planning and construction programs	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD

Table 20 – Cont.

Phase III - Integrated Water Resources - 25% Interim Target

BMPs and Activities

Integrated Water Resources Activities - Committed and Piloted BMPs

CONS = water conserve; RE = reuse/recycling; HAB = habitat; GEO = geomorphology; HYD = hydrology; FLD = flood & volume

Structural Measures	Nicholas	Los Alisos	Encinal	Trancas	Zuma	Ramirez	Escondido	Latigo	Solstice	Corral	Carbon	Las Flores	Piedra Gorda	Pena	Tuna	Topanga
On-Site Options																
Residential Cisterns	N/A	N/A	N/A	N/A	N/A	CONS, RE, HAB, GEO, HYD, FLD	N/A	CONS, RE, HAB, GEO, HYD, FLD	N/A	N/A	N/A	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	N/A	N/A	CONS, RE, HAB, GEO, HYD, FLD
On-site Storage and Reuse Projects	N/A	N/A	N/A	N/A	N/A	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	N/A	N/A	N/A	CONS, RE, HAB, GEO, HYD, FLD	N/A	N/A	N/A	CONS, RE, HAB, GEO, HYD, FLD
Small Scale Infiltration Projects	N/A	N/A	N/A	N/A	N/A	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	N/A	CONS, RE, HAB, GEO, HYD, FLD	N/A	CONS, RE, HAB, GEO, HYD, FLD	CONS, RE, HAB, GEO, HYD, FLD	N/A	N/A	CONS, RE, HAB, GEO, HYD, FLD
Pilot Project Treatment Options																
Las Flores Canyon Restoration and Water Quality Improvements (Biofiltration and infiltration)												GEO, HYD, FLD				
Latigo Shores Subsurface Flow Wetlands								CONS, RE, HAB								

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5.3 Quantified IWR Benefits – Water Conservation

Using the modified rational method, land use information from the Implementation Plan, and runoff coefficients from Ackerman & Schiff (2003) – also reported in the Los Angeles County-wide BMP Prioritization Methodology (Geosyntec, 2006) – total runoff volumes, normalized for precipitation (i.e., volumes per unit rainfall), were computed for each subwatershed. BMP capture volumes (again normalized) were then estimated for on-site structural BMPs based on assumptions for percent residential implementation (2.5%, from Section 3) and percent volume reduction per site (80% average annual volume capture assumed, consistent with SUSMP-based design criteria). To estimate reuse volumes, cisterns and storage/reuse BMP capture volumes were used (assumed 2/3 of total on-site BMP application). To estimate groundwater recharge volumes, infiltration BMP capture volumes were used (assumed 1/3 of total on-site BMP application). Percent of total subwatershed runoff volume was used to characterize these benefits. No regional structural or non-structural water conservation benefits were quantified.

The percent volume capture formula is as follows:

$$PVC = \frac{PA_R * A_R * C_R * PV_R}{A_S * C_S}$$

Where:

PVC = Cumulative BMP Percent Volume Capture
PA_R = BMP Implementation as Percent of Total Residential Area
A_R = Total Residential Area
C_R = Residential Runoff Coefficient
PV_R = BMP Percent Volume Capture
A_S = Total Subwatershed Area
C_S = Subwatershed Net Runoff Coefficient

Table 21 summarizes the land use runoff coefficients used. Tables 22 and 23 summarize the percent volume capture estimates for reuse and infiltration BMPs, respectively.

Table 21. Land Use Runoff Coefficients (Ackerman & Schiff, 2003)

Land Use	Runoff Coefficient
Commercial	0.61
Open	0.06
Residential	0.39

Table 22. On-site Reuse Volume Summary (Cisterns and Storage/Reuse BMPs)

Subwatershed	Total BMP Treatment Area (ac)	Residential Runoff Coefficient	Total BMP Volume Capture (ac-ft)	Sub-watershed Area (ac)	Sub-watershed Net Runoff Coefficient	Sub-watershed Total Volume (ac-ft)	Percent Volume Reuse
Ramirez	14.2	0.39	4.4	3,350	0.149	498	0.9%
Escondido	5.3	0.39	1.7	2,300	0.108	250	0.7%
Latigo	1.3	0.39	0.4	824	0.093	76	0.5%
Corral	7.1	0.39	2.2	4,297	0.106	454	0.5%
Las Flores	4.7	0.39	1.5	2,920	0.095	278	0.5%
Piedra Gorda	2.0	0.39	0.6	628	0.124	78	0.8%
Topanga	23.5	0.39	7.3	12,586	0.098	1,238	0.6%

Table 23. On-site Groundwater Recharge Volume Summary (infiltration BMPs)

Sub-watershed	Total BMP Treatment Area (ac)	Residential Runoff Coeff.	Total BMP Volume Capture (ac-ft)	Sub-watershed Area (ac)	Sub-watershed Net Runoff Coefficient	Sub-watershed Total Volume (ac-ft)	Percent Volume Infiltr.
Ramirez	7.1	0.39	2.2	3,350	0.149	498	0.4%
Escondido	2.7	0.39	0.8	2,300	0.108	250	0.3%
Latigo	0.7	0.39	0.2	824	0.093	76	0.3%
Corral	3.5	0.39	1.1	4,297	0.106	454	0.2%
Las Flores	2.4	0.39	0.7	2,920	0.095	278	0.3%
Piedra Gorda	1.0	0.39	0.3	628	0.124	78	0.4%
Topanga	11.7	0.39	3.7	12,586	0.098	1,238	0.3%

5.4 Quantified Multi-Pollutant Benefits

Using the BMP volume capture estimates from above, plus average stormwater pollutant event mean concentration (EMC) values reported in the BMP Methodology (Geosyntec, 2006), percent load removal estimates were made for total suspended solids (TSS; sediment metric), trash, nitrate (nutrient metric), and total lead (metal metric).

The percent load capture formula for on-site structural BMPs is as follows:

$$PLC = \frac{V_B * EMC_R}{\sum_i A_i * C_i * EMC_i}$$

Where:

PLC = Cumulative On-site BMP Percent Pollutant Load Capture
V_B = BMP Volume Capture (sum for on-site BMPs)
EMC_R = Average Event Mean Concentration (EMC) for Residential
i = Land Use Category
A_i = Total Area for Land Use i
C_i = Runoff Coefficient for Land Use i
EMC_i = Average EMC for Land Use i

Table 24 summarizes the land use average EMC values used. Table 25 summarizes the percent pollutant load capture estimates for on-site BMPs, by subwatershed.

Multi-pollutant benefits were also evaluated for the four regional structural BMP projects proposed. A simple load reduction estimation approach was employed. Percent volume capture was multiplied by percent concentration reduction, as shown in the formula below. Average percent volume capture is assumed equal to percent area treated, as reported in section 4.3.1, therefore this approach is only appropriate for flows below the water quality volume. Unlike the on-site BMP load reduction estimation approach, a percent concentration reduction term was required for each regional BMP for each pollutant because these are flow-through BMP types (i.e., removal is less than 100%). These assumed percent concentration reduction values are summarized in Table 26, and are approximations based on best professional judgment.

The estimated load reductions for each regional BMP project are summarized in Table 27.

The percent load reduction formula for regional structural BMPs is as follows:

$$PLR = PV_B * PCR_V$$

Where:

PLR = Regional BMP Percent Pollutant Load Reduction
PV_B = BMP Percent Volume Treatment (of total subwatershed runoff volume)
PCR_B = BMP Percent Concentration Reduction

Non-structural BMP multi-pollutant benefits were evaluated qualitatively and are summarized in Table 28. These results are based on reported estimates from the Malibu Creek Quantitative Assessment, Task QA.3 (CDM, 2006) as well as an understanding of the source and transport mechanisms associated with each pollutant and targeted by each non-structural activity.

Table 24. Average EMCs by Land Use for Indicator Pollutants (Geosyntec, 2006)

Land Use	Trash, cf/ac	Nitrate, mg/L-N	Total Lead, ug/L	TSS, mg/L
Commercial/ Educational	1.0	0.46	2.1	58
Open	0.0	1.0	0.01	28
HDSF Residential	1.0	0.30	5.0	65

Table 25. On-site Pollutant Load Capture Summary (as percent of total load)

Subwatershed	Trash	Nutrients (Nitrate)	Metals (Total Lead)	Sediment (TSS)
Ramirez	1.9%	0.8%	2.0%	1.6%
Escondido	1.9%	0.5%	1.9%	1.4%
Latigo	2.0%	0.3%	2.0%	1.2%
Corral	1.5%	0.3%	1.7%	1.0%
Las Flores	1.8%	0.3%	1.9%	1.2%
Piedra Gorda	2.0%	0.6%	2.0%	1.6%
Topanga	1.9%	0.4%	2.0%	1.3%

Table 26. Estimated Average Percent Concentration Reductions by Regional BMP Type

Regional BMP Type	Trash, cf/ac	Nitrate, mg/L-N	Total Lead, ug/L	TSS, mg/L
Storage/Treatment	90%	30%	30%	50%
Subsurface Flow Wetlands	90%	90%	90%	90%
Creek Restoration/ Biofiltratoin	30%	90%	70%	70%

Table 27. Regional BMP Pollutant Load Capture Summary (as percent of total load)

Subwatershed (proposed regional BMP project type)	Trash	Nutrients (Nitrate)	Metals (Total Lead)	Sediment (TSS)
Ramirez (SMB-1-7) (storage/ treatment)	90%	30%	30%	50%
Latigo (subsurface flow wetland)	81%	81%	81%	81%
Corral (storage/ treatment)	90%	30%	30%	50%
Las Flores (SMB-1-2) (restoration/ biofiltration)	24%	72%	56%	56%

Table 28. Reduction in Non-Bacteria Related Pollutant Loads that Could be Achieved by Non-Structural BMPs Proposed in the J1/4 IP

BMP	Trash	Nutrients (Nitrate)	Metals (Total Copper)	Sediment (TSS)
Septic Guidance	Low	High	Low	Low
Pet Owner Outreach	Low	High	Low	Medium
Horse & Corralled Animal Owner Outreach	Low	Medium	Low	Medium

6 LIMITATIONS

The following limitations are provided to clarify and constraint potential future applications of this analysis:

- The purpose of analysis was solely to meet submittal requirements established by the LARWQCB that were stipulated in order to establish an integrated water resources approach (and commensurate implementation schedule). No other use or application is intended.

- The analyses should be revisited should any other application be considered.

- The analyses presented herein were based on previously submitted methodologies and assumptions that were previously approved in concept by the LARWQCB.

- The analyses presented herein do not provide an evaluation of uncertainty or probability and represent the best estimate of the Santa Monica Bay Beaches jurisdictional agencies.

7 REFERENCES

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APPENDIX A

LARWQCB RESOLUTION NO. 2006-005

State of California
California Regional Water Quality Control Board, Los Angeles Region

RESOLUTION NO. 2006-005
April 6, 2006

Statement of support for the efforts of responsible jurisdictions and agencies in Jurisdictional Groups 1 and 4 to utilize an integrated water resources approach to achieve full compliance with the Santa Monica Bay Beaches Bacteria Wet Weather TMDL in the shortest possible timeframe and no later than 2021

WHEREAS, the California Regional Water Quality Control Board, Los Angeles Region, finds that:

1. The federal Clean Water Act (CWA) requires the California Regional Water Quality Control Board, Los Angeles Region (Regional Board) to develop water quality standards which include beneficial use designations and criteria to protect beneficial uses for each water body found within its region.

2. The Regional Board carries out its CWA responsibilities through California's Porter-Cologne Water Quality Control Act and establishes water quality objectives designed to protect beneficial uses contained in the Water Quality Control Plan for the Los Angeles Region (Basin Plan).

3. Section 303(d) of the CWA requires states to identify and to prepare a list of water bodies that do not meet water quality standards and then to establish load and waste load allocations, or a total maximum daily load (TMDL), for each water body that will ensure attainment of water quality standards and then to incorporate those allocations into their water quality control plans.

4. Many of the beaches along Santa Monica Bay were listed on California's 1998 section 303(d) List, due to impairments for coliform or for beach closures associated with bacteria generally. The beaches appeared on the 303(d) List because the elevated bacteria and beach closures prevented full support of the beaches' designated use for water contact recreation (REC-1).

5. A consent decree between the U.S. Environmental Protection Agency (USEPA), Heal the Bay, Inc. and Santa Monica BayKeeper, Inc. was approved on March 22, 1999. This court order required completion of a TMDL to reduce bacteria at Santa Monica Bay beaches by March 2002.

6. The Regional Board adopted two TMDLs to address bacteriological water quality impairments for 44 beaches along Santa Monica Bay located in Los Angeles County, California. The Regional Board adopted a TMDL to address water quality impairments during dry weather on January 24, 2002 and a TMDL to address wet weather impairments on December 12, 2002 (Resolutions 2002-004 and 2002-022, respectively).

7. The Regional Board incorporated the dry weather and wet weather TMDLs along with appropriate implementation measures into its Basin Plan as required (40 CFR 130.6(c)(1),

130.7). The Basin Plan and applicable statewide plans serve as the State Water Quality Management Plans governing the watersheds under the jurisdiction of the Regional Board.

8. The Regional Board established the above-mentioned TMDLs to preserve and enhance the water quality at Santa Monica Bay beaches and for the benefit of the 55 million beachgoers, on average, that visit these beaches each year. At stake is the health of swimmers and surfers and associated health costs as well as sizeable revenues to the local and state economy. Estimates are that visitors to Santa Monica Bay beaches spend approximately $1.7 billion annually.

9. The Regional Board's goal in establishing the above-mentioned TMDLs is to reduce the risk of illness associated with swimming in marine waters contaminated with bacteria. Local and national epidemiological studies compel the conclusion that there is a causal relationship between adverse health effects, such as gastroenteritis and upper respiratory illness, and recreational water quality, as measured by bacteria indicator densities. The water quality objectives on which the TMDL numeric targets are based will ensure that the risk of illness to the public from swimming at Santa Monica Bay beaches generally will be no greater than 19 illnesses per 1,000 swimmers, which is defined by the USEPA as an "acceptable health risk" in marine recreational waters.

10. The Dry Weather and Wet Weather Santa Monica Bay Beaches Bacteria TMDLs cover 44 beaches and 29 subwatersheds, with multiple jurisdictions and agencies that are responsible for compliance. Therefore, in the Wet Weather TMDL for implementation planning the Regional Board grouped the subwatersheds into Jurisdictional Groups. Each Jurisdictional Group is comprised of one or more subwatersheds, the beach(es) associated with these subwatersheds, and all responsible jurisdictions and agencies within the subwatershed(s). Each Jurisdictional Group is assigned a primary jurisdiction. A primary jurisdiction is that jurisdiction comprising greater than fifty percent of the subwatershed land area. The primary jurisdiction is responsible for submitting an implementation plan for the Jurisdictional Group per the requirements of the Wet Weather TMDL.

11. Jurisdictional Group 1 is responsible for sixteen subwatersheds, including Arroyo Sequit, Los Alisos, Encinal, Trancas, Zuma, Ramirez, Escondido, Latigo, Solstice, Corral, Carbon, Las Flores, Piedra Gorda, Pena, Tuna, and Topanga. The primary jurisdiction is the County of Los Angeles. Other participating responsible jurisdictions and agencies in Jurisdictional Group 1 include the City of Malibu and California Department of Transportation (Caltrans).

12. Jurisdictional Group 4 is responsible for one subwatershed, referred to as the Nicholas Canyon subwatershed. The primary jurisdiction is the City of Malibu. Other participating responsible jurisdictions and agencies in Jurisdictional Group 4 include the County of Los Angeles and Caltrans.

13. During the adoption of the wet weather TMDL, the Regional Board recognized two broad approaches to implementing the TMDL. One possible approach is an integrated water resources approach that takes a holistic view of regional water resources management by integrating planning for future wastewater, storm water, recycled water, and potable water needs and systems; focuses on beneficial re-use of storm water, including groundwater infiltration, at multiple points throughout a watershed; and addresses multiple pollutants for which Santa Monica Bay or its watershed are listed on the CWA section 303(d) List as impaired. The other possible approach is a non-integrated water resources approach in which

implementation is achieved by focusing on narrowly tailored, end-of-the-pipe solutions to improve bacteriological water quality without incorporating other environmental and public goals.

14. The Regional Board recognized that an integrated water resources approach not only provides water quality benefits to the people of the Los Angeles Region, but also that the responsible jurisdictions implementing this TMDL can serve a variety of public purposes by adopting an integrated water resources approach. An integrated water resources approach will address multiple pollutants, and as a result, responsible jurisdictions can recognize cost-savings because capital expenses for the integrated approach will implement several TMDLs that address pollutants in storm water. In addition, jurisdictions serve multiple roles for their citizenry, and an integrated approach allows for the incorporation and enhancement of other public goals such as water supply, recycling and storage; environmental justice; parks, greenways and open space; and active and passive recreational and environmental education opportunities.

15. The Regional Board acknowledged that a longer timeframe is reasonable for an integrated water resources approach because it requires more complicated planning and implementation such as identifying markets for the water and efficiently siting storage and transmission infrastructure within the watershed(s) to realize the multiple benefits of such an approach. Therefore, after considering testimony, the Regional Board revised the implementation provisions of the TMDL to allow for a longer implementation schedule (*up to* 18 years) if the responsible jurisdictions and agencies clearly demonstrate their intention to undertake an integrated water resources approach and justify the need for a longer implementation schedule. In contrast, the Regional Board required a shorter implementation schedule (*up to* 10 years) for non-integrated approaches because the level of planning is not as complicated.

16. The Regional Board has the authority to provide compliance schedules through the basin planning process. In the wet weather TMDL, adopted by the Regional Board, the Regional Board established dual schedules for implementation that afford the responsible jurisdictions and agencies up to ten or eighteen years, depending on the implementation approaches pursued, to implement the wet weather TMDL.

17. The implementation provisions in Table 7-4.4 of the wet weather TMDL state that, "the implementation schedule will be determined on the basis of the implementation plan(s), which must be submitted to the Regional Board by responsible jurisdictions and agencies within two years of the effective date of the TMDL" (Resolution 2002-022, Attachment A).

18. The implementation provisions in Table 7-4.4 further state that, "responsible jurisdictions and agencies must clearly demonstrate in the above-mentioned plan whether they intend to pursue an integrated water resources approach." If the responsible jurisdictions and agencies prefer an integrated approach, there must be a clear demonstration of need for the longer implementation schedule in the implementation plan. Otherwise, at most a 10-year implementation timeframe will be allotted by the Regional Board, depending upon a clear demonstration of the time needed in the implementation plan.

19. Per the requirements set forth in the wet weather TMDL, responsible jurisdictions and agencies in Jurisdictional Groups 1 and 4 jointly submitted a draft Implementation Plan to the Regional Board on March 15, 2005. Regional Board staff met with the responsible jurisdictions and agencies in Jurisdictional Groups 1 and 4 to review and provide comments on the draft Implementation Plan. Regional Board staff also provided written comments to

the responsible jurisdictions and agencies in a letter dated July 8, 2005. The responsible jurisdictions and agencies submitted a final Implementation Plan to the Regional Board on August 30, 2005.

20. The Implementation Plan submitted by Jurisdictional Groups 1 and 4 lays out a four phase, iterative-adaptive program that combines unique non-structural activities, local on-site structural measures and regional structural solutions for each subwatershed based on subwatershed characteristics and priorities.

21. The Implementation Plan for Jurisdictional Groups 1 and 4 incorporates the principles of an integrated water resources approach by taking a holistic view of regional water resources management by integrating planning for future wastewater, storm water, recycled water, and potable water needs and systems; focusing on beneficial re-use of storm water, including groundwater infiltration at multiple points throughout a watershed; and addressing multiple pollutants.

22. The implementation schedule is phased over 16 years with a final compliance date of 2021 (18 years after the effective date of the TMDL). The Implementation Plan for Jurisdictional Groups 1 and 4 is divided into four phases. The first phase begins with the submittal of the final Implementation Plan (July 2005) and extends until July 2007, the date for reconsideration of the TMDL. In the first phase, Jurisdictional Groups 1 and 4 will initiate all committed non-structural activities; pre-feasibility studies for four (4) sub-regional pilot projects; planning for on-site BMPs; and monitoring, additional studies and source identification activities. Phase II extends until July 2010. In the second phase, Jurisdictional Groups 1 and 4 will continue to implement committed non-structural activities; conduct non-structural pilot programs; continue planning for on-site BMPs; initiate planning and construction of sub-regional pilot projects; and continue monitoring and source identification studies. Phase III extends until July 2013. In the third phase, Jurisdictional Groups 1 and 4 will refocus and reprioritize efforts as appropriate and continue to implement committed non-structural activities; implement successful piloted non-structural programs; begin to implement on-site BMPs; and operate and evaluate pilot sub-regional projects. The final phase extends until final compliance in 2021. In the final phase, Jurisdictional Groups 1 and 4 will again refocus and reprioritize efforts as appropriate and continue to implement non-structural solutions; continue or expand on-site BMPs; and continue, modify or initiate regional structural solutions.

23. The responsible jurisdictions and agencies in Jurisdictional Groups 1 and 4 have committed to 14 targeted non-structural measures; 4 local on-site structural measures; and 4 subregional pilot projects in high priority subwatersheds pending the results of the feasibility studies. These commitments are expected to achieve the early interim milestones of 10% and 25% reductions in exceedance days beyond the allowable exceedance days set forth in the wet weather TMDL.

24. Regional solutions are a secondary resort in managing runoff and reducing bacteria loading at the beaches. However, due to scientific uncertainties it is not possible to guarantee that the implementation actions outlined in the Implementation Plan for Jurisdictional Groups 1 and 4 will achieve the necessary reductions in exceedance days as required by the TMDL. Therefore, it is essential to start the feasibility and conceptual analyses for regional solutions early in the implementation schedule (prior to 2013) in order to identify potential land requirements, physical limitations, and implementation issues. Because these regional solutions require a significant amount of time to plan and implement, beginning the

feasibility analyses early will provide the responsible jurisdictions and agencies sufficient time to make changes and other arrangements and still keep to the implementation schedule.

25. Interested persons and the public have had reasonable opportunity to participate in the development and review of the Implementation Plan for Jurisdictional Groups 1 and 4. The responsible jurisdictions and agencies in Jurisdictional Groups 1 and 4 held two stakeholder workshops on December 1, 2004 and February 1, 2005 during the development of the Implementation Plan.

26. The final Implementation Plan for Jurisdictional Groups 1 and 4 submitted by the responsible jurisdictions and agencies to the Regional Board was posted on the Regional Board's website in advance of the April 6, 2006 Board hearing. A Notice of Hearing was published and circulated 30 days preceding Board action; Regional Board staff responded to oral and written comments received from the public; and the Regional Board held a public hearing on April 6, 2006 to consider the Implementation Plan for Jurisdictional Groups 1 and 4.

THEREFORE, be it resolved that pursuant to Regional Board Resolution 2002-022, Attachment A, Amendment to the Water Quality Control Plan – Los Angeles Region to incorporate Implementation Provisions for the Region's Bacteria Objectives and to incorporate the Santa Monica Bay Beaches Wet Weather Bacteria TMDL, Table 7-4.4, "Implementation", adopted by the Regional Board on December 12, 2002 and effective on July 15, 2003:

1. The Regional Board hereby acknowledges the submission of a draft Implementation Plan and final Implementation Plan dated August 30, 2005 by responsible jurisdictions and agencies in Jurisdictional Groups 1 and 4, including the City of Malibu, County of Los Angeles and California Department of Transportation, per requirements of the Santa Monica Bay Beaches Bacteria Wet Weather TMDL as set forth in Resolution 2002-022, Attachment A, Table 7-4.7.

2. The Regional Board hereby determines that the responsible jurisdictions and agencies in Jurisdictional Groups 1 and 4 as identified in (1) have demonstrated at a conceptual level in the Implementation Plan that they intend to pursue an integrated water resources approach as defined in the Santa Monica Bay Beaches Bacteria Wet Weather TMDL, Table 7-4.4.

3. The Regional Board hereby determines that assuming the responsible jurisdictions and agencies in Jurisdictional Groups 1 and 4 as identified in (1) adequately comply with the terms of this resolution, they will have demonstrated based on their conceptual plan the need for the longer implementation schedule as outlined in the final Implementation Plan dated August 30, 2005, which commits to a final compliance date of July 2021.

4. Given the conceptual commitment to an integrated water resources approach and to achieving final compliance by July 2021 outlined in the Implementation Plan for Jurisdictional Groups 1 and 4, the Regional Board strongly supports and encourages the efforts of the responsible jurisdictions and agencies to (1) aggressively implement early actions as outlined in the Implementation Plan and (2) make timely adjustments and refinements to the Implementation Plan to ensure that bacteriological water quality impairments at Santa Monica Bay beaches are resolved in the shortest possible timeframe.

5. The Regional Board encourages an integrated water resources approach and recognizes that additional time may be necessary to pursue such an approach to TMDL implementation. In order to clearly justify an extended implementation schedule beyond 10 years and up to 18 years from the effective date of the TMDL, the responsible jurisdictions and agencies are required to submit additional quantifiable analyses as described below to demonstrate (1) the proposed plans will meet the interim and final WLAs and (2) the proposed implementation actions will achieve multiple water quality benefits and other public goals.

   The Regional Board strongly encourages responsible jurisdictions and agencies pursuing an integrated water resources approach to employ natural methods as opposed to end-of-pipe, whenever it would be effective and feasible.

6. Per the provisions of the TMDL, the Regional Board will determine, when the TMDL is reconsidered in 2007, if a longer implementation schedule (up to 18 years from the TMDL effective date) shall be granted if there is a clear demonstration that an integrated water resources approach will be pursued.

   The types of approaches proposed coupled with quantifiable estimates of the integrated water resources benefits of the proposed structural and non-structural BMPs included in the Implementation Plan would provide the obligatory demonstration that an integrated water resources approach is being pursued. This demonstration shall provide numeric estimates of the benefits, including reductions in other pollutants, groundwater recharged, acres of multi-use projects and water (e.g. stormwater, runoff, wastewater) beneficially reused among other integrated water resources criteria outlined in the Santa Monica Bay Beaches Wet Weather Bacteria TMDL. Responsible jurisdictions and agencies should submit to the Regional Board technically defensible quantifiable estimates of integrated benefits for actions to meet the first and second interim compliance deadlines (6 and 10 years after the effective date of the TMDL, respectively). This information must be submitted within 9 months to allow sufficient time for staff analyses prior to the Board's reassessment of the TMDL, scheduled for July 2007.

7. The Regional Board recognizes that it is critical to establish a technically defensible quantitative linkage to the interim and final waste load allocations (WLAs) to measure progress toward achieving the WLAs. The linkage should include target reductions in stormwater runoff and/or total coliform, fecal coliform and enterococcus using the 90th percentile year for the jurisdictional group and each individual subwatershed.

   The Regional Board also recognizes that it is essential to establish quantitative estimates of the water quality benefits provided by the proposed structural and non-structural BMPs to meet the first interim compliance deadline (6 years after the effective date of the TMDL), and preliminary estimates of the benefits provided by the proposed BMPs to meet the second interim compliance deadline (10 years after the effective date of the TMDL). These estimates, including a quantitative analysis of their linkage to the interim WLAs, are necessary to provide assurance that interim compliance deadlines will be achieved given the uncertainties involved in an integrated water resources approach. Estimates should address reductions in exceedance days, bacteria concentration and loading, and flow in the drain and at each beach compliance monitoring location. Responsible jurisdictions and agencies should submit such information to the Regional Board within nine months so that the Regional Board staff will have time to assess the information in time for the reconsideration of the TMDL.

8. The Regional Board directs staff to develop draft language for Board consideration that incorporates into the Los Angeles County Municipal Separate Storm Sewer System (MS4) NPDES permit at reissuance explicit requirements for responsible jurisdictions and agencies in Jurisdictional Groups 1 and 4 to submit single coordinated regular reports to the Board on progress toward achieving the required reductions set forth in the TMDLs. These single coordinated regular reports may be submitted as part of the Los Angeles County MS4 Annual Program and Annual Monitoring reports. Reports on progress toward compliance with the TMDL shall include data and information on (1) water quality improvements in the receiving water; (2) the effectiveness of BMPs implemented as part of the Implementation Plan for Jurisdictional Groups 1 and 4 measured in terms of water quality improvement and quantity of wet weather runoff reduced, captured, treated, or infiltrated; and (3) the performance of other programmatic solutions, source identification activities and source control measures. Data on water quality improvements may include for example reductions in exceedance days compared to historical data and interim milestones, where appropriate; the proportion of wet weather days that exceed the water quality objectives by storm year as defined in the TMDLs; and corresponding rainfall data as set forth in the Santa Monica Bay Beaches Bacterial TMDLs Coordinated Shoreline Monitoring Plan submitted by responsible jurisdictions and agencies.

   Given the iterative approach outlined in the Implementation Plan for Jurisdictional Groups 1 and 4, reports shall also include documentation on changes and refinements to the Implementation Plan based on the results of shoreline monitoring data, data on BMP effectiveness, and evaluations of pilot projects and other implementation actions under consideration. Such updates to the Implementation Plan shall include revised quantitative estimates of the water quality benefits of the proposed BMPs and the linkage to the waste load allocations identified pursuant to (7) above.

9. The Regional Board further directs staff to develop draft language for Board consideration that incorporates into the Los Angeles County MS4 NPDES permit at reissuance specific provisions to reopen the TMDL section of the permit and incorporate, after providing the opportunity for public comment, TMDL-related provisions as well as additional implementation actions, including but not limited to institutional controls, source identification and control, and structural and treatment controls if adequate progress is not being made to achieve compliance with Santa Monica Bay Beaches Bacteria TMDLs.

10. The Regional Board anticipates the California Department of Transportation (Caltrans) as a responsible agency to work cooperatively with the responsible jurisdictions and agencies under the Los Angeles County MS4 NPDES permit to achieve compliance with the Santa Monica Bay Beaches Bacteria TMDL, including requirements as set forth pursuant to (8) and (9) above. In the event that Caltrans decides to proceed independently to address compliance with the TMDL, Caltrans will be required to meet the applicable significant dates for responsible jurisdictions and agencies as contained in Attachment A to Resolution No. 2002-022, Table 7-4.7.

11. The Regional Board encourages responsible jurisdictions and agencies to begin feasibility studies and planning for regional solutions to managing wet weather runoff and bacteria loading early in the implementation schedule (prior to 2013) to ensure sufficient time to redirect implementation activities if necessary to include regional solutions and still achieve the final compliance deadline.

I, Jonathan Bishop, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of a resolution adopted by the California Regional Water Quality Control Board, Los Angeles Region, on April 6, 2006.

Jonathan S. Bishop
Executive Officer

APPENDIX B: WET WEATHER MONITORING RESULTS

The following figures summarize the indicator bacteria measured single sample concentrations, with allowable exceedances removed, for example subwatersheds 1-1 (Arroyo Sequit; reference watershed), 1-5 (Zuma), and 1-9 (Latigo). Total exceedance days at each site are as follows: Arroyo Sequit – 1, Zuma – 4, Latigo – 1. All of these exceedance days are due, at least in part, to enterococcus.

Figures 2 through 4 illustrate 2004/05 wet weather single sample monitoring results, by indicator, for example site 1-1 (Arroyo Sequit; reference watershed).

Figures 5 through 7 present 2004/05 wet weather single sample monitoring results, by indicator, for example site 1-5 (Zuma).

Figures 8 through 10 present 2004/05 wet weather single sample monitoring results, by indicator, for a TMDL-designated High Priority site SMB 1-9 (Latigo).

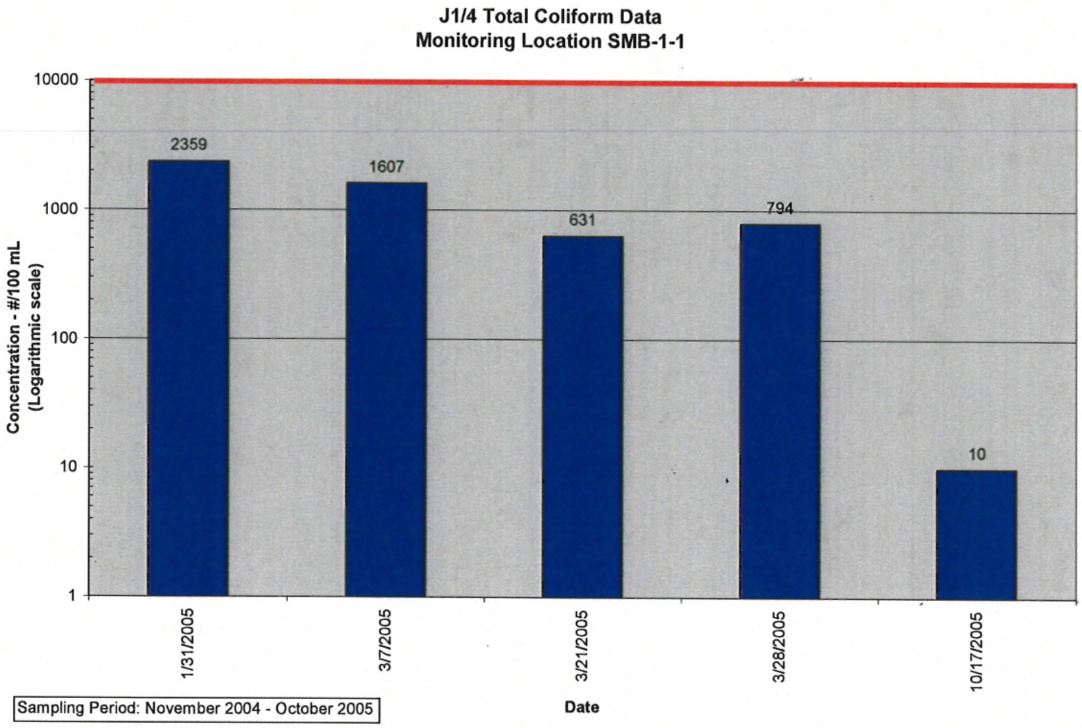

Figure 2 Total Coliform results for Arroyo Sequit (SMB 1-1)

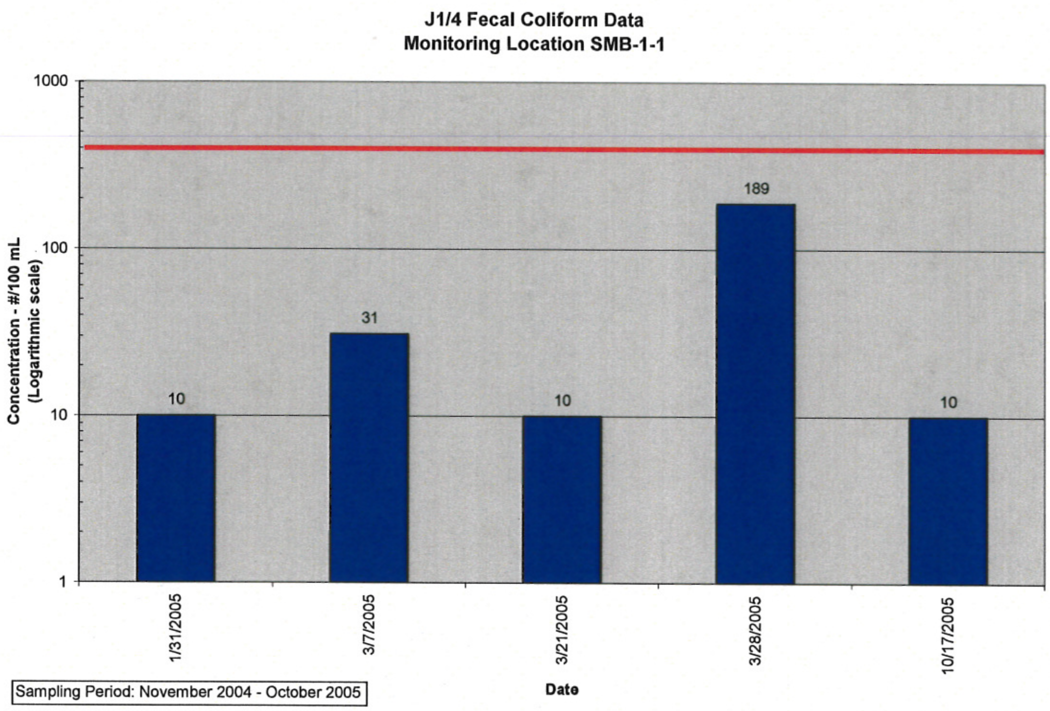

Figure 3. Fecal Coliform results for Arroyo Sequit (SMB 1-1)

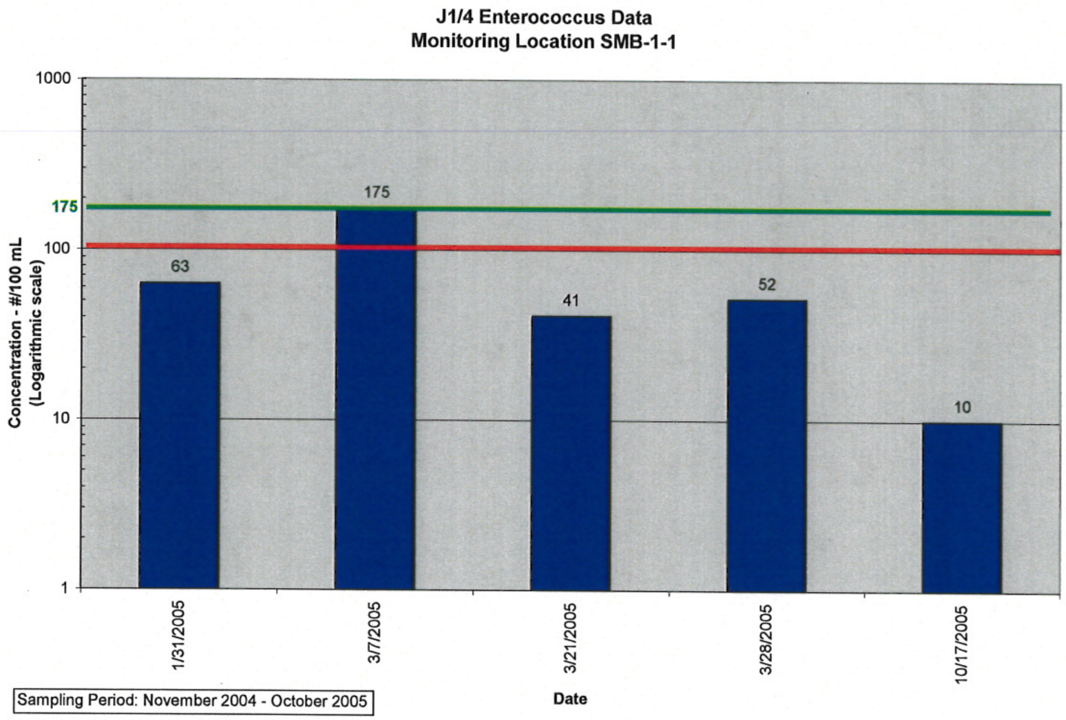

Figure 4 Enterococcus for Arroyo Sequit (SMB 1-1) showing violations of standards

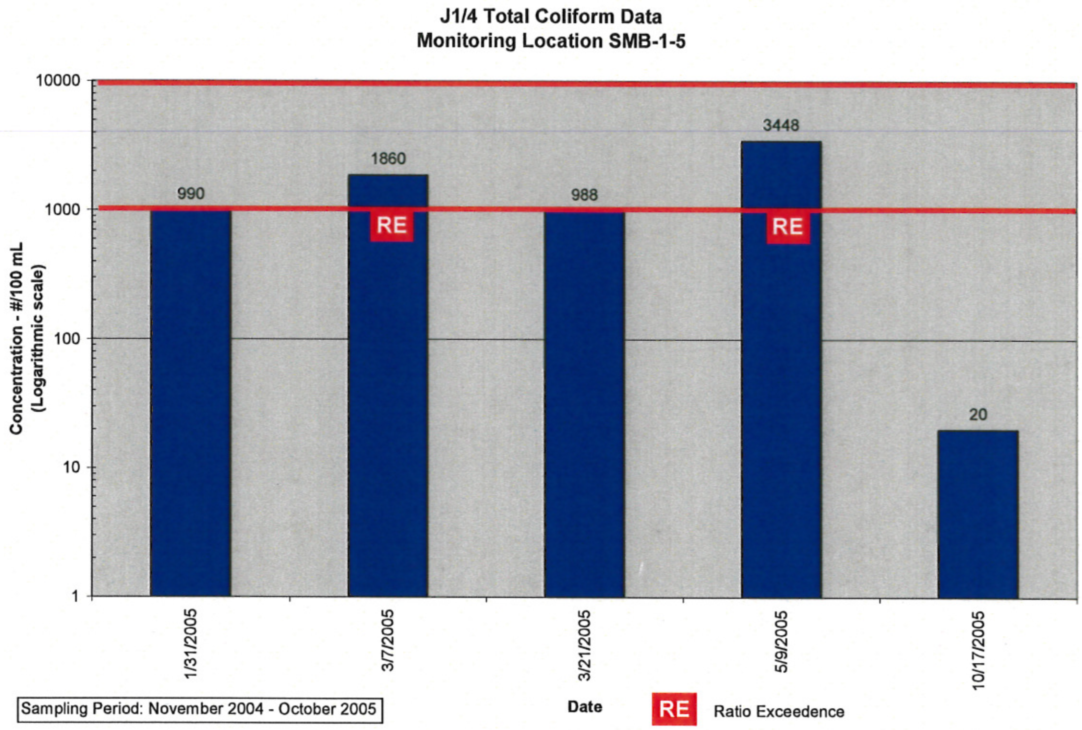

Figure 5. Total Coliform results for Zuma (SMB 1-5)

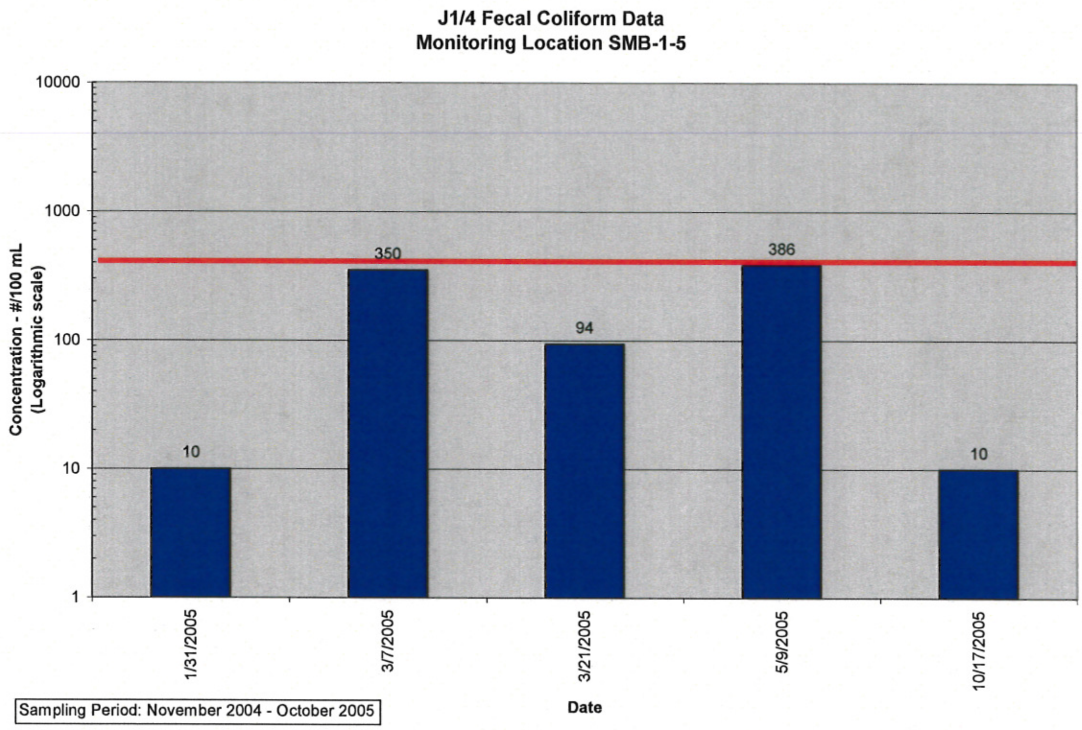

Figure 6. Fecal Coliform results for Zuma (SMB 1-5)

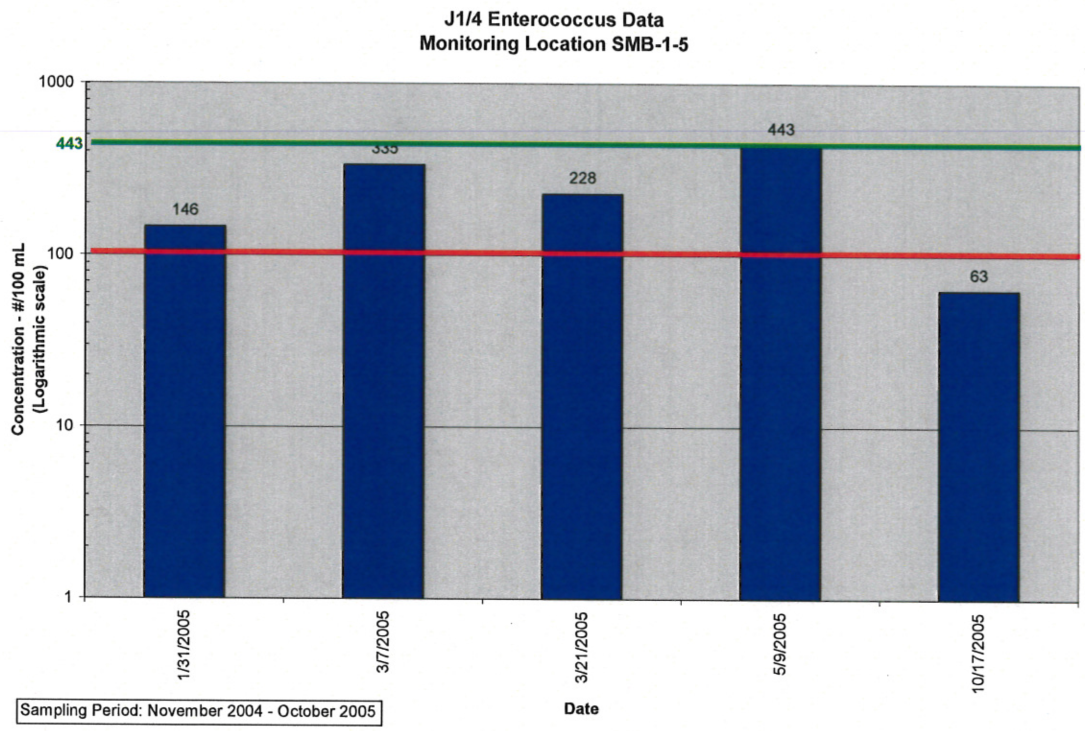

Figure 7. Enterococcus Results for Zuma (SMB 1-5)

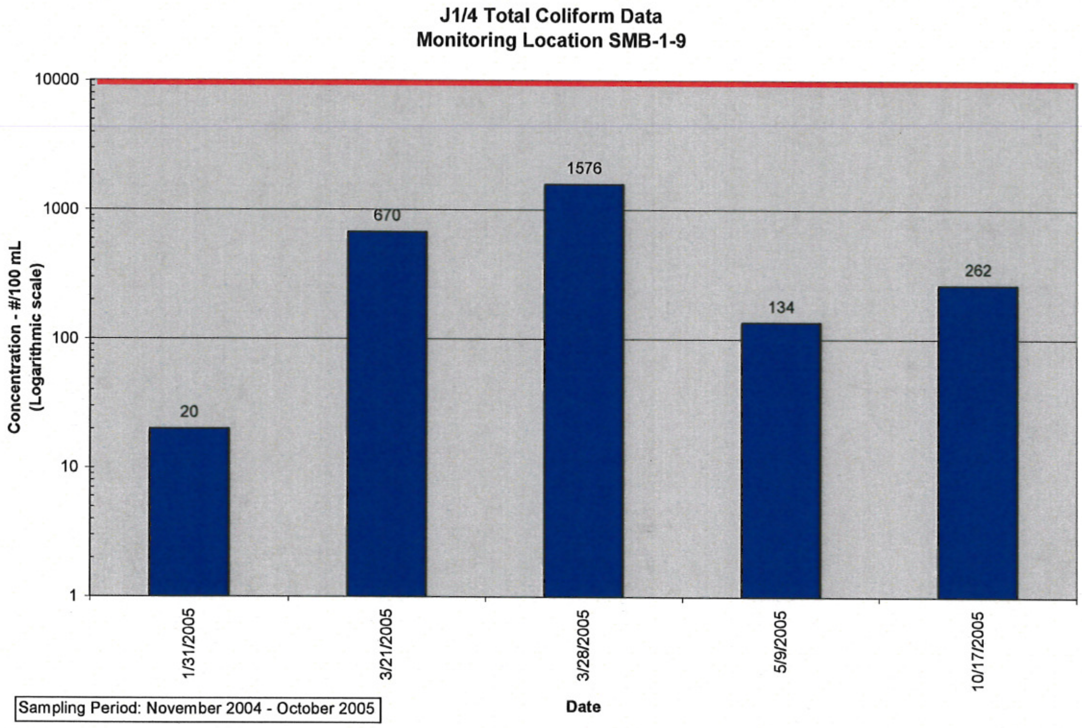

Figure 8. Total Coliform results for Latigo (SMB 1-9)

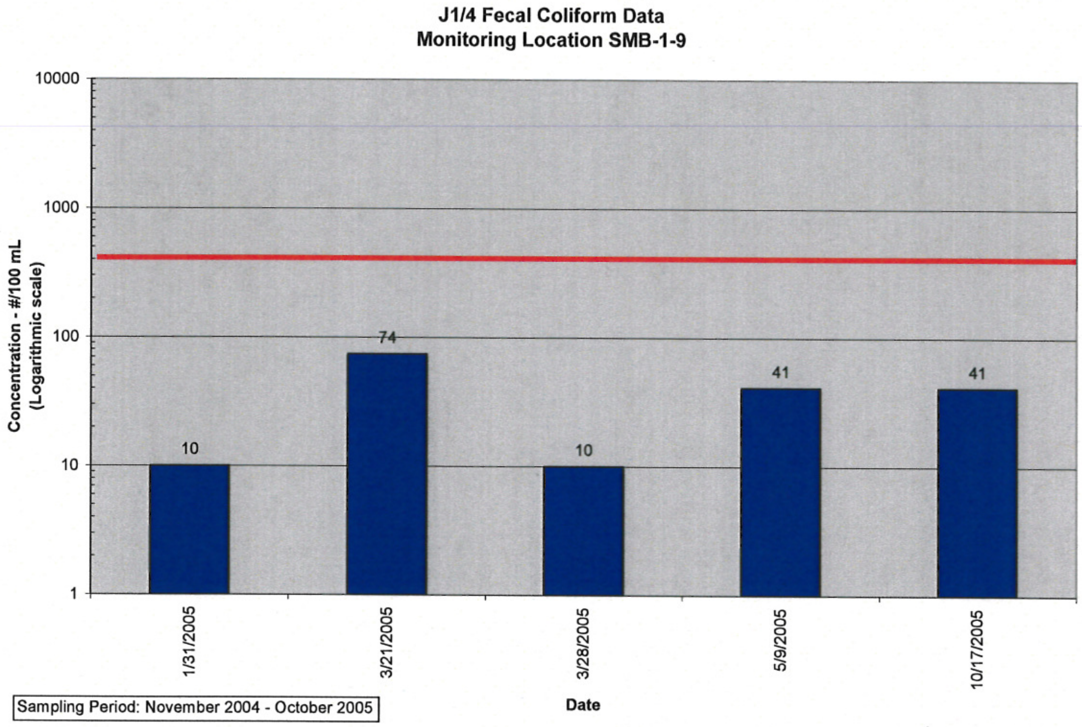

Figure 9. Fecal Coliform results for Latigo (SMB 1-9)

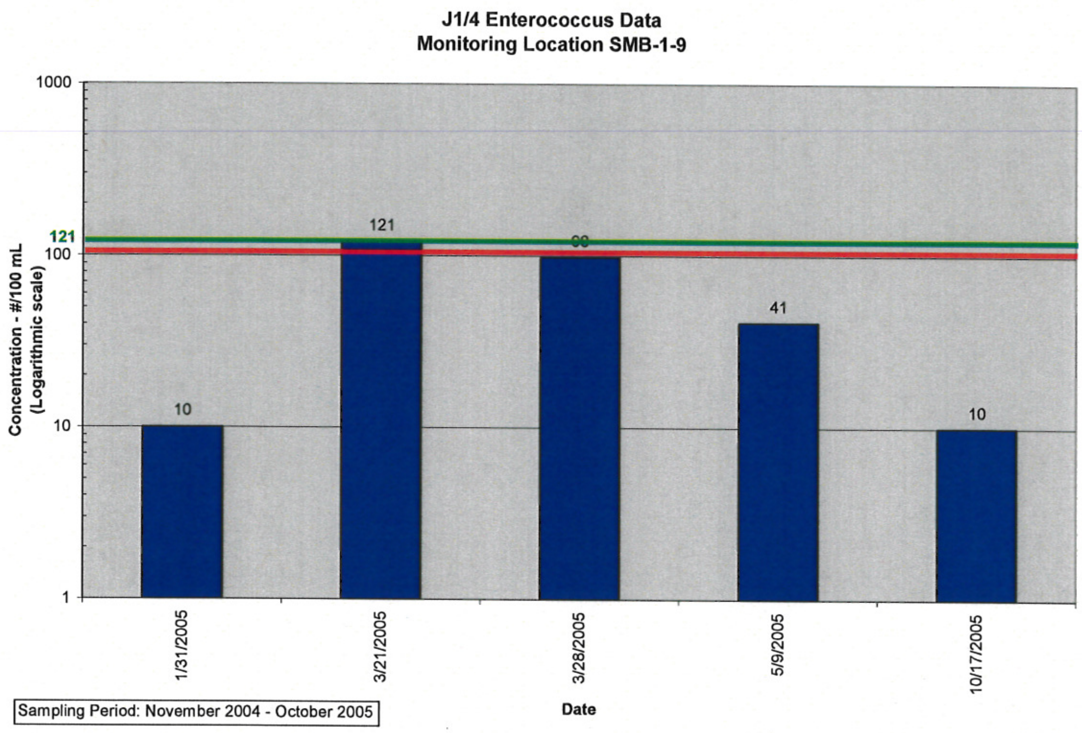

Figure 10. Enterococcus results for Latigo (SMB 1-9)

Summation of Findings
Natural Water Quality Committee
2006-2009

Andrew Dickson
Rich Gossett
Dominic Gregorio
Burt Jones
Steve Murray
Bruce Posthumus
Kenneth Schiff

Southern California Coastal Water Research Project

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Summation of Findings Natural Water Quality Committee 2006-2009

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Technical Report 625

September 2010

PREFACE

The Committee's Definition of Natural Water Quality

Natural ocean water quality: That water quality (based on selected physical chemical and biological characteristics) that is required to sustain marine ecosystems, and which is without apparent human influence, *i.e.*, an absence of significant amounts of:

a) man-made constituents (e.g., DDT),
b) other chemical (e.g., trace metals), physical (temperature/thermal pollution, sediment burial) and biological (e.g., bacteria) constituents at levels that have been elevated due to man's activities above those resulting from the naturally occurring processes that affect the area in question, and
c) non-indigenous biota (e.g., invasive algal bloom species) that have been introduced either deliberately or accidentally by man.

Natural ocean water would be expected to vary noticeably both from place to place, and from time to time. For example, there are significant variations in the composition of minor constituents of seawater (e.g., nutrients, oxygen, trace metals) with depth in the ocean, as well as with distance from land and even between ocean basins. Furthermore, significant ocean properties such as salinity, temperature, and pH vary appreciably with location, season, and year to year due to natural oceanographic processes.

Even within California's coastal ocean, spatial differences exist as a result of regional differences in solar radiation, precipitation, and naturally occurring fresh water. Coastal seawater will differ measurably in trace element composition as a consequence of local watershed geology. Various places on the California shelf have naturally occurring hydrocarbon and groundwater seepage. In near-shore seawater, temporal and seasonal differences in suspended sediments result from variations in wave action. Naturally occurring marine life itself also alters water quality by various processes. For example, seawater near a sea lion haul-out may be high in fecal bacteria levels.

In addition, there are naturally occurring large-scale ocean cycles that dramatically influence the physical, chemical and biological components that support marine life along the California coast. For example, El Niño and La Niña oceanographic events can significantly alter the surface water temperature along the California coast thus extending or diminishing the range and abundance of cold versus warm water species. Rainfall during such El Niño events can also exert large influences on coastal water quality due to significant flood events that deliver (natural) sediments from undeveloped watersheds. Turbidity events associated with California river systems during large flood events have been observed from space.

However, the reality is that vast areas of the ocean are no longer pristine. Truly natural water quality probably does not now exist in California's coastal ocean, and may be rare throughout the world. For example, plastic debris can be found in remote areas of the ocean thousands of miles from continents, and persistent organic pollutants may be found in marine life inhabiting equally remote regions. Even if anthropogenic land-based waste discharges were to be completely eliminated from a section of coastline, there is no guarantee that natural water quality would be reestablished there. Aerial deposition, pollutants carried by oceanic currents from distant sources, and vessel discharges may influence water quality conditions.

As a result, it is not practical to identify a unique seawater composition as exhibiting *natural water quality*. Nevertheless, the committee believes that it is practical to define an *operational natural water quality for an ASBS*, and that such a definition must satisfy the following criteria:

- it should be possible to define a *reference* area or areas for each ASBS that currently approximate *natural water quality* and that are expected to exhibit the likely natural variability that would be found in that ASBS,
- any detectable human influence on the water quality must not hinder the ability of marine life to respond to natural cycles and processes.

Such criteria will ensure that the beneficial uses identified by the Ocean Plan are protected for future generations.

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EXECUTIVE SUMMARY

In response to the regulatory concerns about Areas of Special Biological Significance (ASBS), the California State Water Resources Control Board (State Water Board) empanelled eight experts from different scientific disciplines to develop a functional definition of "natural water quality." It is the work of this Natural Water Quality Committee (NWQC) that is the focus of this report.

The NWQC had a three-year mission to advise State Water Board staff regarding impacts of Scripps Institution of Oceanography's (SIO) discharges into an adjoining ASBS. While the committee focused on SIO and other relevant data in the SIO vicinity, they also recognized the importance of their work in the context of the greater ASBS, Ocean Plan, and stormwater issues. In response, the NWQC agreed that their recommendations may provide guidance for assessing impacts to water quality in any ASBS in the State. To that end, the NWQC addressed three primary questions:

1) Are water quality objectives and permit limits being met?
2) What are impacts of waste discharges to marine species and communities?
3) What would ambient marine water quality be like without waste discharges?

With regard to question 1, SIO has performed extensive monitoring of its waste seawater discharges, stormwater discharges, and marine receiving water. On the whole, the NWQC agreed that SIO was meeting the water quality objectives and permit limits in their permit. In fact, reasonable potential analysis indicated that many constituents were not a threat to ASBS water quality. The NWQC identified three issues of concern in SIO discharges: a) when constituent concentrations did exceed permit concentration limits, this occurred more frequently in stormwater than seawater discharges; b) ubiquitous constituents, such as dioxin, are not introduced at SIO, but were recorded in SIO seawater intake and discharge waters indicating inputs from external sources; and c) methodological issues raised concerns about potential false positive results for measurements including total residual chlorine and toxicity. Of particular concern was chronic stormwater toxicity as recorded in giant kelp (germination and fertilization) and purple sea urchin (fertilization) bioassays.

With regard to question 2, groundbreaking work has been performed in terms of biological monitoring at southern California ASBS, focusing on the rocky intertidal and subtidal communities. The NWQC felt it was too soon to identify the impacts of waste discharges on biological communities, but preliminary data show promise and warrant further assessment as well as continued monitoring for biological status and impacts.

With regard to question 3, the NWQC felt that it was practical to approximate what ambient marine water quality would be like in the absence of (or minimally influenced by) waste discharges by comparing water quality parameters in ASBS to water quality parameters at reference sites. In fact, based on recent studies at targeted reference sites in southern California, average water quality in ASBS was very similar to reference sites. Poor water quality in southern California ASBS was observed, but typically limited to a small number of discharges and/or constituents. The NWQC observed that, at times, concentrations of certain constituents at reference sites were higher than concentrations in Table B water quality objectives listed in the California Ocean Plan.

The NWQC identified four recommendations that regulatory agencies should consider. First, further work needs to occur for quantifying natural variability. While the reference site approach was successfully applied in southern California, insufficient information was collected to have certainty in assigning natural water quality ranges throughout the State (i.e., reference sites need to be sampled in central and northern California). Second, effort should be spent identifying the most appropriate monitoring indicators. Not all indicators need to be measured at all times and adaptive strategies that trigger more (or less) monitoring are a practical and cost-efficient mechanism for ASBS stakeholders. The NWQC emphasized that biological monitoring is considered to be an important addition to monitoring of individual chemical constituents, in order to assess impacts on receiving biological populations and communities. Third, the NWQC recommended that regulators revise Table C of the California Ocean Plan to reflect nearshore, near-surface post-storm reference site water quality. The existing Table C was developed over 30 years ago from open ocean sites, using now out-of-date laboratory methods, for use with plume modeling data to calculate effluent limits at offshore submarine outfalls. Fourth, the NWQC urged regulatory agencies to identify strategies to account for shifting baselines. One flaw of the reference site approach is that, as a practical matter, natural water quality is defined as "the best of what's left." As future development occurs, this may lead to a steady decline in overall water quality.

BACKGROUND

The coastal environment of California is an important ecological and economic resource. It is home to diverse and abundant marine life and has some of the richest habitats on earth including forests of the giant kelp, *Macrocystis pyrifera.* The State Water Resources Control Board (State Water Board) has created 34 Areas of Biological Significance (ASBS) in order to preserve and protect these especially valuable biological communities.

California's coasts are also a repository for waste discharges from the State's ever-increasing population. Treated municipal and industrial wastewaters, urban runoff, and power generating station discharges all represent a number of threats to marine life from human activities. As a result, the State Water Board, in the California Ocean Plan, has prohibited the discharge of waste to ASBS, with certain exceptions. All ASBS are State Water Quality Protection Areas that require special protection under state law.

Despite the prohibition against waste discharges to ASBS, a recent survey has observed approximately 1,658 outfalls to these marine water quality protected areas (SCCWRP 2003). As a result, the State Water Board has initiated regulatory actions, establishing special protections through the Ocean Plan's exception process. The intent of these regulatory actions is to achieve natural water quality of the ocean receiving water in the ASBS. One of the first regulatory actions was taken in San Diego at the ASBS adjacent to the Scripps Institution of Oceanography (SIO). The SIO, which owns and maintains the discharge outfalls to the La Jolla ASBS, was issued an Ocean Plan exception and a National Pollutant Discharge Elimination System (NPDES) Permit. As part of this regulatory action, State Water Board staff was asked to create a panel of experts from different scientific disciplines to help develop a functional definition of "natural water quality." It is the work of the Natural Water Quality Committee (NWQC) that is the focus of this report.

The NWQC includes eight members (Table 1). The NWQC has the mission to evaluate the SIO monitoring data and to advise the San Diego Regional Water Quality Control Board (RWQCB) regarding impacts of SIO's discharges to ASBS. While the committee focused on SIO and other relevant La Jolla data, they also recognized the importance of their work in the context of the greater ASBS, Ocean Plan, and stormwater issues. In response, the NWQC agreed that their work may provide guidance for assessing impacts to water quality in any ASBS in the State. To that end, the NWQC is addressing three primary questions:

1) Are water quality objectives and permit limits being met?
2) What are impacts of waste discharges to marine species and communities?
3) What would ambient marine water quality be like without waste discharges?

The NWQC created a three-year timeline to achieve milestones that help to answer these three questions. The first question, which is focused almost entirely on the SIO permit and site specific issues, was addressed in the first year. The second question, which has both site specific and regional spatial scale issues, was addressed in the second year. The increase in spatial scale is necessary because biological impacts at the SIO ASBS can only be interpreted in response to species and communities outside of the SIO ASBS. The third question, which is almost entirely exclusive of the SIO ASBS, was addressed in the third year. The increase in spatial scale for question three is a reflection of the need to select appropriate regional or statewide reference conditions, which by definition excludes areas with discharges.

Table 1. Members of the Natural Water Quality Committee.

Members	Affiliation
Andrew Dickson	Scripps Institution of Oceanography
Rich Gossett	California State University Long Beach
Dominic Gregorio	State Water Resources Control Board
Burt Jones	University of Southern California
Steve Murray	California State University Fullerton
Bruce Posthumus	San Diego Regional Water Quality Control Board
Kenneth Schiff	Southern California Coastal Water Research Project

DEFINITION OF NATURAL WATER QUALITY

Natural ocean water quality: That water quality (based on selected physical chemical and biological characteristics) that is required to sustain marine ecosystems, and which is without apparent human influence, *i.e.*, an absence of significant amounts of:

a) man-made constituents (e.g., DDT),
b) other chemical (e.g., trace metals), physical (temperature/thermal pollution, sediment burial) and biological (e.g., bacteria) constituents at levels that have been elevated due to man's activities above those resulting from the naturally occurring processes that affect the area in question, and
c) non-indigenous biota (e.g., invasive algal bloom species) that have been introduced either deliberately or accidentally by man.

Natural ocean water would be expected to vary noticeably both from place to place, and from time to time. For example, there are significant variations in the composition of minor constituents of seawater (e.g., nutrients, oxygen, trace metals) with depth in the ocean, as well as with distance from land and even between ocean basins. Furthermore, significant ocean properties such as salinity, temperature, and pH vary appreciably with location, season, and year to year due to natural oceanographic processes.

Even within California's coastal ocean, spatial differences exist as a result of regional differences in solar radiation, precipitation, and naturally occurring fresh water. Coastal seawater will differ measurably in trace element composition as a consequence of local watershed geology. Various places on the California shelf have naturally occurring hydrocarbon and groundwater seepage. In near-shore seawater, temporal and seasonal differences in suspended sediments result from variations in wave action. Naturally occurring marine life itself also alters water quality by various processes. For example, seawater near a sea lion haul-out may be high in fecal bacteria levels.

In addition, there are naturally occurring large-scale ocean cycles that dramatically influence the physical, chemical and biological components that support marine life along the California coast. For example, El Niño and La Niña oceanographic events can significantly alter the surface water temperature along the California coast thus extending or diminishing the range and abundance of cold versus warm water species. Rainfall during such El Niño events can also exert large influences on coastal water quality due to significant flood events that deliver (natural) sediments from undeveloped watersheds. Turbidity events associated with California river systems during large flood events have been observed from space.

However, the reality is that vast areas of the ocean are no longer pristine. Truly natural water quality probably does not now exist in California's coastal ocean, and may be rare throughout the world. For example, plastic debris can be found in remote areas of the ocean thousands of miles from continents, and persistent organic pollutants may be found in marine life inhabiting equally remote regions. Even if anthropogenic land-based waste discharges were to be completely eliminated from a section of coastline, there is no guarantee that natural water quality would be reestablished there. Aerial deposition, pollutants carried by oceanic currents from distant sources, and vessel discharges may influence water quality conditions.

As a result, it is not practical to identify a unique seawater composition as exhibiting *natural water quality*. Nevertheless, the committee believes that it is practical to define an *operational natural water quality for an ASBS,* and that such a definition must satisfy the following criteria:

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- any detectable human influence on the water quality must not hinder the ability of marine life to respond to natural cycles and processes.

Such criteria will ensure that the beneficial uses identified by the Ocean Plan are protected for future generations.

SPECIFIC FINIDINGS

Q1: Are water quality objectives and permit limits being met?

The NWQC met 20 times between October 2005 and August 2010. At several of those meetings the monitoring and conditions specific to the SIO NPDES permit were considered. Both effluent and receiving waters had been sampled by SIO since 2005 and the following general conclusions were drawn:

1) waste seawater system effluent measurements had identified some constituents of concern such as copper, suspended solids, settleable solids, acute toxicity (topsmelt), chronic toxicity (kelp) and dioxins. Notably, copper concentrations in waste seawater have generally declined over the permit period;
2) runoff generally had more constituents with concentrations greater than those specified in Ocean Plan Tables A and B compared with the waste seawater system. These constituents included copper, turbidity, oil and grease, settleable solids, PAHs, indicator bacteria, chronic toxicity (urchins, topsmelt and kelp) and dioxins;
3) chromium, lead, and zinc in the runoff were also elevated above the Ocean Plan Table B six month median levels on more than one occasion during wet weather;
4) receiving water in the ASBS was elevated above water quality objectives on at least one occasion for chronic toxicity (kelp) and/or dioxin during wet and dry weather sampling;
5) dioxins appear to be ubiquitous in the environment and are likely not a direct result of SIO activities (see Attachment B);
6) one sampling period coincided with a red tide event (June 2005) that may have had a confounding or synergistic effect with regard to the toxicity tests;

7) water quality measurements also revealed some technical shortcomings of EPA and State approved test methods, such as elevated total residual chlorine measurements in seawater matrix (see Attachment C), and acute toxicity interpretations; and
8) most other Table B constituents were not detected, or were present in small amounts that represented no reasonable potential (RP) to cause impacts based on RP analysis using State Water Board developed software.

A receiving water study for bacterial contamination was conducted by SIO examining more than 10 sites plus outfall discharges at multiple time intervals during dry weather. The results indicated that bacterial concentrations were routinely low and below water quality standards. In general, the NWQC determined that bacterial monitoring was an inappropriate indicator for assessing potential impacts to aquatic life for this ASBS than other water quality measures. Given that SIO and the County Health Department routinely monitors this beach for the protection of human health, the NWQC recommended against future non-routine bacterial monitoring and that efforts should be reinvested into other monitoring elements.

Finally, SIO had developed a dilution and dispersion computer model for their discharges into the nearshore coastal zone of the ASBS. The model had been previously calibrated and validated at the mouth of the Santa Margarita River that discharges into the littoral zone near Oceanside. Based on model runs at La Jolla conducted by SIO, results indicated that dilution of SIO discharges could be very large due to turbulent mixing and advection by wave action and longshore currents. Model output illustrated dilution factors ranging three orders of magnitude. The NWQC agreed that a 7:1 dilution factor was appropriate. While the model input parameters (i.e., tide, wave height and direction, etc.) were some of the best available, there was some concern that little model validation at the La Jolla ASBS had been conducted.

Q2: What are impacts of waste discharges to marine species and communities?

Quantifying the chemical components of an effluent only partially assesses the potential of waste discharge to ASBS. Ultimately, the biological integrity of marine communities residing in ASBS also need to be assessed to determine if the human influence on water quality is hindering the ability of marine life to respond to natural cycles and processes. To this end, several ASBS stakeholders and the State Water Board utilized scientists at the University of California Santa Cruz to compile data from existing intertidal biological monitoring programs from ASBS statewide. The goal was to assess if historical data were sufficient to make statements about the integrity of ASBS intertidal marine communities (Raimondi 2009).

Raimondi (2009) evaluated the historical data from 12 ASBS intertidal monitoring programs and summarized five features that hindered an independent, integrated assessment of biological impacts in ASBS. First, the methods used in the monitoring programs differed dramatically, ranging from careful designs developed from specific questions to almost naturalist perspectives of sites. Second, all of the monitoring programs were done either by the dischargers or their consultants. Third, the basis for determining if a discharge is causing an impact differed dramatically among monitoring programs. Fourth, and most important, most monitoring programs were not clear about the basis for determining impacts. One strong recommendation for an integrated assessment was that there should be a general basis for determining impact that is consistently applied. There should also be a general assessment design that would yield information sufficient to produce a rigorous determination of impact. Finally, the reporting requirements for assessments should be standardized including data and metadata reporting, transfer, and storage.

In part to overcome the limitations addressed by Raimondi (2009), a regional ASBS biological monitoring program was implemented in southern California. Twenty one rocky intertidal sites were quantitatively sampled for habitat quality, invertebrate and algal abundance, and composition by Raimondi's UC Santa Cruz Coastal Biodiversity research team. The monitoring question focused on differences between reference and ASBS discharge sites. Preliminary results indicated that: 1) there were no significant differences in macro-invertebrate or algal species richness based on geographic grouping or type of site (discharge vs. reference); 2) there were large geographic differences in algal and sessile invertebrate species composition, likely reflecting natural biogeography, but no statistically significant differences between reference sites and ASBS discharge sites; and 3) there were large geographic differences in mobile invertebrate species composition, once again reflecting natural biogeography, but no statistically significant differences between reference sites and ASBS discharge sites. However, the answers differed when sessile and mobile species were jointly considered. Not only were geographic differences observed, but differences were also observed at two discharge sites relative to reference condition (one of which was in La Jolla). While more work is needed to investigate the relationship of these differences to water quality impacts, it demonstrates that biological data can be used, and the NWQC suggested that there is sufficient data to warrant further investigation.

Because of the value of biological information, ASBS stakeholders in southern California supported monitoring of 70 subtidal rocky reef sites. Quantitative sampling for habitat quality, vertebrate, invertebrate and algal abundance, and composition was coordinated by Dr. Dan Pondella at Occidental College with collaborators at UC Santa Barbara and San Diego State University. Similar to the intertidal monitoring, the monitoring question focused on differences between reference and ASBS discharge sites. Data analysis for the subtidal rocky reefs has not progressed as far as the intertidal monitoring. Initial data examination has identified clear differences in community composition based on habitat characteristics (i.e., rock relief), but large differences in biological community characteristics between ASBS and reference sites have yet to be determined.

One last piece of biological monitoring was conducted by SIO, who performed a bioaccumulation study in receiving waters. This monitoring, which used both mussels and sand crabs, occurred in the vicinity of localized reference and ASBS discharge sites. The results indicated that:

1) most organic constituents were present at statistically nonsignificant levels relative to a reference site during the study period;
2) certain pollutants were elevated in transplanted mussels near the SIO pier (Cr, Ni, Fe, and Mn) and at the south end of the adjoining La Jolla ASBS (As) where the City of San Diego storm outfalls are located relative to other sites within the study area;
3) certain pollutants were elevated in transplanted mussels near the SIO pier (Cr and Ni) relative to historical statewide Mussel Watch results; and
4) large relative variability in tissue concentrations from sand crabs due to age/reproductive status precluded an assessment of spatial scale gradients and an evaluation of potential effects.

Q3: What would ambient marine water quality be like without waste discharges?

The State Water Board funded a pilot project during the winter of 2007-08 to evaluate selection of, and sampling methods in, potential reference sites. Proposed reference sampling was determined in collaboration with stakeholders and included surf zone samples at the mouth of a watershed with limited anthropogenic influences, defined as a minimum of 95% open space. The pilot project included a minimal number of sample sites in southern, central and northern California. The pilot project found no detectable levels of the synthetic pollutants DDT and PCB in the samples, and mean values for ammonia and metals were below Ocean Plan six-month medians objectives. The only trace metals with maximum values slightly above the six-month medians were chromium and lead. Notably, mean concentrations of PAHs were approximately an order of magnitude greater than the Table B 30-day average objective.

The State Water Board funded a statewide monitoring program during the winter of 2008-09 specifically to assess the water quality in ASBS near and far from regulated discharge sites. More than 100 chemical constituents and toxicity were measured from 62 sites using a probabilistic study design; roughly half of sites were sampled in the ocean directly in front of a regulated discharge and the other half were located in the ocean >500 m from a regulated discharge. It is important to point out that the sample sites >500 m from direct discharges may have been influenced by other watershed drainages into or adjacent to the ASBS, and therefore may represent background, but not necessarily natural, conditions. Samples at each site were collected <24 hr prior to rainfall and again <24 hr following rainfall. At least one ocean receiving water site was sampled within most mainland ASBS in California.

The statewide survey illustrated generally good chemical water quality in mainland ASBS sites (Table 2). None of the constituents measured exceeded the instantaneous maximum objective listed in the California Ocean Plan (SWRCB 2003). Seven out of 15 constituents did not exceed the Ocean Plan's most stringent objectives (six-month median or 30-day average, depending on the specific constituent) including strictly anthropogenic chemicals such as DDTs or PCBs. Of the eight parameters that did exceed the most stringent Ocean Plan objectives, six (arsenic, cadmium, copper, lead, nickel and zinc) exceeded the objective for relatively small (<15%) portions of ASBS shoreline. Many of these constituents are common in urban stormwater, but have natural sources as well.

Two constituents exceeded Ocean Plan objectives over relatively large proportions of ASBS shoreline including chromium (50%) and polycyclic aromatic hydrocarbons (PAH; 87%) (Table 2). Sources of chromium and PAH can be either natural or anthropogenic. The extent of Ocean Plan exceedence for chromium and PAH was similar near and far from discharge sites following storm events. Similarly, the extent to which chromium and PAH exceeded Ocean Plan standards was similar between pre-storm and post-storm conditions near discharges. It is important to note that the chromium standard is based on the more toxic form, hexavalent chromium, but that total chromium was analyzed for this study. The lack of excessive chemical contamination in ASBS receiving waters was supported by infrequent (<5% of ASBS shoreline) chronic toxicity to a California endemic species (the purple sea urchin, *Strongylocentrotus purpuratus*).

Table 2. Percent of ASBS shoreline with constituent concentrations that exceeded State Water Board Ocean Plan objectives following storm events.

	Ocean Plan Objective	% Shoreline Greater Than OP Objective		
		All ASBS	<500 m from Discharge	>500 m from Discharge
Ammonia-N[1]	0.6 mg/L	--	--	--
Arsenic[1]	8 ug/L	1.6	2.7	--
Cadmium[1]	1 ug/L	2.1	3.6	--
Chromium[1]	2 ug/L	50	61	35
Copper[1]	3 ug/L	6.9	4.8	9.8
Lead[1]	2 ug/L	4.8	--	11.5
Nickel[1]	5 ug/L	15	24	3
Silver[1]	0.7 ug/L	--	--	--
Zinc[1]	20 ug/L	3.8	6.5	--
HCH-lindanes[2]	8.0 ng/L	--	--	--
Chlordane[2]	0.023 ng/L	--	--	--
DDTs[2]	0.17 ng/L	--	--	--
Dieldrin[2]	0.04 ng/L	--	--	--
PAHs[2]	8.8 ng/L	87	85	89
PCBs[2]	0.019 ng/L	--	--	--

[1] 6-month median

[2] 30-day average

While the statewide survey provided valuable estimates of overall chemical condition in ASBS, it lacked an assessment of natural water quality. To address this data gap, the regulated dischargers and Regional Water Quality Control Boards (RWQCBs) initiated a collaborative ASBS regional monitoring program in the Southern California Bight (Bight'08). One goal of Bight'08 was to identify and sample reference sites to determine natural water quality. The dischargers and regulators agreed on reference site criteria that tried to simulate ASBS discharge sites with respect to most factors except one; lack of anthropogenic sources (e.g., <10% watershed development in the contributing catchment). A second goal was to compare these reference site concentrations to concentrations measured near ASBS discharges. Similar to the statewide survey, Bight'08 focused on wet weather conditions.

Regional reference condition was typified by low concentrations and lack of toxicity (Table 3). However, the range of reference site concentrations exceeded Ocean Plan objectives for 8 out of 10 parameters, including chromium and PAH. Intriguingly, the ASBS discharge sites behaved very similarly to reference sites. In fact, average chromium and PAH concentrations at ASBS discharge sites following storm events were not significantly different from average reference site concentrations for all constituents. While there were individual discharges and constituents that were dissimilar from reference concentrations, these appeared to be isolated events rather than the typical condition at southern California ASBS.

For comparing discharge sites to a measure of natural water quality, a threshold level equivalent to the 85th percentile of the reference site post-storm concentrations was used. This 85th percentile level was chosen to represent natural water quality to eliminate uncertainty associated with outliers, thereby being protective of water quality. Exceedence of natural water quality conditions was relatively infrequent at ASBS discharge sites; general constituents, nutrients, and trace metals were the most frequent groups of constituents to exceed natural water quality conditions identified in this study.

Table 3. Minimum, maximum, median, and mean (±95% confidence interval; CI) of post-storm constituent concentrations at reference sites in the Southern California Bight during 2009.

Constituent	Reference Site Concentrations							Ocean Plan Objective
	Units	%ND	Min	Median	Max	Mean	(±)95% CI	
TSS	mg/L	8	Nd	7.7	1692	140	171	-
Ammonia-N	mg/L	64	Nd	nd	0.05	0.01	0.01	0.6
Nitrate-N	mg/L	24	Nd	0.04	0.10	0.05	0.01	-
Nitrite-N	mg/L	88	Nd	nd	0.010	0.002	0.002	-
Total-P	mg/L	44	nd	0.05	0.59	0.08	0.05	-
Total-N	mg/L	65	nd	nd	7.0	0.9	0.7	-
Arsenic	ug/L	0	0.5	1.5	5.0	1.8	0.4	8
Cadmium	ug/L	4	nd	1.5	4.5	1.8	0.5	1
Chromium	ug/L	0	0.2	0.5	16.9	1.9	1.4	2
Copper	ug/L	0	0.05	0.5	6.1	1.1	0.6	3
Lead	ug/L	0	0.1	0.6	9.5	2.4	1.2	2
Nickel	ug/L	0	0.2	0.5	19	2.0	1.8	5
Silver	ug/L	76	nd	nd	6.0	0.7	0.8	0.7
Zinc	ug/L	24	nd	3.3	29	5.2	2.6	20
Total PAH	ng/L	16	nd	6.5	318	22	24	8.8

nd = not detected

95% CI = confidence interval

- = no objectives exist for this parameter

THE NEED FOR ADDITIONAL GUIDANCE

Consistent with the NWQC's desire to provide guidance to the State Water Board not only for SIO, but for all ASBS, the Committee delved into several issues in more detail. These included:

1) Interactions with the Coastal Ocean Observing System,
2) ASBS grant monitoring,
3) Suggested goals and approaches for protection of ASBS,
4) TCDD measurement, and
5) Total residual chlorine measurements.

The findings and recommendations for each of these issues are summarized below. Further details are captured in a series of white papers presented in Attachments A through C of this report.

Interactions with the Coastal Ocean Observing System

One concern related to the management and regulation of a specific ASBS is that the conditions of the ambient receiving waters may be influenced as much, or more, by discharges outside of the ASBS. These external ASBS discharges, if large enough, may overwhelm discharges inside the ASBS.

For the southern California region, the Southern California Coastal Ocean Observing System (SCCOOS) maintains an active set of ocean observing and modeling resources. One of SCCOOS comprehensive resources is the surface current mapping network that spans the entire California coastline (in collaboration with the Central California Coastal Ocean Observing System [CENCOOS]). Surface current mapping provides the capability of producing connectivity matrices and probability maps illustrating the likely regions of influence from discharges outside of the ASBS boundaries. A demonstration project was conducted to evaluate the probability of Los Penasquitos Lagoon discharge interacting with the San Diego-Scripps ASBS.

Los Penasquitos Lagoon is located approximately 7 km north of the San Diego-Scripps ASBS. Depending on the direction, speed and duration of coastal currents, it is possible that outflow from the Los Penasquitos Lagoon enters the region of that the San Diego-Scripps ASBS and its neighboring La Jolla ASBS. A statistical analysis using hourly data from surface currents measured by SCCOOS was used to estimate the percentage of time the Los Penasquitos outflow would enter the ASBS. Based on a complete year of data, it appeared that water from the lagoon entered the ASBS 10 to 25% of the time. Two years of precipitation data (62 days with measurable rainfall) were examined for wet weather contributions to the ASBS from Los Penasquitos Lagoon and its watershed. Within three days following each rain event, SCCOOS scientists predicted the wet weather plume would enter the ASBS 5 to 10% of the time.

This preliminary analysis indicated that it is possible for distant, non-ASBS regulated discharges to be transported into ASBS jurisdiction. While significant additional work needs to be completed to assess the extent of this problem, SCCOOS and CeNCOOS desire to continue their relationship with the state and regulated parties. Additional work could include: a) dilution and degradation of discharge constituents in addition to transport; b) targeted time scales to evaluate critical conditions; c) producing probability maps for other ASBS of concern; and d) interaction with other water quality issues such as harmful algal blooms.

ASBS Grant Monitoring

The voters of California have approved bond measures for Proposition 84 that provides funding to assist responsible parties to comply with the discharges prohibition into ASBS. The State Water Board is planning on distributing approximately $32,000,000 from Proposition 84 specifically to remove waste from discharges that drain directly to ASBS. Approximately $1,000,000 from Proposition 84 may be set aside to provide for coordinated effectiveness monitoring for the suite of projects recommended for funding. As a result, the NWQC was encouraged by State Water Board staff to address monitoring issues related to Proposition 84 grant funded projects. The NWQC addressed this issue in three steps: 1) determine the success (or failure) of monitoring programs associated with other grant programs; 2) assess what factors would be important for grant funded monitoring for ASBS; and 3) provide recommendations to the Proposition 84 Task Force, the body that evaluates Proposition 84 grant proposals, including monitoring.

Ultimately, the NWQC made three recommendations to the Proposition 84 Task Force to enhance the grant program monitoring components (*see NWQC White Paper*, Attachment A). These recommendations included: 1) a cohesive, question-driven monitoring program; 2) a unified monitoring design that ensures comparability in sampling, data analysis, and information management; and 3) a single person or group responsible for coordinating, collating, assessing and reporting on the Proposition 84 monitoring effort.

Suggested Goals and Approaches for Protection of ASBS

Recommendation

The State Water Board should consider a broader goal for protection of Areas of Special Biological Significance (ASBS) and different approaches for achieving that goal.

Background

The Ocean Plan establishes requirements that apply to discharges of waste to California ocean waters in general, with the intent of protecting the beneficial uses of those waters. The Ocean Plan also establishes a higher level of protection for ASBS by prohibiting discharges of waste to ASBS (with certain exceptions). The Ocean Plan specifies that

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waste discharges are to be located a sufficient distance from ASBS "to assure maintenance of natural water quality conditions" in ASBS.

Although "maintenance of natural water quality conditions" in ASBS would be desirable, such a goal may not always be realistic. Considering the definition of "natural water quality" (see *NWQC Definition* above), and considering the nature, extent, and magnitude of anthropogenic influences on California coastal waters (and their ecosystems) and on the watersheds and stream systems that drain to the coast, it seems unlikely that "natural water quality conditions" (or, for that matter, natural biological conditions) are or can be consistently achieved and maintained in all ASBS at all times. For example, substances such as mercury or dioxins are ubiquitous in the ocean at low levels and are not always from natural sources.

Although "maintenance of natural water quality conditions" in ASBS is probably not always an achievable goal, a goal to "minimize anthropogenic influence on water quality" in ASBS is realistic and provides a direction forward for continuing improvement.

Existing and Suggested Approaches

Completely stopping all existing waste discharges directly into ASBS would result in improved, more nearly natural, less anthropogenically influenced water quality conditions in ASBS. In some cases (e.g., certain smaller storm drainages and nonpoint runoff sources), such improvements may be insignificant yet the cost of terminating such discharges may be substantial. In fact, stopping and re-routing storm runoff potentially harms the ecosystem by altering the hydrologic cycle.

The State Water Board approach to regulating direct discharges to ASBS has been the inclusion of prohibitions and special conditions in Ocean Plan exceptions, referred to as "Special Protections," with permits implementing those conditions. Those conditions generally require the elimination of dry weather runoff, ensure that wet weather runoff and marine laboratory waste seawater does not alter natural water quality in the ASBS, and that adequate monitoring be conducted to determine if natural water quality and the marine life beneficial use is protected. Compliance for storm water runoff has generally been determined or proposed to be determined in receiving water.

However, stopping discharges directly into ASBS cannot ensure absolute protection of water quality in ASBS, if only because other discharges (including distant sources and aerial deposition) can influence water quality conditions in ASBS. The degree to which a discharge might influence an ASBS is a function of a number of factors, including but not limited to the proximity of the discharge to the ASBS and the characteristics of the discharge. Consequently, larger, "more polluted" discharges outside of or further away from an ASBS could have a greater influence on that ASBS than smaller, "less polluted" discharges directly into or closer to the same ASBS. Although the Ocean Plan calls for discharge locations to be kept away from ASBS, in many cases the locations where anthropogenically influenced land runoff (e.g., via streams and rivers) enters the ocean cannot readily be changed. Even if such locations could be changed, doing so could have significant adverse effects on beneficial uses of waters outside of ASBS (e.g., in estuaries).

In order to avoid significant expenditures that do little to protect ASBS, an assessment of existing and potential anthropogenic influences on each ASBS should be conducted. Those influences should be ranked as posing a high, medium, or low threat to the ASBS. Priority should be given to reducing and minimizing the anthropogenic influences that pose greater threats, regardless of their proximity to the ASBS.

In order to provide a higher level of protection to ASBS, a higher level of protection should be provided to California coastal waters as a whole. ASBS exist within the larger context of California coastal waters as a whole. ASBS are not separate from or isolated from those waters. Water, biota, and substances move between ASBS and surrounding coastal waters. Therefore, providing a higher level of protection to California coastal waters as a whole would also provide a higher level of protection to ASBS. This might be accomplished using various combinations of requirements, including requirements that would limit the total mass of specified pollutants that can be discharged into California coastal waters or segments thereof.

Dioxins

Dioxins (also known as TCDD) are toxic compounds that have both anthropogenic (e.g., combustion byproducts) and natural (e.g., forest fires) sources. Atmospheric deposition is a major source of dioxin in soil and water and national background soil levels are 1 to 6 ng/kg TEQ (TCDD Equivalents) in rural areas and 7 to 20 ng/kg TEQ in urban areas. In the California Ocean Plan, the objective for TCDD Equivalents addresses the human health beneficial use via consumption of seafood. The objective for TCDD Equivalents is 0.0039 picograms per liter, the lowest objective for any of the constituents in the Ocean Plan.

The Scripps Institute of Oceanography (SIO) ASBS Monitoring Program measures dioxins in their effluent and receiving water during dry weather and wet weather conditions. SIO Dioxin TEQ results were consistently above permit limits, but all of the sample concentrations (with one exception) were below the range detected in stormwater from the San Francisco Bay and the Santa Monica Bay areas. Since Scripps has no source of dioxin in their seawater system, the NWQC assumes that the TCDD in SIO discharges is most likely from regional sources such as stormwater runoff and/or aerial fallout (*See Attachment B*). This is supported by the results of their monitoring data where seawater discharge concentrations and congener profiles were similar to the concentrations measured in ambient seawater samples. Stormwater discharge samples routinely had greater TCDD concentrations than seawater discharge results. In particular, stormwater discharge (Outfall 002) sampled on 11/30/2007 had noticeably greater concentrations and a different congener profile than previous samples. This sample was collected just after a major forest fire in the San Diego area upland from SIO.

Total Residual Chlorine

Many NDPES Permit holders discharging estuarine or marine water into the coastal waters of California are required to monitor their effluent and/or receiving water for Total Residual Chlorine (TRC), even if they are not chlorinating their effluent. Chlorine is toxic to marine aquatic life and therefore Table B of the California Ocean Plan (SWRCB, 2005) lists 6-month median, daily maximum, and instantaneous maximum of 2, 8, and 60 µg/L, respectively. SIO does not add chlorine to its seawater or stormwater discharges.

At present, it is difficult to accurately quantify the amounts of residual or free chlorine in marine systems due to matrix interference introduced by naturally occurring salts of iodide and bromide. Two matrix-associated interferences were noted by the NWQC (*See Attachment C*). First, free chlorine reacts almost instantaneously with salt in seawater, so that any free chlorine has essentially reacted before the sampler can cap the sample bottle. Second, interferences by other oxidizing compounds such as bromide and iodide will cross-react with method reagents leading to a potential false negative. In the case of SIO, nearly every sample of seawater discharge exceeded permit limits. Since SIO does not chlorinate its discharge, the NWQC assumes that the permit limit exceedences for TRC are false positives. In addition, the NWQC recommends that the State Water Board either change the required method for TRC and/or allow for altering the interpretation of results (i.e., total residual oxidants).

CONCLUSIONS

- **On the whole, the Scripps Institution of Oceanography is meeting effluent limitations and water quality objectives in their permit.**

  The SIO consistently meets effluent limitations listed in their NPDES permit for the vast majority of monitored constituents and concentrations of constituents in excess of Ocean Plan objectives in receiving water was rare. In fact, the discharge monitoring requirements were eased in 2008 when reasonable potential analysis indicated that many constituents were unlikely to be a threat to ASBS receiving waters. However, not all constituents were within regulatory limits at all times. The NWQC identified three issues that regulators should be aware of. The first issue was the difference between seawater discharges (from once through use in aquaria and holding tanks) and stormwater discharges (from surface runoff generated both on- and off-campus). Stormwater discharges from SIO exceeded permit limits more frequently than seawater discharges, and often for known stormwater constituents such as copper and chronic toxicity (kelp, urchins). The second issue was ubiquitous constituents. Perhaps the best example of this issue was the frequent exceedence of permit limits for dioxins, which SIO does not add to its process stream, but is found routinely in receiving waters and stormwater discharges from southern California. The third issue was methodology. Two examples of methodology arose in our survey of SIO results including total residual chlorine (TRC) and toxicity testing. The NWQC observed many examples of permit limit exceedences for TRC, but after further investigation, identified that the method currently approved by the NPDES permit is prone to false positives in a seawater matrix. The NWQ prepared a white paper in this report that provides regulators and other ASBS stakeholders potential options for resolving this issue. The NWQC also observed several examples of acute toxicity, particularly for fish. While certain toxicity results were statistically significant, other toxicity exceedences did not have a significantly different response relative to controls (i.e., <5% effect). This is a known issue to regulators, but makes it difficult to identify when true toxic events occur that regulators should care about.

- **It is too soon to tell if there are impacts of waste discharge to marine species and communities**

  Examining biological impacts in ASBS is a worthwhile endeavor and SIO, as well as the other ASBS stakeholders in southern California, should be commended for undertaking biological monitoring. Collaboratively, these 14 entities have partnered with universities to conduct intensive biological surveys of communities in rocky intertidal and rocky subtidal habitats. While the final data analysis has not been completed, it is clear from preliminary results that a regional reference condition approach is necessary to define “natural” in ASBS. The NWQC agreed that comparing an ASBS to a minimal number of isolated reference sites is inadequate to describe these complex and dynamic habitats. The NWQC also recognizes that, while the current surveys are focused on spatial comparisons (many sites), examining temporal trends (individual sites over time) is necessary to assess how sites respond to both natural and anthropogenic stresses. Attributing causes and sources of impact to biological systems is not an easy task, particularly in intertidal and rocky subtidal reef systems where natural perturbations (waves, tidal exposure, etc.) and human-induced (fishing, trampling, kelp harvesting, etc.) stressors can be significant influences in addition to water quality. Yet, these are areas of special *biological* significance and minimum monitoring requirements could be used to trigger more detailed exploration when impacts are observed. One avenue currently being explored, and one that the NWQC endorses, is investing effort into identifying key indicator species, species groups, or assessment indices that can provide simple and effective answers to questions about water quality (and perhaps other) impacts.

- **It is practical to quantitatively define ambient water quality without (or with minimal) waste discharges.**

The definition of natural water quality supplied by the NWQC is an achievable goal. The collaborative southern California monitoring program (Bight'08) is currently the best illustration of this success. Bight'08 proxied natural water quality by examining the chemical and toxicological properties of ambient ocean water at reference sites. Results indicated no detectable trace synthetic organic compounds (i.e., DDT, PCB) or toxicity, and generally low concentrations of naturally occurring constituents (trace metals, PAH). With one minor exception, all of the constituents had median values below the strictest Ocean Plan objectives. However, there were times at reference stations when maximum concentrations of several naturally occurring constituents exceeded current Ocean Plan Table B thresholds. More importantly, values for many constituents in the reference data set exceeded Table C ("Background Seawater Concentrations") in the Ocean Plan. One positive outcome, and with few exceptions, most southern California ASBS discharge sites and monitored parameters behaved similarly to reference site conditions. While the reference site criteria used in Bight'08 could be altered, or alternative criteria could be developed, the fact that regulated parties and regulatory agencies could come together and agree on currently existing reference sites is a powerful statement.

It is important to note that the NWQC did discuss other approaches that could work, including tracers of waste discharge or reference condition normalizers, which could also be further explored. In addition, the reference area approach may have its limitations as in the case of widespread anthropogenic influences (i.e., PAHs, TCDDs) or the situation where distant sources impinge on reference site water quality. (i.e., transport of large stormwater plumes)

RECOMMENDATIONS

- **Further work needs to occur for quantitatively defining natural water quality.**

  While the definition of natural water quality supplied by the NWQC is an achievable goal, quantifying natural water quality is not concluded. It is important that the true range of natural variability be encompassed. Having too broad a reference site characterization will provide insufficient protection for ASBS. Having too narrow a reference site characterization will promote unrealistic or unachievable goals for regulated entities. The work initiated by Bight'08 represents the first such attempt in California to determine natural water quality characteristics in the nearshore following storm events. The NWQC felt that although the Bight'08 program provided sufficient information for the SWRCB to move forward, prudent management would also seek additional information. For example, Bight'08 quantified intra-annual (storm-to-storm) variability, but lacked inter-annual or even decadal scale variability known to produce natural alterations in ocean water composition and biological communities. Similarly, additional reference sites in central and northern California would be a sensible next step. Finally, the NWQC recognized that, for some instances, the reference site approach can be problematic. For example, the reference site approach may be limited in the case of widespread anthropogenic influence (i.e., PAHs, TCDDs) or the situation where distant sources impinge on reference site water quality. (i.e., transport of large stormwater plumes from outside the ASBS). All of these causes of natural variability, and impacts from unanticipated anthropogenic contributions, should be investigated before final natural water quality ranges can be ascertained. In addition, further collaboration between the ocean observing systems, regulators, and responsible parties can assist with identifying contributions from distant sources.

- **Effort should be spent identifying the most appropriate monitoring indicators**

  The NWQC strongly recommends that biological monitoring occur in addition to the required chemical or toxicological monitoring. Biological monitoring provides an integrative measure over time that chemical and toxicological measures do not. Biological monitoring also measures the effects of unmeasured constituents and/or cumulative effects of constituents. Regardless of chemical, toxicological or biological measures, the most informative indicators within each class should be selected. Minimizing the indicator list to the most informative measures will reduce per-event costs, enabling more locations or time periods to be monitored. If this approach is taken, the NWQC strongly urges that adaptive monitoring triggers be established *apriori* that can be used to increase (or decrease) monitoring effort should problems (or lack of problems) be identified. If the chemical constituent list is reduced, the utility of integrative measures such as toxicity also become more valuable. The NWQC suggests that multiple species and endpoints be considered for toxicity testing and, if sufficient toxicity is observed, dischargers be required to conduct toxicity identification evaluations (TIEs) to determine the problematic constituents.

- **Improvements should be made to the Ocean Plan**

  Table C in the California Ocean Plan (Seawater Background Concentrations) was first adopted in 1983 and based on relatively sparse data over 30 years old collected far from shore. Perhaps this was appropriate since the information was intended to be used with plume modeling data to calculate effluent limits for relatively consistent discharges of effluents from publicly owned treatment works (POTW) through offshore submarine outfalls. The current emphasis on stormwater runoff is incongruous with this application. Stormwater is highly unpredictable, where flows and concentrations can change by orders of magnitude over short time scales (sometimes within minutes) and is discharged at the surface. Table C values should be altered to reflect current needs, including values for nearshore, post-storm water quality.

  Other changes to the Ocean Plan that should be considered include addressing: a) new or revised methods for measuring total residual chlorine , b) improving trace metal sample extraction to eliminate interferences with seawater (such as using EPA Method 1640), and revise the acute toxicity equation in cases when survival in undiluted effluent is greater than control survival.

- **Regulatory agencies need to identify strategies to account for shifting baselines**

  Based largely on verbal accounts, it is suspected that increases in human population and development since the mid-1970's have resulted in degradation of water quality and biological communities. This may or may not be true, but scant little data is available to inform us. If true, then the water quality conditions at reference sites we identify today may be significantly different than they were 35 years ago when the ASBS were first designated. The NWQC is concerned that operational definitions of natural water quality years from now might be significantly different from today's conditions. In order to account for the potential shifting baseline where natural water quality is, as a practical matter, defined as the best of what's left, the NWQC recommends that the State Water Board identify how they plan to deal with future increases in human population and development and the potential for water quality degradation in and near ASBS and present day reference sites.

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SCCWRP. 2003. Discharges into State Water Quality Protected Areas. Final Report to the State Water Resources Control Board. Southern California Coastal Water Research Project. Westminster, CA http://www.waterboards.ca.gov/water_issues/programs/ocean/docs/asbs/swqpa_finalsurveyreport_wlayouts.pdf

SWRCB. 2005. California Ocean Plan. Sacramento, CA

ATTACHMENT A

Natural Water Quality Committee
Initial Recommendations for Monitoring ASBS Implementation Projects

The Natural Water Quality Committee (NWQC) was formed at the direction of the State Water Resources Control Board (SWRCB, resolution 2004-052, Section 3.a.). The charge of the NWQC was to define natural water quality based on a review of monitoring data and to advise the Water Boards regarding the attainment of natural water quality relative to waste discharges in Areas of Special Biological Significance (ASBS). Some of these recommendations have focused on monitoring as one approach to assessing the attainment of natural water quality.

The voters of California have approved Bond measures for Proposition 84 that provides funding to assist responsible parties to comply with the discharge prohibition into ASBS. The SWRCB is planning on distributing approximately $32,000,000 from Proposition 84 specifically to remove waste from discharges to ASBS. Approximately $1,000,000 from Proposition 84 may be set aside to provide for coordinated effectiveness monitoring for the suite of projects recommended for funding. As a result, the NWQC was encouraged by State Water Board staff to address monitoring issues related to Proposition 84 funded projects. The NWQC addressed this issue in three steps: 1) determine the success (or failure) of monitoring programs associated with other grant programs; 2) assess what factors would be important for grant funded monitoring for ASBS; and 3) provide recommendations to the Proposition 84 Task Force, the body that evaluates Proposition 84 Grant proposals, including monitoring.

After discussions with RWQCB and SWRCB staff, task force members from other grant programs (i.e., Proposition 50), and the grantees themselves, the NWQC came to three conclusions regarding the successes and failures of previous grant programs. Frequently in the past, grant programs were incapable of assessing the success/failure of their program for either removal of pollutants or improvements to receiving waters. Inadequate guidance was provided to the grantees on the specific goals of the monitoring programs employed, especially to those grantees that lacked capabilities and experience with monitoring. Specifically, grantees rarely had a vision of the State's monitoring objectives such as cumulative pollutant removal. Even for those grantees with experience and capability, the timeline of the grant programs (typically two to three years) were inconsistent with adequately quantifying the goal of measuring pollutant reductions.

The NWQC discussed several important elements to enhance the Proposition 84 grant program monitoring components. These elements included: 1) a cohesive, question-driven monitoring program; 2) a unified monitoring design that ensures comparability in sampling, data analysis, and information management; and 3) a person or group responsible for coordinating, collating, assessing and reporting on the Proposition 84 monitoring effort. A clear statement of objectives needs to be composed so as to provide a vision for the Proposition 84 monitoring program. Monitoring experts universally agree that this is best achieved through the use of a well-formed and unambiguous monitoring question, much akin to a hypothesis for testing. This question should be crafted with care and agreed to by the Proposition 84 Task Force or other governing body.

A centralized monitoring design should be created with sufficient scientific rigor that the monitoring question can be answered with a specified level of confidence. It is impossible to describe what this design may look like until the monitoring question is created, but there are certain elements that must be included. The first element should be some level of standardized sampling. Standardized sampling approaches ensure representativeness and reduce bias in data collection. For example, flow weighted composite sampling during wet weather runoff can produce very different results than grab sampling, even during the same storm event at the same site. Comparing data from different sampling approaches is inappropriate and could lead to faulty conclusions. Similarly, standardized quality assurance should be achieved through the laboratory analysis portion of a large-scale monitoring program. Comparability is paramount and several large-scale monitoring programs use performance-based quality assurance guidelines to ensure comparability for laboratory analysis. Finally, a centralized data management system is necessary for collating the reams of information generated by multiple monitoring programs. Grantees will focus on the monitoring data associated with the management actions specific to their project and these individual data sets will be, for the most part, relatively small and easy to manage. Combining data sets from numerous individual grant projects *post hoc*, however, would be daunting to impossible and could cost hundreds of thousands of dollars unless a well-conceived information management system is implemented before data collection. Thankfully, several systems exist within the state that could be used as a vehicle for data management.

Finally, a person or group must be tasked from the beginning with the responsibility for coordinating the Proposition 84 ASBS monitoring program. Deriving monitoring questions, ensuring comparability and quality assurance/training cannot be done as a sideline to one’s daily activities. It is a full-time job. The larger the program, the more likely it will require additional personnel to accomplish all of the integration necessary to address the monitoring question. It will be this entity that shall be responsible for communicating with grantees on monitoring and eventually for writing a summary report of the program’s success at reducing pollutant loads and/or concentrations.

The NWQC had four recommendations to the ASBS Task Force on a structure for the statewide grant monitoring program to achieve the three goals of monitoring question(s), comparability, and organization. The first recommendation stated the singular monitoring question of utmost importance, “How much pollutant (i.e., in kg) was removed as a result of the grant-funded BMP?” Several additional questions are feasible and perhaps warranted, but this single question must be answered. The second recommendation addressed who should coordinate the Proposition 84 monitoring. The NWQC felt that the SWRCB should coordinate this monitoring, perhaps through one of their statewide programs such as the Surface Water Ambient Monitoring Program (SWAMP). Third, the NWQC felt that at least 10% of each grant should be allocated to monitoring activities. Each grantee can conduct this coordinated monitoring themselves or, if they prefer, return 10% of the grant back to the SWRCB to arrange for the coordinator to conduct this monitoring. Regardless of who implements the monitoring, the SWRCB must use the $1 million set aside from Proposition 84 to conduct the coordination, quality assurance, and data management to ensure comparability. Finally, the NWQC recommended that grantees be allowed a 1-year, no-cost extension to conduct post-construction monitoring. The extra time will provide invaluable monitoring information, particularly in the drier parts of the state where rainfall is limited to a short window of time during the year.

ATTACHMENT B

Dioxin White Paper
State Water Resource Control Board- Natural Water Quality Committee
August 2010

Dioxin is a general term for a group of chemicals that are highly persistent in the environment. Dioxins and a related group, the furans, are among the most toxic pollutants known to science. The US Environmental Protection Agency, in a draft report in September 1994, describes dioxin as a serious public health threat. According to their report, there does not appear to be a "safe" level of exposure to dioxin, and dioxins have been found in the general US population "at or near levels associated with adverse health effects." The most toxic dioxin compound is 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD).[1]

TCDD is the prototype for a class of halogenated aromatic hydrocarbons, which appear to have a common mechanism of action and to produce similar effects, although they differ in potency. TCDD achieved notoriety in the 1970's when it was discovered to be a contaminant in the herbicide Agent Orange and was shown to produce birth defects in rodents. It continues to generate concern because of its widespread distribution as an environmental contaminant, its persistence within the food chain, and its toxic potency.[2] TCDD is the most toxic polychlorinated dibenzo-p-dioxin (PCDD) to fish.[3]

Dioxins originate as combustion byproducts, from impurities during the manufacture of wood preservatives and herbicides, and as a byproduct of wood pulp bleaching. New research suggests that forest fires are also a major source of dioxins.[4] The estimated distribution of Dioxin sources for 2004 were; backyard trash burning (25%), societal, e.g. residential wood combustion, gasoline and diesel use, etc (5%), industrial (15%), and natural forest fires (54%).[4] Atmospheric deposition is a major source of dioxin in soil and water and US background soil levels are 1-6 ng/kg TEQ (TCDD Equivalents) in rural areas and 7-20 ng/kg TEQ in urban areas. San Francisco Bay Area stormwater contains 0.2 – 65 pg/L and Santa Monica Bay Watershed concentrations range from 1 – 53 pg/L.

<u>TCDD Equivalents</u>
In the California Ocean Plan TCDD Equivalents are defined as “the sum of the concentrations of chlorinated dibenzodioxins (2,3,7,8-CDDs) and chlorinated dibenzofurans (2,3,7,8-CDFs) multiplied by their respective toxicity factors…” The objective for TCDD Equivalents is for the human health beneficial use, through consumption of seafood, based on the fact that it is a carcinogen. The objective for TCDD Equivalents is 0.0039 picograms per liter, the lowest objective for any of the constituents in the Ocean Plan.

The California Toxics Rule has an objective for TCDD (but not equivalents), set at 0.0013 picograms per liter.

Recently the San Francisco Regional Board used a different definition for TCDD Equivalents based on new information: TCDD Equivalents means the sum of the concentrations of chlorinated dibenzodioxins and chlorinated dibenzofurans multiplied by their Toxicity Equivalency Factor (TEF) and their Bioaccumulation Equivalency Factor (BEF).[5]

$(TEC)_{TCDD}$ = The sum of $(C)_x(TEF)_x(BEF)_x$

Where $(TEC)_{TCDD}$ = TCDD Equivalents concentration in effluent

$(C)_x$ = concentration of total congener x in effluent

$(TEF)_x$ =TCDD toxicity equivalency factor for congener x

$(BEF)_x$ = TCDD bioaccumulation equivalency factor for congener x

Toxicity Equivalency Factor and Bioaccumulative Equivalency Factors are listed in the table below.

The Scripps Institute of Oceanography (SIO) ASBS Monitoring Program measures dioxins in their effluent and receiving water during dry weather and wet weather conditions. A synopsis of the TEQ (pg/L) results are presented in the following table.

Outfall 001- Seawater Discharge		Outfall 002- Stormwater Discharge Wet Weather		Receiving Water- Dry Weather	
Sample Date	**TEQ (pg/L)**	**Sample Date**	**TEQ (pg/L)**	**Sample Date**	**TEQ (pg/L)**
9/30/2005	0.00587	2/27/2006	0.105		
10/13/2005	0.00876	11/30/2007	2.12		
11/16/2005	0.00930	1/5/2008	0.663		
8/21/2006	0.00222	2/6/2009	0.524	8/21/2006	0.00134
5/14/2007	0.00172	3/7/2010	0.601	5/14/2007	0.00227
10/14/2008	0.00703			10/14/2008	0.00251
7/28/2009	0.00355			7/28/2009	0.00331

SIO Dioxin TEQ results were almost all (with one exception) below the range detected in both the San Francisco Bay Area Stormwater and the Santa Monica Watershed. Since Scripps has no likely source of dioxin in their water system, the source of these compounds is most likely from particles present in the local coastal zone from runoff and/or aerial fallout which is supported by the following points:

- The results for the stormwater discharge (Outfall 002) are 2 orders of magnitude higher than the seawater
- The results for the seawater discharge (Outfall 001) are similar to the receiving water

- The result for the stormwater discharge (Outfall 002) sampled on 11/30/2007 are higher than the other sample dates. This sample was collected following a large forest fire upland from SIO. Moreover, the dioxin composition (not shown here) of this sample is also significantly different from all the other samples collected.

Toxicity Equivalent Factors by dioxin congener. OCDD was the primary congener found in SIO discharge.

Congener	Toxicity Equivalency Factor (TEF)	Bioaccumulation Equivalency Factors (BEF)
2,3,7,8-TCDD	1.0	1.0
1,2,3,7,8-Pe-CDD	0.5	0.9
1,2,3,4,7,8-HxCDD	0.1	0.3
1,2,3.6,7,8-HxCDD	0.1	0.1
1,2,3,7,8,9-HxCDD	0.1	0.1
1,2,3,4,6,7,8-HpCDD	0.01	0.05
OCDD	0.0003	0.01
2,3,7,8-TCDF	0.1	0.8
1,2,3,7,8-PeCDF	0.03	0.2
2,3,4,7,8-PeCDF	0.3	1.6
1,2,3,4,7,8-HxCDF	0.1	0.08
1,2,3,6,7,8-HxCDF	0.1	0.2
2,3,4,6,7,8-HxCDF	0.1	0.7
1,2,3,7,8,9-HxCDF	0.1	0.6
1,2,3,4,6,7,8-HpCDF	0.01	0.01
1,2,3,4,7,8,9-HpCDF	0.01	0.4
OCDF	0.0003	0.02

[1] Web Resources for Environmental Justice Activists, website
http://www.ejnet.org/dioxin/

[2] Stanford University Dept of Molecular Pharmacology website
http://www.stanford.edu/group/whitlock/dioxin.html

[3] Walker and Peterson, Chapter 11 Aquatic Toxicity of Dioxins and related Chemicals, Dioxins and Health, Schecter 1994
http://books.google.com/books?hl=en&lr=&id=I7JoGkn3DI8C&oi=fnd&pg=PA347&dq=%22Walker%22+%22Aquatic+toxicity+of+dioxins+and+related+chemicals%22+&ots=nsMtfzop_d&sig=kTX2dSxIP0Jqe_qpn4_nw45_X7I#v=onepage&q=%22Walker%22%

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[4] DioxinFacts.Org web site. Forest Fires: A Major Source of Dioxins. http://www.dioxinfacts.org/sources_trends/forest_fires2.html

[5] *San Francisco RWQCB 2009. NPDES NO. CA0037681 ORDER NO. R2-2009-0062*

ATTACHMENT C

Issues Related To Measuring Residual Chlorine
In Non-chlorinated Estuarine and Marine Water
October 2009

Background

Many NDPES Permit holders discharging estuarine or marine water into the coastal waters of California are required to monitor their effluent and/or receiving water for Residual Chlorine, even if they are not chlorinating their effluent. Chlorine is toxic to marine aquatic life and therefore Table B of the California Ocean Plan (SWRCB, 2005) lists 6-month median, daily maximum, and instantaneous maximum of 2, 8, and 60 µg/L, respectively. The USEPA 304(a) water quality criteria for chlorine are in terms of Total Residual Chlorine (TRC) in fresh water, which includes free chlorine and chloramines, and in seawater are for chlorine-produced oxidants (CPO), which includes the oxidative products of chlorine (hypobromous acid (HOBr), hypobromous ion (OBr-), and bromamines). The one hour average criteria is 19 µg/L for TRC and 13 µg/L for CPO, and the four day average criteria is 11 µg/L for TRC and 7.5 µg/L for CPO. However, the analytical methods typically used for Residual Chlorine (Standard Methods for the Examination of Water and Wastewater- 19th Edition, 1995) have detection limits around 10 µg/L or higher which exceeds the 6-month median and daily maximum values.

Sources of Chlorine

There are many potential sources of chlorine. Chlorine is used as a disinfectant in sewage wastewater treatment and in marine laboratories. Chlorination is also performed at power generating facilities using once-through cooling, and may be present in power plant discharges. Chlorine and other oxidants are being considered for treatment of ballast water in oceangoing vessels prior to discharge. There are various technologies for dechlorination, including the application of sulfite or sulfite compounds. Other discharges of free chlorine include may be due to the drainage of swimming pools, illicit laundry discharges, the use of chlorine bleach as a cleaning agent in waterfront activities, and industrial spills.

Chlorine and Chlorination Byproducts in Seawater

The issue of monitoring the release of chlorine into the marine environment is of great importance. While chloride ions are the most abundant ions in seawater, free chlorine is highly reactive and not a natural component in marine water. The formation of potentially dangerous byproducts as a result of chlorination can lead to negative consequences for ecologically important areas along our coast. Once introduced into a solution, whether seawater or freshwater, chlorine is generally present as either hypochlorous acid or hypochlorite which are both regarded as free chlorine. These compounds quickly react with the surrounding constituents, such as bromide, iodide, ammonia, and manganese through oxidation reactions to form a variety of products. Exposure to sunlight or any agitation of the solution increases the rates of these reactions. Any free chlorine that is left over is labeled as residual chlorine and quantified.

However, at present it is difficult to accurately quantify the amounts of residual chlorine in marine waters due to the complex nature of seawater. Unfortunately, the higher salt content makes the methodologies currently being used to quantify residual chlorine in fresh water unreliable for use with seawater samples (Johnson, 1977).

Seawater naturally contains approximately 67ppm of bromide and 64ppb of iodide, which are both quickly oxidized to bromine and iodine when they come into contact with chlorine. Seawater also contains variable amounts of ammonia, which in the presence of chlorine can lead to the formation of haloamines (e.g., chloramines and bromamine). As a result of these reactions, the free chlorine is reduced to chloride, while the bromine and iodine form hypobromous and hypoiodic acids, both potent oxidants, and the ammonia is oxidized to bromamine or chloramine, which are toxic to aquatic life. The rates of these reactions are quite rapid, to the point that they are almost instantaneous. For example, the oxidation of bromide by chlorine can use up one-half of the free chlorine in less than one second. These newly formed oxidants will continue to react with nearby compounds and eventually be reduced back to bromide, iodide, and ammonia.

Trihalomethanes (THM) are also formed as a result of chlorination in the presence of organic matter. The formation of these compounds is a function of precursor concentration, contact time, chlorine dose and pH. Typically, only four THM compounds are normally found and analyzed in the lab. They include chloroform (CHCl3), bromodichloromethane (CHBrCl2), dibromochloromethane (CHBr2Cl), and bromoform (CHBr3). Polyhalomethanes are naturally found in low concentrations in marine waters. Some species of marine algae are sources of polyhalomethanes including but not limited to bromoform (CHBr3), brodichlormethane (dichlorobromomethane, CHBrCl2), chloroform (trichloromethane, CHCl3), and dibromochloromethane (CHBr2Cl). Rock pool and shallow subtidal seaweeds in the genera *Laminaria, Fucus, Pelvetia, Gigartina, Polysiphonia, Enteromorpha, Chaetomorpha, Ulva, and Cladophora,* have been specifically identified as trihalomethane producers (Nightingale et al. 1995; Moore, 2003). Productive coastal waters are enriched with bromoform due in part to their production by marine macroalgae and possibly by marine microbes (Manley, Goodwin and North 1992). Seaweeds appear to be the dominant natural oceanic source of bromoform and methylene bromide. The marine coastal zone is a major source of bromoform produced by cyanobacteria (blue green algae), and other microalgae including phytoplankton and benthic forms. A major environmental source of chloromethane is also the decomposition of seaweeds. Salt marsh flowering plants also produce methyl halides (Murray et al. 2002). Toxicological studies suggest that chloroform is a potential human carcinogen (Standard Methods 19th Ed. 2005). The Ocean Plan defines halomethanes as the sum of bromoform, bromomethane (methyl bromide) and chloromethane (methyl chloride). The Ocean Plan's 30-day average water quality objective is 130 µg /l for total trihalomethanes (TTHM) and is based on protection of human health; the 2005 Ocean Plan does not provide an objective for the protection of marine aquatic life.

Measuring Chlorine in Seawater

It is because chloride, bromide and iodide are present in such high amounts that the determination of residual chlorine in seawater is so problematic (Johnson, 1977). By the time the analysis of seawater is initiated, the majority of the free chlorine will have reacted with something and been reduced to harmless chloride ions. Unfortunately, the methods used to measure the concentration of residual chlorine are not specific to that element. Rather, they measure the total concentration of oxidizing agents in the solution. Consequently, the oxidized bromine, iodine, and bromamine compounds would register as residual chlorine, even though they are something completely different (Eaton, 1995), and a more appropriate measurement may be for chlorine-produced oxidants. For this reason, it is important to be cautious when reviewing residual chlorine data for seawater samples. According to the 19th Edition of Standard Methods for the Examination of Water and Wastewater, as well as a paper published in the journal Chesapeake Science by Dr. J. Donald Johnson, iodide based residual chlorine methods, including colorimetric, amperometric monitors, and amperometric titrations, are inappropriate for the quantification of residual chlorine in estuarine and marine samples. Amperometric and continuous monitoring systems have been used successfully for chlorine-produced oxidants but do require additional expertise and care when making these measurements.

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Status of California's
Marine Water Quality Protected Areas

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Status of California's Marine Water Quality Protected Areas

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ABSTRACT

California has designated 34 different marine water quality protected areas, termed Areas of Special Biological Significance (ASBS), which extend across roughly 500 miles (32%) of state shoreline. Recent surveys observed over 1,600 outfalls into ASBS, most of which are storm drains potentially discharging nonpoint sources of pollutants. The goal of this study was to assess the extent and magnitude of water quality impacts in California's ASBS following storm events. A stratified probabilistic design was used for sampling receiving water shorelines near (discharge) and far (non-discharge) from storm drain outfalls. In all, more than 98 target analytes were measured from 33 sites immediately prior to (pre-storm) and immediately following (post-storm) wet weather. In general, reasonably good water quality exists in California's ASBS following storm events. Many of the target analytes measured did not exceed the State of California's Ocean Plan water quality standards (WQS) and toxicity, using an endemic test species, was rare. The post-storm concentrations of most constituents in discharge and non-discharge strata of ASBS were similar. Likewise, the average concentration increase across all target analytes from pre- to post-storm was less than 3-fold in the discharge stratum. The three potentially problematic parameters identified were total PAH, chromium, and copper. Total chromium did not exceed state WQS such as the instantaneous maximum and daily maximum, but did exceed the six-month median WQS in an estimated 50% of the state's ASBS shoreline-miles. Total PAH exceeded the 30-day average WQS in an estimated 87% of the state's ASBS shoreline-miles. Copper exceeded WQS less extensively (7% of ASBS shoreline-miles), but exclusively in the discharge stratum and for dissolved as well as total copper concentrations. The relatively good water quality on a statewide basis was not evenly distributed. In southern California, whose shoreline is under much more intense development than elsewhere in the state, almost twice as many target analytes exceeded WQS as in central or northern California.

INTRODUCTION

By their proximity, oceans adjacent to coastal land development are continually subjected to pollutant inputs. In the United States, approximately 53% of the population lives in counties bordering the coast, but comprises only 17% of the land area (Culliton *et al*. 1998). This has led to habitat alteration (Boesch *et al*.2001), eutrophication (Bricker *et al*.1999), contaminated sediments (USEPA 2005), and accumulation of toxics in tissues of marine organisms (O'Connor 1998).

One conservation strategy used to safeguard the marine environment is the establishment of protected areas where portions of the coast are set aside for limited use. Marine protected areas exist for some of the most ecologically sensitive areas around the world including Australia's Great Barrier Reef, Fiji, the Galapagos Islands, and others. Many marine protected areas also exist within the United States including California, Hawaii, and Florida (NOAA 2008). Virtually all of these marine protected areas, however, were established based upon natural resource needs and not exclusively water quality issues. Almost in unanimity, the aforementioned marine protected areas initially have fisheries-based goals that limit recreational and/or commercial fishing. Water quality goals, if addressed, were not the primary motivation for the establishment of the marine protected area.

Unlike most other coastal conservation strategies, the State of California established 34 marine protected areas in 1974-75 specifically for the protection of water quality (SWRCB 2005). Although they are called areas of special biological significance (ASBS), not all of these marine water quality protected areas also limit harvesting (i.e., fishing). Twenty-five of the ASBS occur on the mainland of California comprising 499 shoreline miles and 32% of the state coastline (Figure 1). The primacy of water quality protection is indicated within state policy whereby all "discharge of waste is prohibited" and "natural water quality must be maintained" in these ASBS (SWRCB 2005).

The State of California has done a remarkable job limiting point source discharges in ASBS. Less than 10 point source discharges exist statewide, and these are almost entirely discharges from marine aquaria and/or flow through seawater systems associated with research academic institutions. However, little attention has been placed on non-point source discharges, which are much more numerous. Over 1,600 outfalls have been identified along ASBS shoreline (SCCWRP 2003). The vast majority of these outfalls were storm drains that could potentially discharge urban and agricultural runoff from upstream development. Large portions of this upstream development did not exist when the ASBS were originally established in the mid-1970's.

The objective of this study was to assess the extent and magnitude of water quality impacts in ASBS following storm events. Further, the magnitude and extent of impact in ASBS was compared between areas near stormwater discharges and areas distant from discharges to determine the potential of storm drain outfalls to cause the observed impacts in water quality. Ultimately, the goal was to determine if significant water quality impacts existed within ASBS, with the results guiding managers on the need and direction of potential future intervention.

METHODS

This study utilized a probabilistic-based design to estimate the shoreline-miles or percent of total shoreline-miles with observed impacts to water quality. Probabilistic designs, wherein sample sites are selected randomly, enable unbiased estimates of extent (Stevens 1997). For the current study design, the sampling frame consisted of all mainland ASBS shoreline, divided into two groups: 1) areas near direct discharges defined as less than 500m from a pipe, drain, or other surface discharge greater than 18 inches diameter; and 2) non-discharge areas defined as more than 500 m distant from direct discharges. The 500 m cutoff was selected based on nearshore modeling studies by Jenkins and Wasyl (2007). All sites were collected from shoreline receiving water. No effluent samples were collected as part of this study. All sites were sampled for only a single storm event between February and April 2009.

A total of 33 sites were selected for sampling. Twenty-one sites were from the discharge stratum and 12 sites were from the non-discharge stratum (Table 1). At each site, samples were collected immediately prior to (<48 hours), then immediately following (<24 hours), significant storm events. Sampling criteria included: 1) all post-storm samples must be collected as soon after the storm event as possible (nearly all were collected less than six hours following cessation of rainfall); 2) at discharge sites, stormwater flows must reach the ocean; and 3) all ocean receiving water samples must be collected by hand from the shore (no boats). These criteria helped ensure that the focus was on receiving waters, that recent stormwater inputs had occurred, and examining the area closest to shore where potentially the least mixing occurs.

All water samples were analyzed for 98 parameters: 1) general constituents including total suspended solids (TSS), dissolved organic carbon (DOC), and salinity; 2) nutrients including nitrate (NO3-N), nitrite (NO2-N), ammonia (NH3-N), total nitrogen (TN), total phosphorus (TP), and ortho-phophate (PO4-P); 3) dissolved and total trace metals (As, Cd, Cr, Cu, Ni, Pb, Ag, Se, Zn); 3) chlorinated hydrocarbons including total PCB (sum of congeners 18, 28, 37, 44, 49, 52, 66, 70, 74, 77, 81, 87, 99, 101, 105, 110, 114, 118, 119, 123, 126, 128, 138, 149, 151, 153, 156, 157, 158, 167, 168, 169, 170, 177, 180, 183, 187, 189, 194, 201, 206) and total DDT (sum of o,p'- and p,p'-DDT, DDE, and DDD); 4) total polycyclic aromatic hydrocarbons (28 PAH); and 5) short-term chronic toxicity using an early life stage of an endemic species. All sample analysis followed standard methods and/or EPA approved procedures (APHA 2006). Trace metals were prepared for analysis using ammonium pyrrolidine dithiocarbamate (APDC), a chelation method that concentrates trace metals and removes matrix interferences (USEPA 1996). Fertilization success of the purple sea urchin, *Strongylocentrotus purpuratus*, was used for toxicity testing (USEPA 1995).

The project focused on performance-based measures of quality assurance. In general, laboratory data quality was quite good: no laboratory blank samples greater than the method detection limit; 96% success meeting data quality objectives (DQOs) for precision using laboratory duplicates; 91 % success meeting DQOs for accuracy using spiked samples. The lowest accuracy success rate was for cadmium (12 of 15 batches) and zinc (8 of 16 batches) where the requirement of 75-125% recovery from seawater was not met. This was due, in part, to the APDC chelation method that has lower affinities for extracting cadmium and zinc.

Data Analysis

Based on the study design, two data analysis approaches were utilized to compare spatial (discharge vs. non-discharge strata) and temporal (pre-storm vs. post-storm) relationships. The first approach examined the magnitude of changes in space and time. To do this, area-weighted geometric means were calculated for total ASBS shoreline and for each stratum and time period using a ratio estimator approach following Thompson (1992):

$$m = \frac{\sum_{i=1}^{n} (p_i * w_i)}{\sum_{i=1}^{n} w_i},$$

Where:
m = Log_{10} of the area-weighted mean concentration for population j.
p_i = Log_{10} of the parameter value (e.g., concentration) at station i.
w_i = Area weight for station i.
n = Number of stations in population j.

The standard error of the mean is calculated using the following equation where the 95% confidence intervals about the mean were calculated as 1.96 times the standard error.

$$\text{Standard error (SE)} = \sqrt{\frac{\sum_{i=1}^{n} ((p_i - m) * w_i)^2}{\left(\sum_{i=1}^{n} w_i\right)^2}},$$

where:
m = Log_{10} of the area-weighted mean concentration for population j.
p_i = Log_{10} of the parameter value (e.g., concentration) at station i.
w_i = Area weight for station i.
n = Number of stations in population j.

All concentrations below detection limits were treated as zero. Area-weighted geometric means and confidence interval were back-transformed for tables and graphs.

The second data analysis approach focused on estimating the areal extent of impact. To accomplish this, area weights for each sample that exceeded State of California water quality standards (WQS) were summed and divided by the total area-weight for the stratum and time period of interest. The WQS are defined in Table B of the California Ocean Plan (SWRCB 2005). Four WQS exist including six-month median, 30-day average, daily maximum, and instantaneous maximum thresholds.

RESULTS

The post-storm concentrations of most constituents in discharge and non-discharge strata of ASBS were similar (Table 2). Except for DOC and dissolved copper, there was no statistical difference in area-weighted geomean concentrations between post-storm discharge and non-discharge strata. In the case of post-storm copper geomean concentrations, the discharge stratum was greater than the non-discharge stratum. The case was reversed for DOC; the non-discharge was greater than the discharge stratum. Although not statistically different, the area-weighted geometric mean concentration in the discharge stratum was greater for 14 of the remaining 24 parameters compared to the post-storm non-discharge stratum. Post-storm concentrations of chlorinated hydrocarbons, such as total DDT and total PCB, were uniformly non-detectable in both strata.

On average, the increase in concentration across all target analytes from pre- to post-storm samples was less than 3-fold in the discharge stratum (Table 2; Figure 2). In fact, none of the target analyte concentrations were significantly greater post-storm compared to pre-storm. Average concentrations for 12 of the 25 target analyte actually decreased from pre- to post-storm in the discharge stratum. Of the remaining 13 target analytes, the most substantial concentration increases were for dissolved iron (26-fold) and DOC (15-fold).

In general, exceedence of WQS such as instantaneous maxima, daily maxima, and six-month medians, were infrequent for ammonia and trace metals following storm events (Table 3). None of the target analytes collected post-storm exceeded WQS based on instantaneous maxima. Only a single target analyte collected post-storm exceeded the WQS based on the daily maximum. This analyte, total chromium, exceeded 2% of the post-storm shoreline-miles across all ASBS. Ten of 18 parameters collected post-storm exceeded the WQS based on six-month median objectives. Three parameters were dissolved metals (cadmium, copper, and nickel); none of these dissolved metals exceeded the six-month median in more than 2% of the ASBS shoreline-miles. Seven of the parameters exceeding the six-month median were for total metals. The parameter that exceeded the six-month median WQS most frequently (50% of ASBS shoreline-miles) was total chromium. Total nickel exceeded the six-month median WQS second most frequently (15% of ASBS shoreline-miles). Total arsenic, cadmium, copper, lead and zinc exceeded six-month median WQS between 2 and 7% of the ASBS shoreline-miles.

In contrast to ammonia and trace metals, exceedence of state WQS for trace organic parameters was much more frequent (Table 4). Of the six target organic analytes collected post-storm, only total PAH exceeded the 30-day average WQS. However, total PAH exceeded the 30-day average WQS an estimated 87% of the ASBS shoreline-miles. Other trace organic parameters including total DDTs, total PCBs, chlordane, and dieldrin did not exceed the 30-day average WQS.

Except for total chromium and total nickel, there was no dramatic difference in the extent of post-storm WQS exceedences between discharge and non-discharge strata (Tables 3 and 4). The difference in exceedence of the six-month median WQS following storm events was nearly two-fold for total chromium (35% of shoreline-miles for the non-discharge stratum compared to 61% of shoreline-miles for the discharge stratum) and a factor of eight for total nickel (3% of shoreline-miles for the non-discharge stratum compared to 24% of shoreline-miles for the discharge stratum).

Contrary to expectations, there was little change in the extent of WQS exceedences from pre- to post-storm in the discharge stratum (Tables 3 and 4). For example, the percent of shoreline-miles that exceeded WQS for chromium and total PAH changed by less than 10% (Figure 3). On the other hand, there were substantial changes in the extent of WQS exceedence from pre- to post-storm in the non-discharge stratum, particularly for these same two target analytes. The extent of shoreline-miles approximately doubled pre- to post-storm for total chromium and total PAH. In fact, the extent of post-storm WQS exceedences of total PAH in the non-discharge stratum looked very much like the extent in the discharge stratum (89% vs. 86% of shoreline-miles, respectively).

Exceedences of the WQS occurred most frequently in southern California compared to northern or central California (Figure 4). The Irvine Coast ASBS in southern California had the greatest number of target analytes (six) sampled post-storm that exceeded WQS and had concentrations that increased from pre- to post-storm. The Robert Badham ASBS followed with four target analytes sampled post-storm that exceeded WQS. No ASBS in Central and Northern California exceeded these same criteria by more than three target analytes. Only a single ASBS in southern California (San Diego-Scripps ASBS) had no exceedences of the WQS for any analyte. There were six ASBS in Central and Northern California that had no analytes exceeding the WQS.

The occurrence of toxicity in post-discharge samples from ASBS was rare. Roughly 3% of the shoreline miles observed post-storm toxicity. This was relatively evenly split between non-discharge and discharge strata.

DISCUSSION

Based on the results from this study, generally good water quality exists in California's ASBS following storm events. Most target analytes measured did not exceed the State of California's WQS and, for the majority of analytes that did exceed the WQS, the relative extent of impact was small (< 7% of ASBS shoreline-miles). All of the target analytes that exceeded WQS have natural as well as anthropogenic sources (e.g., trace metals), but synthetic pesticides (e.g., total DDTs, total PCBs, chlordane and dieldrin) never exceeded WQS and were rarely detected. Additionally, toxicity using an endemic species (sea urchin fertilization test) was infrequent indicating unmeasured analytes were likely not problematic. Finally, average receiving water concentrations of most common stormwater constituents (i.e., lead, zinc, etc.) were statistically similar between the discharge and non-discharge stratum, and average concentrations measured pre-storm were statistically similar to post-storm concentrations in discharge stratum. The lack of demonstrative impact following storm events is an important finding because the greatest perceived risk to ASBS water quality is from stormwater runoff generated by urban, agricultural, and other nonpoint source activities.

While the summary of post-storm water quality in ASBS can be described as good, there were three parameters that stand out as potentially problematic. These include total PAH, chromium, and copper. Total PAH is a known stormwater contaminant from studies not only in California (Stein *et al*.2006), but around the United States (Hoffman *et al*.1984). Total PAH concentrations in ASBS were generally low, never exceeding 186 ng/L. Unlike all the other analytes that indicated impairment, the WQS for PAH is based on risk to human health through bioaccumulation in seafood. Hence, the total PAH WQS may be marginally applicable for the protection of marine aquatic life. Interestingly, the frequency of WQS exceedence for total PAH was similar between pre- and post-storm in the discharge stratum so non-storm sources may be at play. Other potential sources could be numerous including dry weather runoff (Stein *et al*. 2006), atmospheric deposition (Sabin *et al*.2009), or natural seeps (Leifer *et al*.2006). Clearly, future work on source attribution of total PAH and its potential for biological effects, should be evaluated.

Unlike total PAH, the WQS for chromium is based on the predicted marine life toxicity of its most harmful state, hexavalent chromium. While total chromium is the accepted surrogate for hexavalent chromium in most regulatory applications, no analysis was done in this study to evaluate the relative contribution of hexavalent chromium. Since toxicity was infrequently observed, one can hypothesize that hexavalent chromium was often below the WQS. However, the disparity in the extent of total chromium exceeding WQS between the discharge stratum and non-discharge stratum was sizeable (61% vs. 35% of ASBS shoreline-miles, respectively). Therefore, total chromium in stormwater discharges likely has some influence on ASBS receiving water concentrations. Adding to the concern, total chromium is a commonly found analyte in urban stormwater discharges, with industrial land uses having amongst the greatest concentrations in southern California (Tiefenthaler *et al*.2008). Chromium is also a naturally occurring component of serpentine rock in many coastal California locations (Caillaud *et al*. 2009). Because of the issues associated with natural versus anthropogenic sources of chromium, surveys focused on chromium and the relationship between total and hexavalent chromium at problematic ASBS may be warranted.

Copper was the final target analyte of concern. The concern was generated by four factors that individually aren't alarming, but collectively may indicate stormwater influences. First, total copper exceeded WQS, although not extensively (7% of ASBS shoreline-miles). However, the extent of impact occurred exclusively in the discharge stratum while the non-discharge stratum was free of copper WQS exceedences. Second, the copper WQS exceedence in the discharge stratum occurred post-storm, but was absent in pre-storm samples. Third, the WQS exceedence occurred not just for total copper, but also for dissolved copper. Fourth, the average dissolved copper concentration was significantly greater post-storm than pre-storm. The third and fourth factors are relevant to stormwater inputs because dissolved copper is more bio-available, and an inherently greater toxicological risk to marine life, compared to total copper (Arnold *et al*.2005). Moreover, copper is consistently observed in stormwater discharges (Tiefenthaler 2008). Further, copper has been identified as the primary toxicant of concern for failed toxicity tests using the sea urchin fertilization test in near coastal water influenced by stormwater runoff (Bay *et al*.2003)

The larger concern for total PAH and total chromium may actually be in the non-discharge stratum. It was in the non-discharge stratum that WQS exceedences rose dramatically from pre- to post-storm. While average concentrations did not dramatically increase, they were very near the state's WQS and the extent of ASBS shoreline-miles exceeding WQS doubled or tripled. In fact, the extent of WQS exceedence in non-discharge areas post-storm looked very similar to the extent observed in the discharge stratum. This study design element was intentional; we wanted to see if discharges either inside or outside of ASBS may impact non-discharge shoreline. The influence of distant sources, at least for these two target analytes, was obvious.

An alternative hypothesis is that applying long-term WQS to short-term events, like storm events, are not appropriate in the nearshore zone. California has several short-term thresholds including instantaneous maximum, daily maximum, and additional long-term thresholds such as the 30-day average (for trace organics) or six-month median (for ammonia and trace metals). However, it is standard regulatory practice to use even single samples to evaluate the long-term thresholds when additional data are not available. In the case of this study, even the most problematic target analytes (total PAH and total chromium, both of which have both natural and anthropogenic sources) did not exceed the short-term thresholds. It was application of the long-term thresholds, whose benchmark concentrations are much lower, when WQS exceedences became problematic. For this reason, a more appropriate measure might be "natural water quality" as designated in state policy. Natural water quality, while attractive, has its own set of technical and political challenges. Since no statewide data exists from natural (e.g., reference) sites, additional data collection would be necessary.

Finally, the notably good water quality on a statewide basis was not evenly distributed throughout the state. Some ASBS exceeded WQS standards at a much greater frequency and these regions should likely receive further attention. For example, sites in southern California fared worse than their northern or central California counterparts. This may be due, in part, to the intense urbanization of the southern region. More than 20 million people live in southern California and coastal development pressure is intense (Ackerman and Schiff 2003). In the survey of storm drain discharges to ASBS, over 46% occurred in southern California. In fact, so much development occurs in southern California coastal watersheds, that the non-discharge stratum (defined as >500m from drain discharges 18 inches and greater), did not exist in southern California.

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Figure 1. Map of California's Water Quality Protected Areas termed "Areas of Special Biological Significance".

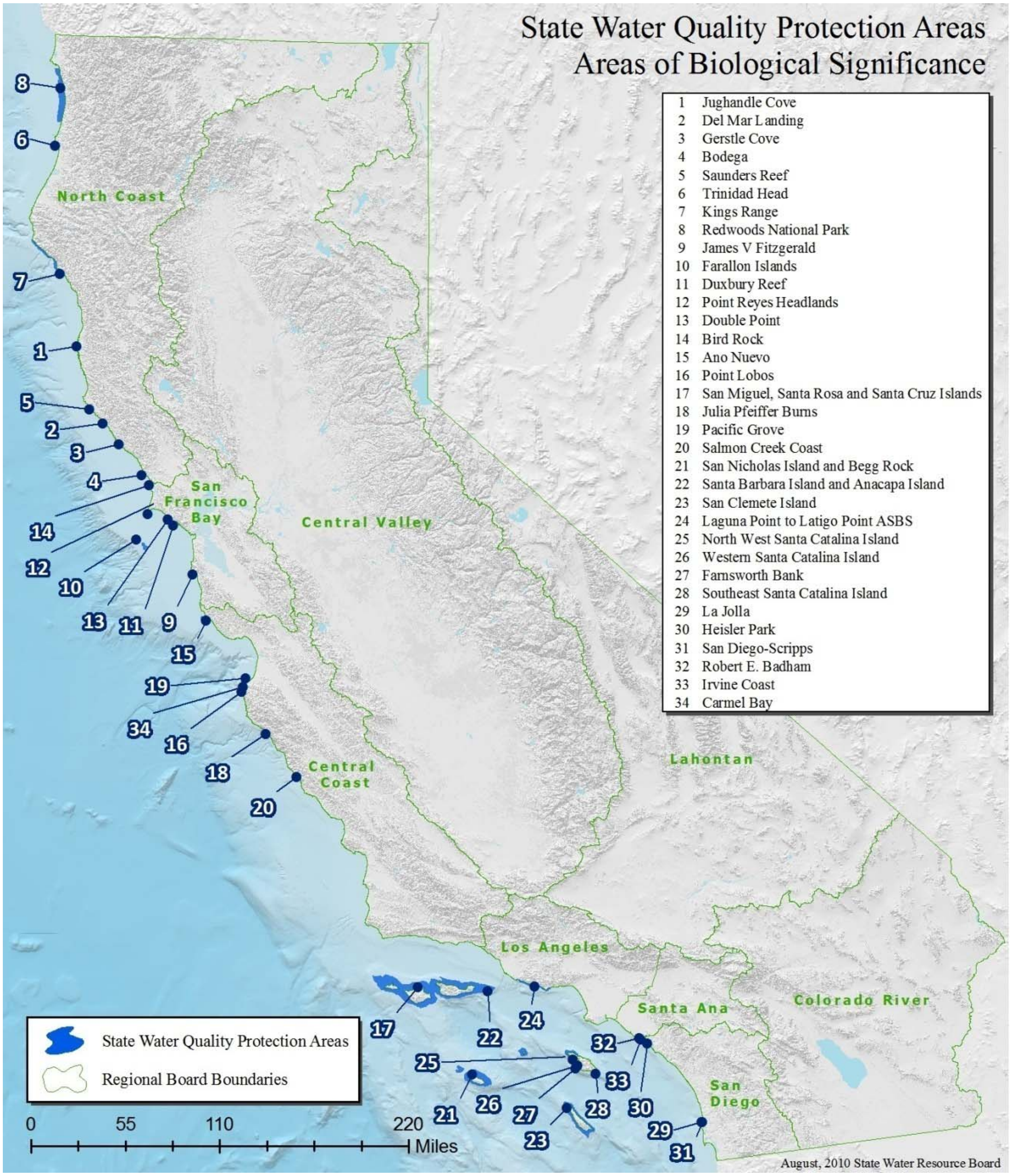

Figure 2. Relative increase of target analyte concentrations in Areas of Special Biological Significance (ASBS) collected <48 hours prior to a storm (pre-) compared to concentrations collected <24 hours following a storm (post-). Unity indicates pre- and post-storm concentrations were the same. Values greater than 1 indicate a post-storm increase in concentration.

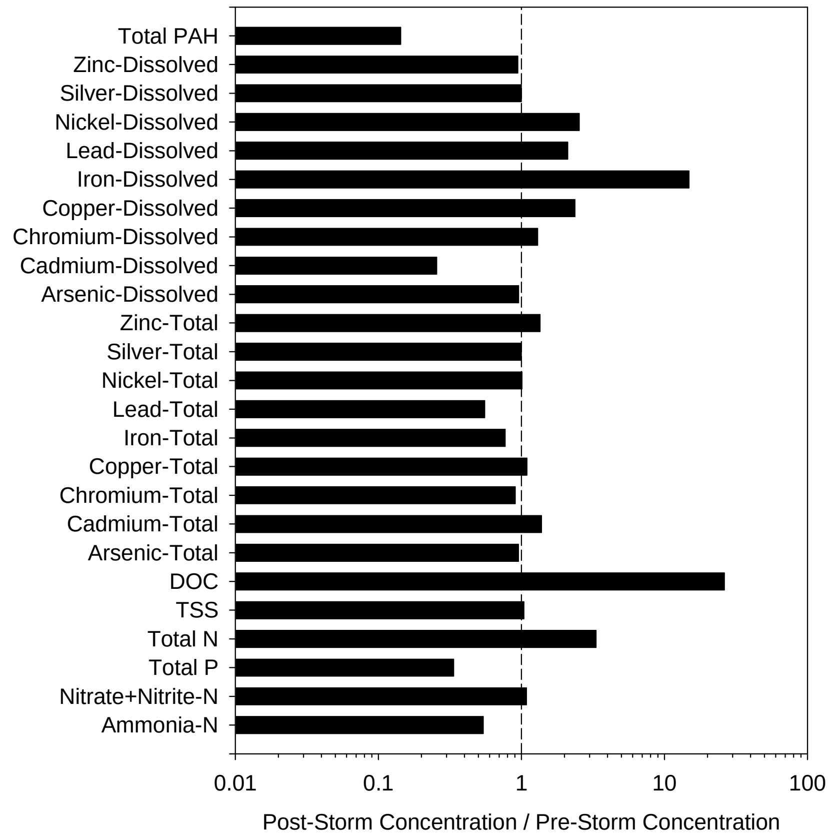

Figure 3. Comparison of the percent shoreline-miles that exceeded State of California 30-day water quality standards for total chromium and total PAH from pre- and post-storm samples in discharge and non-discharge strata.

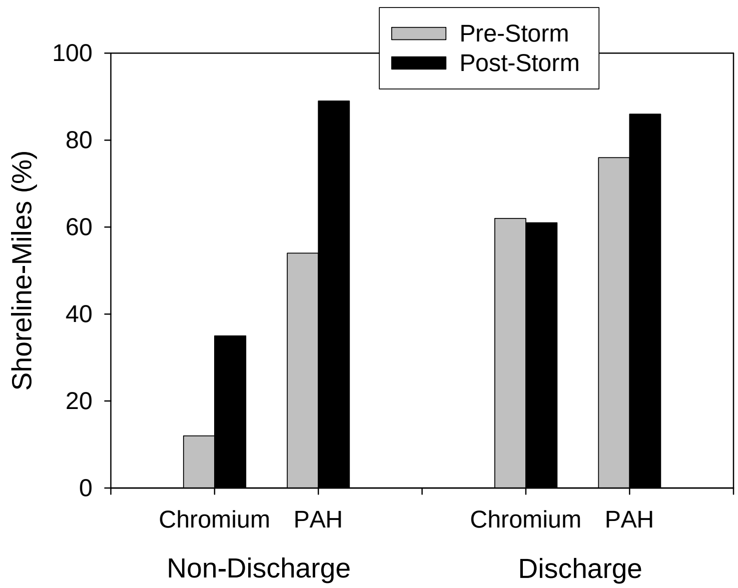

Figure 4. Number of parameters (out of 25) that exceeded State Water Quality Standards (6 month median for ammonia and trace metals, 30-day average for trace organics, SWRCB 2005), and had post-storm concentrations greater than pre-storm concentrations, in each of the sampled Areas of Special Biol ogical Significanc e (AS BS). Da ta are pre sented for b oth the disc harge and no n-discharge strata. 0 = no parameters exceeded water quality standard (WQS). nd = no data.

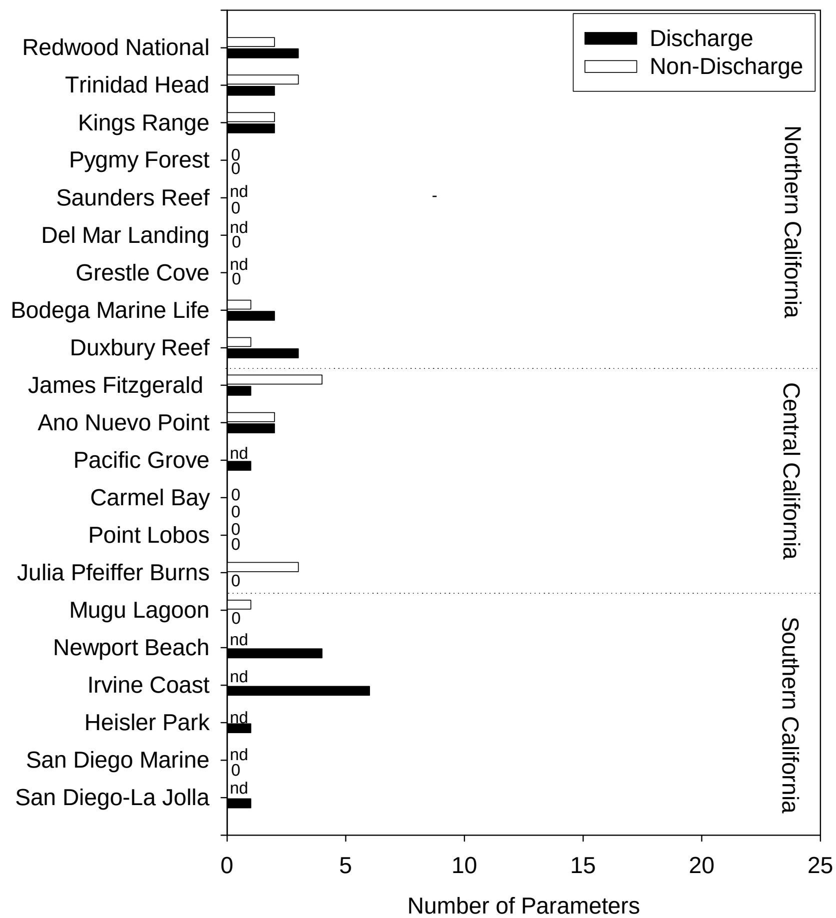

Table 1. List of sample sites.

Stratum	SiteID	Longitude	Latitude	ASBS No.	Location
Non-Discharge	N018	-124.0858	41.3196	7	Redwood National and State Parks ASBS
Discharge	D055	-124.0941	41.2799	7	Redwood National and State Parks ASBS
Discharge	D027	-124.1486	41.0608	5	Kelp Beds at Trinidad Head ASBS
Non-Discharge	N043	-124.1441	41.0573	5	Kelp Beds at Trinidad Head ASBS
Non-Discharge	N243	-124.0796	40.0584	6	Kings Range National Conservation Area ASBS
Discharge	D119	-124.0798	40.0388	6	Kings Range National Conservation Area ASBS
Non-Discharge	N035	-123.8216	39.3808	1	Pygmy Forest Ecological Staircase ASBS
Discharge	D037	-123.8188	39.3764	1	Pygmy Forest Ecological Staircase ASBS
Discharge	D050	-123.6487	38.8519	5	Kelp Beds at Saunders Reef ASBS
Discharge	D042	-123.5116	38.7408	2	Del Mar Landing Ecological Reserve ASBS
Discharge	D043	-123.3315	38.5663	3	Grestle Cove ASBS
Non-Discharge	N038	-123.0742	38.3190	4	Bodega Marine Life Refuge ASBS
Discharge	D046	-123.0704	38.3171	4	Bodega Marine Life Refuge ASBS
Non-Discharge	N051	-122.7192	37.9017	10	Duxbury Reef Reserve and Extension ASBS
Discharge	D067	-122.7111	37.8972	10	Duxbury Reef Reserve and Extension ASBS
Discharge	D058	-122.4986	37.5011	8	James V. Fitzgerald Marine Reserve ASBS
Non-Discharge	N042	-122.4958	37.4956	8	James V. Fitzgerald Marine Reserve ASBS
Discharge	D001	-122.3381	37.1361	15	Ano Nuevo Point and Island ASBS
Non-Discharge	N064	-122.3042	37.1153	15	Ano Nuevo Point and Island ASBS
Discharge	D035	-121.9135	36.6230	19	Pacific Grove Marine Gardens Fish Refuge and Hopkins Marine Life Refuge ASBS
Discharge	D220	-121.9316	36.5396	34	Carmel Bay ASBS
Non-Discharge	N055	-121.9298	36.5232	34	Carmel Bay ASBS
Non-Discharge	N002	-121.9528	36.5183	16	Point Lobos Ecological Reserve ASBS
Discharge	D030	-121.9439	36.5128	16	Point Lobos Ecological Reserve ASBS
Discharge	D031	-121.6973	36.1754	18	Julia Pfieffer Burns Underwater Park ASBS
Non-Discharge	N022	-121.6960	36.1743	18	Julia Pfieffer Burns Underwater Park ASBS
Discharge	D016	-118.8727	34.0373	24	Mugu Lagoon to Latigo Point ASBS
Non-Discharge	N006	-118.8076	34.0008	24	Mugu Lagoon to Latigo Point ASBS
Discharge	NWPT	-117.8675	33.5887	32	Newport Beach Marine Life Refuge ASBS
Discharge	D087	-117.8480	33.5774	33	Irvine Coast Marine Life Refuge ASBS
Discharge	D076	-117.7897	33.5428	30	Heisler Park Ecological Reserve ASBS
Discharge	D080	-117.2535	32.8693	31	San Diego Marine Life Refuge ASBS
Discharge	D074	-117.2637	32.8498	29	San Diego-La Jolla Ecological Reserve ASBS
22					Total No. Sites in Discharge Stratum
11					Total No. Sites in NonDischarge Stratum
33					Total No. Sites

Table 2. Area weighted geomean concentrations (+ 95% confidence intervals) for receiving water strata near (discharge) and far (nondischarge) from outfalls in areas of special biological significance <48 hours before (pre-storm) and <24 hours following (post-storm) wet weather events. "–" indicates no detectable quantities.

Parameter	Units	Nondischarge				Discharge			
		Pre-storm		Post-storm		Pre-storm		Post-storm	
		Geomean	(+) 95% CI	Geomean	(+) 95% CI	Geomean	(+) 95% CI	Geomean	(+) 95% CI
Ammonia-N	mg/L	0.001	0.002	0.004	0.008	0.017	0.031	0.009	0.009
Nitrate+Nitrite-N	mg/L	0.13	0.10	0.14	0.10	0.11	0.07	0.12	0.0559
Total P	mg/L	0.41	0.24	0.19	0.09	0.21	0.20	0.07	0.03
Total N	mg/L	0.76	1.22	0.82	1.03	0.37	0.56	1.25	1.44
TSS	mg/L	95.7	145.3	78.5	52.3	91.7	69.2	95.5	75.4
DOC	mg/L	--	--	--	--	0.03	0.06	0.89	1.03
Arsenic-Total	ug/L	1.69	0.35	1.72	0.30	1.96	0.42	1.87	0.40
Cadmium-Total	ug/L	0.05	0.02	0.05	0.02	0.08	0.02	0.11	0.10
Chromium-Total	ug/L	1.61	0.49	2.17	0.74	2.85	1.48	2.59	0.96
Copper-Total	ug/L	0.99	0.32	1.43	0.70	1.09	0.37	1.19	0.43
Iron-Total	ug/L	761	539	1301	1098	1288	919	994	474
Lead-Total	ug/L	0.71	0.82	0.60	0.49	0.89	0.61	0.50	0.13
Nickel-Total	ug/L	2.07	0.84	2.91	0.88	2.87	1.28	2.90	0.95
Silver-Total	ug/L	0.002	0.004	--	--	0.007	0.010	--	--
Zinc-Total	ug/L	1.91	1.76	1.10	1.20	3.39	0.91	4.59	2.86
Arsenic-Dissolved	ug/L	1.43	0.07	1.32	0.16	1.35	0.07	1.29	0.13
Cadmium-Dissolved	ug/L	0.02	0.02	0.03	0.02	0.20	0.27	0.05	0.03
Chromium-Dissolved	ug/L	0.18	0.02	0.18	0.04	0.16	0.01	0.21	0.02
Copper-Dissolved	ug/L	0.17	0.03	0.21	0.05	0.23	0.10	0.54	0.24
Iron-Dissolved	ug/L	0.07	0.12	0.15	0.21	0.36	0.24	5.33	4.90
Lead-Dissolved	ug/L	0.002	0.003	0.003	0.003	0.009	0.006	0.018	0.019
Nickel-Dissolved	ug/L	0.39	0.13	0.47	0.27	0.37	0.15	0.93	0.65
Silver-Dissolved	ug/L	--	--	--	--	--	--	--	--
Zinc-Dissolved	ug/L	0.24	0.34	0.26	0.33	1.53	1.63	1.44	1.84
Total PAH	ug/L	0.020	0.017	0.038	0.033	0.106	0.117	0.015	0.005

Table 3. Percent of shoreline-miles exceeding daily maximum of six-month median water quality standards (WQS) in receiving water either near outfalls (discharge), far from outfalls (nondischarge), or combined (statewide) in areas of special biological significance <48 hours before (pre-storm) and <24 hours following (post-storm) wet weather events.

Parameter	Units	Shoreline-Miles (%) Exceeding Daily Maximum WQS						
		WQS	Pre-Storm			Post-Storm		
			Statewide	Discharge	Non-Discharge	Statewide	Discharge	Non-Discharge
Ammonia-N	mg/L	2.4	--	--	--	--	--	--
Arsenic-Dissolved	ug/L	32	--	--	--	--	--	--
Cadmium-Dissolved	ug/L	4	--	--	--	--	--	--
Chromium-Dissolved	ug/L	8	--	--	--	--	--	--
Copper-Dissolved	ug/L	12	--	--	--	--	--	--
Lead-Dissolved	ug/L	8	--	--	--	--	--	--
Nickel-Dissolved	ug/L	20	--	--	--	--	--	--
Silver-Dissolved	ug/L	2.8	--	--	--	--	--	--
Zinc-Dissolved	ug/L	80	--	--	--	--	--	--
Arsenic-Total	ug/L	32	--	--	--	--	--	--
Cadmium-Total	ug/L	4	--	--	--	--	--	--
Chromium-Total	ug/L	8	--	--	--	2	3	--
Copper-Total	ug/L	12	--	--	--	--	--	--
Lead-Total	ug/L	8	--	--	--	--	--	--
Nickel-Total	ug/L	20	--	--	--	--	--	--
Silver-Total	ug/L	2.8	--	--	--	--	--	--
Zinc-Total	ug/L	80	--	--	--	--	--	--

Table 3. Continued

Parameter	Units	Shoreline-Miles (%) Exceeding 6-Month Median WQS						
		WQS	Pre-Storm			Post-Storm		
			Statewide	Discharge	Non-Discharge	Statewide	Discharge	Non-Discharge
Ammonia-N	mg/L	0.6	--	--	--	--	--	--
Arsenic-Dissolved	ug/L	8	--	--	--	--	--	--
Cadmium-Dissolved	ug/L	1	--	--	--	< 1	< 1	--
Chromium-Dissolved	ug/L	2	--	--	--	--	--	--
Copper-Dissolved	ug/L	3	--	--	--	< 1	< 1	--
Lead-Dissolved	ug/L	2	--	--	--	--	--	--
Nickel-Dissolved	ug/L	5	--	--	--	2	3	--
Silver-Dissolved	ug/L	0.7	--	--	--	--	--	--
Zinc-Dissolved	ug/L	20	--	--	--	--	--	--
Arsenic-Total	ug/L	8	--	--	--	2	3	--
Cadmium-Total	ug/L	1	--	--	--	2	4	--
Chromium-Total	ug/L	2	41	62	12	50	61	35
Copper-Total	ug/L	3	--	--	--	7	5	10
Lead-Total	ug/L	2	11	6	18	5	--	11
Nickel-Total	ug/L	5	3	6	--	15	24	3
Silver-Total	ug/L	0.7	--	--	--	--	--	--
Zinc-Total	ug/L	20	--	--	--	4	7	--

Table 4. Percent of shoreline-miles exceeding 30-day average water quality standards (WQS) in receiving water either near outfalls (discharge), far from outfalls (nondischarge), or combined (statewide) in areas of special biological significance <48 hours before (pre-storm) and <24 hours following (post-storm) wet weather events.

Parameter	Units	Shoreline-Miles (%) Exceeding 30-Day Average WQS						
		WQS	Pre-Storm			Post-Storm		
			Statewide	Discharge	Non-Discharge	Statewide	Discharge	Non-Discharge
Fluoranthene	ng/L	150	--	--	--	--	--	--
Chlordane	ng/L	0.023	--	--	--	--	--	--
DDT	ng/L	0.17	< 1	1	--	--	--	--
Dieldrin	ng/L	0.04	--	--	--	--	--	--
PAHs	ng/L	8.8	66	76	54	87	86	89
PCBs	ng/L	0.019	--	--	--	--	--	--

SEPTEMBER 2012

Santa Monica Bay Watershed Management Area (WMA) Trash Monitoring and Reporting Plan (TMRP) - Final

Submitted to:

COUNTY OF LOS ANGELES

LARRY WALKER ASSOCIATES

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List of Acronyms

BMP	Best Management Practice
BPA	Basin Plan Amendment
CPS	Connector Pipe Screen
DGR	Daily Generation Rate
DBH	Department of Beaches and Harbors
FCS	Full Capture System
LA	Load Allocation
MFAC	Minimum Frequency of Assessment and Collection
MS4	Municipal Separate Storm Sewer System
PCS	Partial Capture System
TMDL	Total Maximum Daily Load
TMRP	Trash Monitoring and Reporting Plan
WLA	Waste Load Allocation

Overview

The purpose of this document is to detail a Trash Monitoring and Reporting Plan (TMRP) and Minimum Frequency of Assessment and Collection/ Best Management Practice (MFAC/BMP) program to implement the Santa Monica Bay Nearshore and Offshore Debris Total Maximum Daily Load (TMDL), effective March 20, 2012. The implementation of the TMDL covers the entire Santa Monica Bay Watershed Management Area (WMA).

The TMRP encompasses a description of an MFAC program, procedures to assess compliance with the MFAC program, current BMPs, a monitoring program to quantify trash from source areas, and information on sources to prioritize BMP implementation. The TMRP includes monitoring and assessment procedures that allow for determination of compliance for both point and nonpoint sources.

The TMRP and MFAC/BMP program described herein are being submitted on behalf of the County of Los Angeles (County), the Los Angeles County Department of Beaches and Harbors (DBH), and the City of Hermosa Beach, three of the responsible parties identified in the TMDL, to address point and non-point source trash in the Unincorporated County Areas, on beaches and harbors owned and operated by the County, and non-point source trash within the Hermosa Beach owned by the City of Hermosa Beach within the Santa Monica Bay Watershed Management Area. Future implementation efforts may warrant changes based upon outcomes of subsequent studies and findings. Significant deviations from the County TMRP and MFAC/BMP program will initiate notification to the Los Angeles Regional Water Quality Control Board (Regional Board).

TRASH DEFINITION

For purposes of the TMRP and MFAC/BMP program, trash is any persistent solid material that is manufactured or processed and directly or indirectly, intentionally or unintentionally, disposed of or abandoned into the environment. Materials properly placed within trash collection bins (e.g., cans or dumpsters) are not considered trash with regards to MFAC assessment or trash generation rate evaluations. Naturally occurring vegetation waste is also not considered trash.

TMRP REQUIREMENTS

TMRP requirements apply to both point sources (e.g., catch basins within the municipal separate storm sewer system) and nonpoint sources (i.e., beaches, harbors, non-beach open space and parks.) As outlined in the TMDL, assessment metrics for point source waste load allocations (WLAs) and nonpoint source load allocations (LAs) are as follows:

Point sources:

- The installation of full capture devices on all conveyances discharging to waterbodies within the Santa Monica Bay WMA[1].

Nonpoint sources:

[1] Where full capture devices are not feasible (e.g., due to size limitations), the County will elect to use partial capture devices or other controls to remove trash from the subdrainage area at the commensurate trash generation rate.

- No trash on Beaches or in Harbors immediately after a cleanup event.
- Trash is not accumulating in deleterious amounts.
- Trash generation rate of sources areas does not exceed the benchmark of 113,150 pounds per mile per year (310 lbs/mi/day) for Beaches and Harbors, or 162,468 pounds per square mile per year (640 gal/mi^2/yr) for Non-Beach Open Space and Harbors, and displays a decreasing trend over time.

In the event the assessment metrics are not met, the County may evaluate the BMPs currently being employed and determine if additional BMPs may result in attaining the metrics. If changes to existing BMPs or implementation of additional BMPs are determined to likely result in attaining the assessment metrics, the County will describe the proposed modifications and the schedule for effecting the modifications as part of the Annual Monitoring Report. Where assessment metrics are not met, the County will be in compliance with the TMDL by completing the BMP evaluation, reporting the results and schedule for changes as appropriate in the Annual Monitoring Report, and, as appropriate, implementing the identified changes.

The TMRP is designed to address the following requirements:

- Assessment and Monitoring
    - Establish nonpoint source monitoring requirements
    - Develop initial monitoring protocols, locations, and frequencies
        - MFAC assessment program for Beaches and Harbors (nonpoint sources)
        - MFAC assessment program for Non-Beach Open Space and Parks (nonpoint sources)
        - Evaluation of trash generation rates from nonpoint source areas
    - Establish reporting requirements
- BMP Implementation
    - Prioritize High Trash Generation Areas (point and nonpoint sources)
    - Evaluate and identify most appropriate Full Capture Systems (FCS) or Partial Capture Systems (PCS)/BMPs to install or implement (point and nonpoint sources)
    - Evaluate MFAC/BMP program effectiveness (nonpoint sources)
- Point source implementation
    - Outline FCS sizing.
    - Propose definitions for “major rain event” and “proper operation and maintenance”

Trash receptacles placed for proposer disposal of unwanted items, and cleanup events to collect trash, are the major BMPs of the MFAC program. The following are the proposed collection and monitoring procedures that will be used for the TMRP:

MFAC Collection Program:

- Maintain existing daily cleanup events for Beaches, Harbors, and Burton Chace Park.
- Implement daily cleanup events for trash source areas of Beaches, Harbors, and Burton Chace Park.
- Continue conducting as-needed cleanup events for Non-Beach Open Space and Parks.

Assessment program for MFAC:

- Define MFAC Assessment Sites.
- Visually survey and collect any trash within 100 foot long site reach at defined locations immediately after a cleanup event. If any trash is found, it will likely necessitate additional field staff training or evaluation of modified collection procedures to capture all trash.

Evaluation program and definition of trash generation rate for nonpoint source areas:

- Define Source Area Evaluation Sites.
- Collect all trash within evaluation area at defined locations in the late afternoon before dusk, and weigh the trash collected.
- Extrapolate the collected trash data from evaluation sites to the whole location (e.g., a beach) for comparison with the benchmark.
- Demonstrate a decreasing trend in trash generation rates over time.

Trash Monitoring Program

- Conduct monitoring as per the MS4 permit, if so required.

The proposed components of the monitoring program and the purposes they serve in the TMRP for meeting the TMDL requirements are listed in Table 1, in addition to the frequency at which the components of the program will be conducted.

Table 1. Proposed Components of the MFAC Program and the Frequency of Implementation.

Component	Purpose	Frequency
MFAC Collection Program (Cleanup Events)	Zero-trash requirement to be met immediately after cleanup events	Daily for Beaches and Harbors Daily for source areas of Beaches and Harbors Daily for Non-Beach Open Space and Parks near shorelines
MFAC Assessment Sites	MFAC assessment that zero-trash metric has been met immediately after cleanup events	Annually for Beaches and Harbors Annually for Non-Beach Open Space and Parks
Source Area Evaluation Sites	Collection of trash to determine trash generation rate for specific areas	Semi-annually for Beaches and Harbors Semi-annually for Non-Beach Open Space and Parks
Point Sources	Determination of attaining the specified point source WLAs and progressive reduction	None. Assumes all County point sources will be implementing full capture Assumes monitoring of MS4 system and drainage channels will be addressed through the MS4 permit

In addition, the County TMRP will serve as the monitoring guidelines and procedures that will be used for the MFAC/BMP program effort. Any changes and revisions to the described procedures will be included with annual monitoring reports. The MFAC/BMP program as defined in the BPA is “Established at an interval that prevents trash from accumulating in deleterious amounts that cause nuisance or adversely affect beneficial use between collections”.

MFAC/BMP Program Requirements

The MFAC/BMP program applies to nonpoint sources only. Requirements for the MFAC/BMP program are associated with TMRP requirements and are as follows:

- Develop initial minimum frequency of monitoring and collection, as well as protocol and locations (nonpoint sources)
    - Collection and monitoring program for Beaches and Harbors
        - Routine trash generation rate evaluation
    - Collection and monitoring program for Non-Beach Open Space and Parks
        - Routine trash generation rate evaluation
- Implement an initial suite of structural and/or nonstructural BMPs
- Develop Health and Safety Plan

Data and results gathered from the MFAC/BMP program will assist in determining TMRP required BMP Implementation actions and may additionally affect monitoring protocols, locations, and frequencies.

GENERAL APPROACH

The County will initially use the default baseline load allocations (LAs) for nonpoint sources and the default WLA for point sources, as given in the BPA (see **Comparison with Established Baselines** section). The County TMRP proposes the following procedures for meeting the TMDL requirements as listed in the BPA:

1. Conduct initial TMRP actions to meet the following goals:
    a. Cleanup events (no monitoring), conducted daily to remove trash from Beach and Harbor shorelines, Beach and Harbor source areas, and Harbor waters.
    b. MFAC assessments, conducted annually immediately after a cleanup event to ensure all trash is collected.
    c. Evaluation of source areas, conducted semi-annually with collection conducted in late afternoon before dusk to determine if the trash generation rate is decreasing and whether the trash is accumulating at a rate deleterious to beneficial uses.
2. Prepare a monitoring report one year from the start of the required monitoring[2] and each year thereafter that provides the following information:
    a. Results of all nonpoint source monitoring efforts
        i. MFAC assessment results
        ii. Source area evaluation results
        iii. Number of cleanup, MFAC assessment, and source area evaluations conducted
    b. Summary of all efforts implemented at point sources
        i. Number of installed FCSs and percent of coverage
        ii. Summary of any point sources not addressed with FCSs
        iii. Description of point sources to be addressed the following year
    c. Determine if the County is within with TMDL assessment metrics
        i. Zero trash after MFAC assessment events
        ii. Trash generation rates below baseline
        iii. Reduction in trash generation rates
    d. Discussion of effectiveness of the MFAC/BMP program
    e. If necessary, proposed revisions to the MFAC/BMP program and TMRP, including:
        i. Assessment site revisions
        ii. Evaluation site revisions
        iii. Monitoring frequency revisions

---

[2] The start of the required monitoring program will be based upon receipt of the Regional Board Executive Officer's approval letter

iv. BMP implementation revisions.

These proposed procedures comprise a tentative list that may be modified after the monitoring efforts begin. Any major deviations will warrant Regional Board notification. The annual reports will incorporate TMRP results and description of components and/or elements added or modified by the County.

PROGRAM COVERAGE

The Basin Plan Amendment (BPA) lists numerous responsible parties who are not participating in the County TMRP effort and are not covered by any component of the County TMRP. The County is assuming that non-participating responsible parties will implement their own plan/s and the Regional Board will enforce all requirements associated with BPA milestones and requirements in an equitable manner to ensure that the trash impairments are addressed in all listed areas.

The TMRP is developed to assess and evaluate the trash collection and generation rate in areas under the County jurisdiction. Specifically, the beaches may receive trash from areas outside the County jurisdiction, including from Caltrans (Pacific Coast Highway) and storm drain discharges from upstream non-County urban areas. The site selection and monitoring presented herein are designed to exclude to the extent possible trash emanating from areas outside of County control.

As subsequent implementation efforts take place, other parties within the watershed may agree to join this implementation effort, whereupon modified procedures (e.g., notification to the Regional Board of party joining the effort, increased sampling and/or MFAC/BMP program requirements, and reporting requirements covered under the joint effort) will be followed.

TRASH COLLECTION PROCEDURES

Trash collection will occur primarily through cleanup events, which occur generally on a daily basis at Beaches and Harbors. Secondary trash collection may occur through source area evaluation events. Ideally, there will be no trash remaining during MFAC assessment events, which are scheduled to occur immediately after the primary cleanup events, however, remaining trash collection will be collected and weighed. A schedule of monitoring events including cleanup, MFAC assessment, and source area evaluation events is provided in Table 2.

Cleanup Events

Cleanup events will include collection of trash from sandy beach areas and harbor waters. A specific protocol is not required for collection procedures occurring at cleanup events. As long as the frequency of cleanup events meets the frequencies specified herein, the County may use any methods or techniques desired for trash collection at cleanup events.

Monitoring, Assessment, and Evaluation Approach

For the TMRP, MFAC monitoring sites are identified for locations that fall under County jurisdiction. Depending on existing monitoring and assessment activities at each of these sites, changes in monitoring may be proposed in the future to refine the evaluation and assessment of the MFAC/BMP program. The intent of the monitoring and assessment approach is to ensure that the MFAC program requirements are being met, and to utilize available resources to the extent possible to meet other TMRP requirements so that duplicative efforts are minimized.

MONITORING SITE LOCATION APPROACH

The impaired locations listed in the BPA consist of broadly defined areas, including the waterbodies within the Santa Monica Bay WMA, the Santa Monica Bay, and the shoreline/beaches of the Santa Monica Bay. Adjacent land areas which may contribute trash to these areas (e.g., beaches, marinas, open spaces, and parks in the WMA) are also included. It is important to note that there are various leased or privately owned Beach and Harbor areas scattered along the Santa Monica Bay shoreline. Leased and privately owned areas are not addressed in the TMRP and are to be avoided when conducting TMRP and MFAC/BMP activities. Only areas owned by the County and maintained by DBH will be covered by the County TMRP. In addition, the unique topography in certain areas of the WMA contains dangerous and inaccessible areas, such as cliffs and bluffs, which cannot be safely cleaned of trash or monitored, as described in the Health and Safety Plan (see **Attachment B**).

The proposed approach for meeting both the MFAC and TMRP requirements includes the use of two types of monitoring sites:

- MFAC Assessment Sites (Assessment Sites)
- Source Area Evaluation Sites (Evaluation Sites)

The Assessment Sites are specific sites located adjacent to impaired waterbodies within the WMA, which are representative of the critical areas defined in the BPA. These sites are also considered a component of the MFAC/BMP program, and are used to monitor the assessment metric of no trash remaining after a cleanup event.

The Evaluation Sites will primarily be used to determine the trash generation rates for the nonpoint source areas. Data from Evaluation Sites will be used to help identify High Trash Generating Areas adjacent to selected Assessment Sites, evaluate the effectiveness of the MFAC/BMP program, and determine the assessment metrics to compare with TMDL baseline and trending reduction requirements.

Specific assessment and evaluation sites are listed in **Attachment A**. The following is a discussion of the site selections.

MFAC ASSESSMENT SITES

MFAC Assessment Sites (Assessment Sites) serve the following purpose under the TMRP:

- Allow for repeatable monitoring efforts and comparable data analysis to evaluate assessment metrics and the TMDL load allocation.

The Assessment Sites were selected for their representation of impaired areas as well as their safety and accessibility. Each Assessment Site is intended to provide a representative assessment of the County jurisdiction as listed in the BPA and locations for long-term assessment. For each Beach and Harbor location, generally one Assessment Site has been proposed.

Detailed monitoring of 100 foot sections of a shoreline will be conducted at each Assessment Site. Procedures for conducting monitoring are described in the **Monitoring Procedures** section of the TMRP report. Specific details pertaining to each site sampled will be included in subsequent annual monitoring reports.

SOURCE AREA EVALUATION SITES

The Source Area Evaluation Sites (Evaluation Sites) meet the following TMRP requirements:

- Evaluation of the trash generation rate for nonpoint sources.
- Measure over time for to determine trend.
- Evaluate the effectiveness of the MFAC/BMP program.

Evaluation Sites are focused in or around locations likely to be trash hotspots (e.g., parking lots, pay stations, recreation areas, and restaurants). Evaluation sites are generally areas that are cleaned on a daily basis. Monitoring procedures conducted at the Evaluation Sites will include weighing and photographing all trash that is collected. Monitoring procedures are described in the **Monitoring Procedures** section. No specific source identification data will be collected and the specific amount of information collected per Evaluation Site may vary based on feasibility, necessity of information, and accessibility of the site. Similar to the Assessment Sites, Evaluation Sites will not be located in areas deemed unsafe, inaccessible or on leased/private property where access has not been granted.

TMRP COVERAGE

The County will not be held accountable for other responsible parties not participating in the County TMRP effort (as listed in the **Overview**). The County will not be held responsible for any monitoring not conducted in the areas defined as being outside the Watershed or County boundaries characterized in Figure 1. Additionally, Trash TMDLs are effective for both the Malibu Creek and Ballona Creek Watersheds (both of which being part of the Santa Monica Bay WMA). The Malibu Creek and Ballona Creek Trash TMDL each specify the requirements for their respective areas, and are not readdressed here.

More specifically, the TMRP will cover locations deemed to be “source areas” within the WMA. Source areas[3] may be defined as locations that are in immediate proximity of the Santa Monica Bay, and thus have a strong likelihood of contributing trash directly to the waters of the Santa Monica Bay (i.e., all locations situated on a coastline waterfront, such as Beaches and Harbors). Though the TMRP will also address other locations that are likely to indirectly contribute trash to the waters of the Santa Monica Bay (e.g., Open Space and Parks not along a coastline waterfront), the only requirement for these sites will be to ensure trash is not discharged to Santa

[3] Distinct from “point source” and “nonpoint source” categorizations, which primarily serve to indicate the pattern of trash dispersion, can be used broadly to refer to any locations where trash may potentially be released, and may or may not also qualify as source areas

Monica Bay by conducting trash assessments as needed. Appropriate BMPs, which may or may not include a MFAC program, will be implemented to ensure trash is not discharged from these areas. More intensive monitoring procedures are applied at Beach and Harbor source areas, where the County plans to focus its resources. Monitoring efforts at Beaches and Harbor source areas are intended to capture all trash that would otherwise come in contact with the waters of the Santa Monica Bay.

The City of Hermosa Beach has elected to use the County TMRP and associated documents for Hermosa Beach. City of Hermosa Beach, not the County, will be solely responsible for implementation of the actions proposed in the TMRP for Hermosa Beach. Will Rogers, Venice, Dockweiler, and Point Fermin beaches will not be covered in the LA County Santa Monica WMA TMRP as the individual cities which have jurisdiction over these beaches plan to prepare separate TMRPs that will cover these locations. White Point/Royal Palms Beach will not be covered in the Santa Monica Bay WMA TMRP because shoreline conditions preclude MFAC Assessments and there are no suitable source areas under County jurisdiction. If such constraints change, the beach will be added to the TMRP and MFAC/BMP program requirements.

There is some likelihood that trash sources within the WMA that are not under County jurisdiction discharge trash to the selected monitoring locations in the TMRP, potentially causing an exceedance of the baseline WLA and/or LA. Such exceedances may likely occur with point and nonpoint sources or infrastructure maintained by Caltrans or other Municipal Separate Storm Sewer System (MS4) Permittees, especially under storm conditions. Since it is not currently feasible to differentiate County trash from non-County trash once it has been discharged and dispersed, the County will monitor all trash that is found in its source areas. For the TMRP, however, the evaluation sites are selected to exclude areas dominated by trash from non-County sources. The County will utilize all the strategies within its authority to achieve its allocations, pursuing any actions necessary to prevent or resolve such issues (e.g., obtaining necessary permits to install FCS or PCS in the infrastructure of the County flood control district). For the purposes of the TMRP, the County will assume that any further actions that are required[4] will be covered by the MS4 permits and addressed through requirements outlined within the respective permits. Documentation and discussion of these issues will be included in subsequent annual monitoring reports.

[4] Including visual monitoring and removal of trash, addressing fugitive trash deposited either illegally or through wind transport, and identifying and prioritizing areas of illicit discharge in all open channels and other MS4 drainage structures

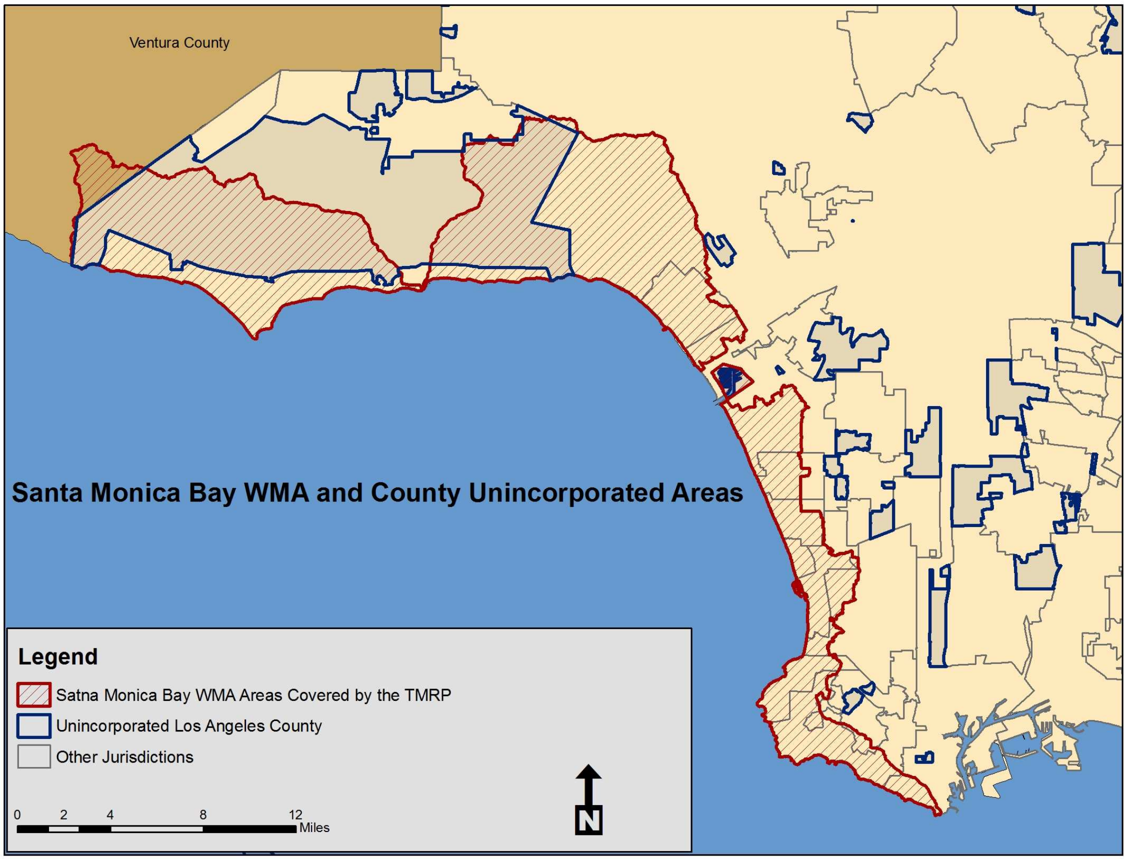

Figure 1. Santa Monica Bay WMA and County Unincorporated Areas

INACCESSIBLE AREAS

Areas of the WMA that are deemed inaccessible due to safety concerns or limited access will not receive cleanings and will not be assessed by the TMRP effort. Specifics on areas deemed inaccessible will be included in the annual monitoring reports.

MONITORING PROCEDURE APPROACH

Trash monitoring for the TMRP requires the collection of trash in a specified manner that allows for the generation of reproducible results that can be compared over time. Additionally, the monitoring procedure needs to define the metric that will be used to measure the trash collected. The standard procedures for each type of site (Assessment Site vs. Evaluation Site) also vary, with a more detailed approach used at the Assessment Sites. The procedures for monitoring can be found in the **Monitoring Procedures** section of the TMRP, and the Standard Operating Procedures for monitoring can be found in the **Standard Operating Procedures** section of the Health and Safety Plan.

The monitoring procedure approach that has been selected for the TMRP is to record the weight of trash collected.

Monitoring Locations and Frequencies

MONITORING SITE LOCATIONS

Assessment and Evaluation Sites are proposed for nonpoint sources owned by the County or maintained by DBH and are presented in **Attachment A**. Generally, each beach maintained by the DBH contains one Assessment Site and one Evaluation Site. Assessment and Evaluation Sites are summarized in Table 2.

Assessment Sites will be selected at locations where cleanup event assessment metrics will be measured. The level of monitoring effort for Assessment Sites should be minimal. These sites will be approximately 100 feet in length and follow the detailed procedures for identification and assessment given in the TMRP. The number of Assessment Sites will be based on the County's selected approach.

Evaluation Sites will be used to provide additional coverage requirements for the impaired areas listed in the BPA. These sites will be utilized for source area evaluation, assessment for Areas of High Trash Generation, and/or BMP effectiveness requirements. The level of effort for Evaluation Site monitoring will be greater than that required for Assessment Sites.

MONITORING FREQUENCY

The frequency of required monitoring for impaired locations listed in the BPA may vary from one to two times per year. The overview of the proposed frequency of cleanup, MFAC assessment, and source area evaluation events is presented in Table 2.

A summary of the event frequencies is as follows:

1. Total Assessment Sites = 13 (one per nonpoint source where site conditions permit)
    a. 11 sites monitored once per year (Beaches)
    b. 1 site monitored once per year (Harbors)
    c. 1 site monitored once per year (Non-Beach Open Space and Parks)
2. Total Evaluation Sites = 12 (one per Beach, Harbor, Open Space and Park)
    a. 10 sites monitored twice per year (Beaches)
    b. 1 site monitored twice per year (Harbors)
    c. 1 site monitored twice per year (Non-Beach Open Space and Parks)

Table 2. Proposed Monitoring Events in the Santa Monica WMA

Location	Event Frequency		
	Cleanup	Morning MFAC Assessment(1)	Afternoon Source Area Evaluation(2)
Beaches			
Nicholas Canyon Beach	Once per day	Annually	Semi-annually
Zuma Beach	Once per day	Annually	Semi-annually
Point Dume Beach	Once per day	Annually	Semi-annually
Latigo Shores Beach	Once per day	None(3)	Semi-annually
Dan Blocker Beach	Once per day	Annually	None(4)
Malibu/Surfrider Beach	Once per day	Annually	None(4)
Las Tunas Beach	Once per day	None(3)	Semi-annually
Topanga Beach	Once per day	Annually	Semi-annually
Marina Beach	Once per day	Annually	Semi-annually
Manhattan Beach	Once per day	Annually	None(4)
Hermosa Beach	Once per day	Annually	Semi-annually
Redondo Beach	Once per day	Annually	Semi-annually
Torrance Beach	Once per day	Annually	Semi-annually
White Point/ Royal Palms Beach	Once per day	None(3)	None(4)
Harbors			
Marina Del Rey	Once per day	Annually	Semi-annually
Non-Beach Open Space and Parks			
Burton Chace Park	Once per day	Annually	Semi-annually

(1) MFAC assessments performed immediately after cleanup events, generally at one site per location
(2) Source Area evaluations performed generally at one site per location
(3) Shoreline conditions preclude MFAC Assessments
(4) No suitable source areas under County jurisdiction

MFAC Assessment Sites

MFAC assessments at Beaches and Harbors will be performed on an annual basis, immediately following a cleanup event. Cleanup events at Harbor shorelines and sandy areas of Beaches are performed on a daily basis year round.

Burton Chace Park in Marina del Ray is the only park within the County jurisdiction identified as potentially contributing trash to beach shorelines or harbor waters. DBH performs daily cleanups at Burton Chace Park. Annual MFAC assessments will be conducted at Burton Chace Park. If other Non-Beach Open Spaces and Parks are found to be source areas of trash to the Santa Monica Bay shoreline or Harbor waters, then appropriate BMPs will be defined and applied to these areas. Instead of conducting MFAC assessment at other Non-Beach Open Spaces and Parks, however, the County may opt to focus its resources on monitoring efforts at Beaches and Harbors where trash has the highest likelihood of making contact with the waters of the Santa Monica Bay.

No point source monitoring is proposed because it is anticipated that all County point sources will be addressed through full capture. FCSs are designed to capture any particles measuring 5 millimeters or more in any direction, and will be sized for the peak flow rate of a "major rain event", defined as a one-year, one-hour storm in the subdrainage area. For full capture, the County will use connector pipe screen (CPS) devices.[5]

A CPS device is a vertical screen with 5 mm openings, installed inside a catch basin directly upstream of the connector pipe in such a manner that all water entering the basin must pass through the device. A vertical opening is provided around the perimeter of the screen to allow storm water to bypass in the event of a large storm or if the screen becomes clogged. CPS devices are currently manufactured and installed by Advanced Solutions (Stormtek) and American Storm Water (Debris Dam). CPS screens and bypass openings will be sized according to the recommendations and procedures given in the County CPS design manual.[6]

The purpose of a Connector Pipe Screen (CPS) is to contain trash within a catch basin and exclude it from the storm drain system. As such, routine maintenance will likely be necessary to remove trash from the catch basin to prevent it from accumulating to a point that would affect the performance of the CPS or the catch basin itself. Per the County CPS design manual, "proper operation and maintenance" will be defined as inspecting and cleaning each catch basin each year (e.g., at least once between May 1 and September 30), as well as inspecting and providing additional cleaning of any catch basin that is at least 40% full of trash and/or debris.

The County will perform phased implementation of FCSs at point sources over an eight year period. See Table 4 for a schedule of planned FCS implementation. If FCSs cannot be or are otherwise not implemented at point sources, trash generation rate monitoring procedures will need to be implemented. Monitoring at these locations will use the weight of trash collected from the catch basins not draining to a FCS.

For MFAC assessment sites, the proposed schedule of monitoring frequency is given in Table 2.

Source Area Evaluation Sites

Source area evaluation will be performed at Beaches and Harbors source areas on a semi-annual basis. For both Beaches and Harbors, source area evaluation will be conducted in the afternoon. To optimize usage of County resources, the frequency and locations of subsequent (e.g., year two) Evaluation Site monitoring may be modified upon review of the data gathered. As listed in the BPA, after the first year effort, monitoring frequencies may be revised pending review of the data collected through the MFAC/BMP program. A proposed monitoring schedule for Evaluation Sites is given in Table 2.

The County will initiate the given monitoring program within six months from the receipt of a letter of approval from the Regional Board Executive Officer (E.O.).

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[5] CPS devices were certified by the Regional Board as an approved full-capture device on August 1, 2007

[6] Connector Pipe Screen Design: Full Capture TMDL Compliance, Screen and Bypass Sizing Requirements, Technical Report (April 2007), available at: http://www.waterboards.ca.gov/rwqcb4/water_issues/programs/tmdl/fcc/la%20county%20full%20capture%20request%20package.pdf

Monitoring Event Preparation

Monitoring events should only be conducted during daylight hours under safe weather conditions. The weather forecast should be checked immediately prior to each monitoring event. Monitoring events will not occur during or immediately after storm events. Precipitation events within the WMA can cause elevated water levels and unsafe conditions. If at any time during a monitoring event, field personnel feel that site conditions are unsafe for any reason, the event should be abandoned and the project manager notified of the situation.

Prior to mobilization for each monitoring event, field personnel should prepare the equipment necessary to conduct the trash assessment monitoring event. Required equipment is listed in Table 3.

Table 3. Equipment Checklist

Required Trash Assessment Items	
☐ First Aid Kit ☐ Cellular Telephone ☐ Copy of TMRP document	☐ Large Trash Bags (e.g., Green 'N' Pack Eco Friendly Lawn & Leaf Bags [30" x 33" x 1.1 mil, 30 gallon] or Glad ForceFlex Lawn Drawstring Bags [32.5" x 38" x 1.1 mil, 39 gallon])
☐ Trash Monitoring Worksheets	☐ Work Gloves/Medical Gloves
☐ Hazardous Material/Intractable Trash Logs	☐ Sharps Container
☐ Clipboard	☐ Digital Camera
☐ Notebook	☐ Garbage Bag Tags
☐ Pens/Pencils and Permanent Marker	☐ Scale (e.g., Hand-Held Scale)
☐ Side Pack/Messenger Bag	☐ Hiking Boots
☐ GPS Unit	☐ Wader Boots
☐ Measuring Wheel/Tape Measure	☐ Maps and Aerial Photos
☐ Cones/Flagging Stakes	☐ Sunscreen Lotion
☐ Timepiece	☐ Hat/Sunglasses
☐ Trash Grabber (e.g., Ettore 49036 Grip 'n Grab)	☐ Coins and small bills for parking

Additionally, any necessary permits required for access to restricted areas and/or trash removal will be obtained prior to the monitoring event.

SITE DEFINITION

For all monitoring locations, site locations have been identified as listed in the **Monitoring Site Locations** section. At each of the selected monitoring locations (see **Attachment A**), monitoring will take place at a defined 100 foot section of the impaired area that is identified as the monitoring site. All subsequent monitoring events will take place within the same identified 100 foot area. If for any reason the location of a site is modified during an assessment event, the field crews will need to note the change and contact the project manager of the deviation.

Site Length

When the site is first established the 100 foot section will be accurately measured that includes sinuosity of the location. The length should be measured as the actual shoreline, channel/drain, open space, or park length (including curves), not necessarily in a straight line. Where possible, the upper and lower boundaries of each site should be identified by clearly visible and fixed landmarks, such as structures or natural formations that are notable. If possible, the boundaries may be flagged or physically marked to save time during subsequent assessment events. In addition, GPS coordinates should be recorded for the boundaries of each site during the first event. Again, if a section of the length is blocked or deemed inaccessible, the site can be moved to a more accessible location but any move will need to be noted and the project manager notified upon completion of the event.

Site Width

During the first site visit, the field team will document the transverse boundaries of the lengths to be monitored. For trash assessment events at Beaches, the site boundaries will be defined by the area between the current visible high-water line or beach crest[7] and the lowest level to which the water recedes. For trash assessment events at Non-Beach Open Space and Parks as well as trash evaluation events at all nonpoint sources, site boundaries will be five to ten feet wide and will represent the areas within which trash can be carried to the waterbody by wind or water. For trash assessment events at Harbors, the site boundaries will be confined to the water. As appropriate, the boundaries may be defined by a physical structure, such as a fence or roadway, and will be documented in field notes and/or with digital photographs. Subsequent monitoring events will follow similar procedures within the same specified boundaries. If unable to resample previous areas, field crews will note the change and reason for the change in the monitoring worksheets.

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[7] The approximate line along and closest to a shoreline where the slope of the beach changes in steepness due to wave action. No sand or rocks wetted by waves will be found above the current visible high-water line or beach crest.

Monitoring Procedures

For the required monitoring events, trash will be collected following standard operation procedures as outlined in the TMRP. The amount of effort per event will vary based on the types of sites being monitored for that specific event. In particular, the BPA specifies that assessment shall focus on the shorelines or interface along Santa Monica Bay. However, procedures as outlined in TMRP are still required to be followed. During each monitoring event the weight of trash will be recorded. As such, the amount of trash will be determined using weight of trash as the standard metric.

MFAC Assessment and Source Area Evaluation Events

During each MFAC assessment and source area evaluation event at each site, a crew comprised of a minimum one or two-person monitoring crew will move through the entire Assessment Site or Evaluation Site. Though there should be no trash present at Assessment Sites during an assessment event, the monitoring crew will note and collect any trash not captured by the prior collection event. Trash collected during an assessment event will be weighed and recorded. At Evaluation Sites and Assessment Sites, the monitoring crew will collect and weigh every piece of trash[8] found. Collecting all trash items will allow the site to be revisited and re-assessed for impairment and usage patterns. No waste receptacles will be covered by MFAC assessment and source area evaluation efforts.

A trash grabber or similar tool (e.g., metal kitchen tongs) should be used to help pick up trash. It is important to look under vegetative cover to see if trash has accumulated beneath. The ground and substrate should be inspected to ensure that small items are picked up and collected.

*****To avoid injury while picking up trash, team members should always wear gloves and avoid touching trash with unprotected hands*****

All collected trash shall be placed in trash bags and weighed to determine the weight of trash collected at each site. The amount of time needed for the trash monitoring should also be recorded.

To account for items which are too heavy to be lifted or are embedded in the area (e.g., boats that wash up during storms), referred to as intractable or “legacy trash”, specific notes will be written on the trash monitoring worksheet (along with GPS coordinates and/or digital photographs) as to avoid noting the same item/s during the next monitoring event. Legacy trash items will need to be removed by qualified individuals with appropriate equipment, therefore the monitoring crew will not attempt to remove these items themselves.[9]

Prior to deployment, the monitoring crew shall be informed or trained as to what hazardous materials are and may potentially be, and how to safely remove these items. If a potentially hazardous item is found during the assessment, the crew will not touch or move the item but shall inform the lead field technician. If the lead field technician determines that the item cannot

[8] Trash as defined in the TMRP

[9] Intractable or legacy trash is usually heavy and will interfere with assessment and evaluation efforts, which use weight as the single metric for measuring amounts of trash

be safely removed, the location of the item will be documented (along with photographs and/or GPS coordinates). Hazardous material identification and removal is further defined in the Health and Safety Plan along with a detailed list of items that are considered “Hazardous” and banned from disposal in the trash. More information can be found on the California Integrated Waste Management Board Website: www.ciwmb.ca.gov/hhw/info/. The appropriate authorities will be contacted immediately for removal of the hazardous item(s), if proper training or collection materials are not available to the monitoring crew.

MFAC ASSESSMENT SITE PROCEDURES

MFAC assessment will occur at Beaches and Harbors as well as Non-Beach Open Space and Parks. While monitoring Assessment Sites, the field crew will fill out a trash Monitoring Worksheet (**Attachment D**). Trash MFAC assessment will be conducted using the following procedures:

At Beaches

Before the first event at each site, set the specific shoreline location for the reference endpoints. Provide the coordinates for the two reference endpoints of each site, as located along the current visible high-water line or beach crest. Each site reach must be approximately 100 feet in length. Also provide a description for the general location.

1. Immediately after a cleanup event at each designated site, at least one field crew member will be deployed for the follow-up assessment event.

2. A Monitoring Worksheet will be used to record observations and notes. If available, multiple individuals can participate in an assessment event, but only one individual is to be recording information on the Monitoring Worksheet in order to minimize the potential for errors.

3. Using the description and coordinates of the reference endpoints, find the approximate location at which to begin the assessment.

    a. If for some reason it is not possible to access an endpoint or entire site, note the reason/s and contact the project manager for further directions.

    b. If project manager is unavailable, note the time of the visit and continue on to the next site.

4. Record the coordinates for each of the two corners of the starting location.[10] The distance between these points should encompass the site width to be monitored, with the higher point situated on the current visible high-water line or beach crest and the other point on the lowest level to which the water recedes.

5. Before beginning the assessment, record the starting time.

[10] If a line were drawn between the two corner points, the line would lie roughly perpendicular to the adjacent shoreline.

6. Proceed to walk along and visually sweep the shoreline area between the current visible high-water line or beach crest and the lowest level to which the water recedes. Look carefully for any articles of trash. Head towards the far end of the 100 foot reach, noting and collecting any trash that may be found within the site. Make additional notes as appropriate, and check the GPS device every so often to ensure that assessment efforts are confined to the approximate designated location.

7. If large items are identified or hazardous materials are found, follow the procedures in the **Identified Hazardous Materials and Intractable Trash** section of the Health and Safety Plan.

8. Upon arriving at the approximate end location, record the stop time and then record the coordinates of each of the two corners of the end location.

9. Take a digital photograph to document the cleanliness of the site.

10. Complete any remaining relevant portions of the Monitoring Worksheet.

If the monitoring group identifies a more efficient and/or modified method to record monitoring information, the method will be noted in the subsequent annual report.

At Harbors

Before the first event at each site, set the specific shoreline location for the reference endpoints. Provide the coordinates for the two reference endpoints of each site, as located along land-water interface. Each site reach must be approximately 100 feet in length. Also provide a description for the general location.

1. Immediately after a cleanup event at each designated site, at least one field crew member will be deployed for the follow-up assessment event.

2. A Monitoring Worksheet will be used to record observations and notes. If available, multiple individuals can participate in an assessment event, but only one individual is to be recording information on the Monitoring Worksheet in order to minimize the potential for errors.

3. Using the description and coordinates of the reference endpoints, find the approximate location at which to begin the assessment.

    a. If for some reason it is not possible to access an endpoint or entire site, note the reason/s and contact the project manager for further directions.

    b. If project manager is unavailable, note the time of the visit and continue on to the next site.

4. Record the coordinates for each of the two corners of the starting location.[11] The distance between these points should encompass the site width to be monitored.

5. Before beginning the assessment, record the starting time.

6. Proceed to move along and visually sweep the general area. Look carefully for any articles of trash. Head towards the far end of the 100 foot reach, noting and collecting any trash that may be found within the site. Make additional notes as appropriate, and check the GPS device every so often to ensure that assessment efforts are confined to the approximate designated location.

7. If large items are identified or hazardous materials are found, follow the procedures in the **Identified Hazardous Materials and Intractable Trash** section of the Health and Safety Plan.

8. Upon arriving at the approximate end location, record the stop time and then record the coordinates of each of the two corners of the end location.

9. Take a digital photograph to document the cleanliness of the site.

10. Complete any remaining relevant portions of the Monitoring Worksheet.

At Non-Beach Open Space and Parks

Before the first event at each site, set the specific endpoints by providing coordinates for each of the four corners of the site. Each site reach must be 100 feet in length and at least 5 to 10 feet in width. Also provide a description for the general location.

1. Immediately after a cleanup event at each designated site, at least one field crew member will be deployed for the follow-up assessment event.
2. A Monitoring Worksheet will be used to record observations and notes. If available, multiple individuals can participate in an assessment event, but only one individual is to be recording information on the Monitoring Worksheet in order to minimize the potential for errors.

3. Using the description and coordinates of the endpoints, find the approximate location at which to begin the assessment.

    a. If for some reason it is not possible to access an endpoint or entire site, note the reason/s and contact the project manager for further directions.

    b. If project manager is unavailable, note the time of the visit and continue on to the next site.

[11] If a line were drawn between the two corner points, the line would lie roughly perpendicular to the adjacent shoreline.

4. Record the coordinates for each of the two corners of the starting location. The distance between these points should encompass the site width to be monitored.

5. Before beginning the assessment, record the starting time.

6. Proceed to walk along the length of the reach, visually sweeping across the width. Look carefully for any articles of trash. Head towards the far end of the 100 foot reach, removing any trash that may be found within the site for subsequent weighing. Make additional notes as appropriate, and check the GPS device every so often to ensure that assessment efforts are confined to the approximate designated location.

7. If large items are identified or hazardous materials are found, follow the procedures in the **Identified Hazardous Materials and Intractable Trash** section of the Health and Safety Plan.

8. Upon arriving at the approximate end location, record the stop time and then record the coordinates of each of the two corners of the end location.

9. Take a digital photograph to document the cleanliness of the site.

10. Complete any remaining relevant portions of the Monitoring Worksheet.

MFAC Assessement Site Completion

Following the completion of the site assessment, the team should check the Monitoring Worksheet for completion. The total time for the assessment event, including start time and end time, should also be noted on the worksheet. It is important to complete the worksheets before leaving the site while the memory is still fresh.

Observations about the condition of the site, locations of any possible trash found, potential contributing sources, and other observations should be recorded in the appropriate spaces on the trash monitoring worksheet.

SOURCE AREA EVALUATION SITE PROCEDURES

The effort for the Evaluation Site monitoring will include trash collection and take place at a later time of day. Trash collection may include items on the ground or items caught within structures or vegetation, but will exclude all items contained within waste receptacles. Source area evaluation will occur at Beaches and Harbors as well as Non-Beach Open Space and Parks. Evaluation procedures are as follows:

At Beaches, Harbors, Non-Beach Open Spaces and Parks

Before the first event at each site, set the specific endpoints by providing coordinates for each of the four corners of the site. Each site reach must be 100 feet in length and at least 5 to 10 feet in width. Also provide a description for the general location.

1. In the late afternoon before dusk, at least two field crew members will be deployed for an evaluation event. A Monitoring Worksheet will be used to record observations and notes, but only one individual is to be recording information on the worksheet to minimize the potential for errors.

2. Using the description and coordinates of the endpoints, find the approximate location at which to begin the assessment.
    a. If for some reason it is not possible to access an endpoint or entire site, note the reason/s and contact the project manager for further directions.
    b. If project manager is unavailable, note the time of the visit and continue on to the next site.
3. Before beginning the evaluation, record the start time.
4. Proceed to walk along the length of the reach, visually sweeping across the width.
5. Collect any articles of trash found, heading towards the far end of the 100 foot reach. Make additional notes as appropriate, and check the GPS device periodically to ensure that evaluation efforts are confined to the approximate designated location.
    a. In areas where large amounts of trash are accumulating, note any observations on the Monitoring Worksheet.
    b. If large items are identified or hazardous materials are found, follow the procedures in the **Identified Hazardous Materials and Intractable Trash** section of the Health and Safety Plan.
6. Upon arriving at the approximate end location, record the stop time and then record the coordinates of each of the two corners of the end location.
7. Take a digital photograph to document the cleanliness of the site.
8. If trash was found and a trash bag used to contain items found within the site, secure the bag opening and label the bag with the site name and date.
9. Use a hand-held scale to weigh the bag. Record the weight on the Monitoring Worksheet.
10. Complete any remaining relevant portions of the Monitoring Worksheet.

Source Area Evaluation Site Completion

Following completion of the site, the team should check the Monitoring Worksheet for completion. The total time for the collection event, including start time and end time, should also be noted on the worksheet. General site observations should be recorded on the trash monitoring worksheet as well. It is important to complete the worksheets before leaving the site while the memory is still fresh.

POST-EVENT ACTIVITIES

At the completion of source area evaluation events, all collected trash will be taken to a County facility. At the County facility, all trash will be placed in a dumpster and subsequently be sent to a landfill or recycling facility for appropriate disposal.

The contracted agency should make all reasonable attempts to recycle the materials collected during the event, with time permitting. The recycling of materials is not a requirement of the TMDL or the TMRP/MFAC and is at the discretion of the contractor. If items are too large to remove or are deemed hazardous or “Legacy Trash”, the contractor shall immediately contact the program manger to initiate removal of the items.

In addition, the trash generation rate will be calculated at the completion of source area evaluation events. Dividing the weight of trash collected by the site length (Beaches and Harbors) or area (Non-Beach Open Space and Parks) will yield an approximated site-specific trash generation rate, which may be used to estimate the trash generation rate for the entire location. For trash generation rate calculations, site length will be 100 feet and site width may be calculated using the coordinates of the monitored area, as recorded on a Monitoring Worksheet. The collected data will be used to inform the annual report in assessment of the comparison to baseline and, over time, evaluation of reducing trend in the rate.

Special Circumstances for Safety Consideration

Within the Santa Monica WMA there are several potentially hazardous factors that exist. One of these is the potential to encounter homeless individuals that are known to occupy the area. The other factors include steep cliffs and access trails, ocean currents, confined spaces, and invasive species. The potential for these special circumstances are discussed in more detail below and in the Health and Safety Plan (**Attachment B**). The Health and Safety Plan provides a more comprehensive review of special circumstances for safety consideration, including additional special circumstances not covered in the TMRP. Cleanup, assessments, and evaluations will not occur in areas with safety concerns.

HOMELESS INDIVIDUALS AND PROPERTY

There is the potential for encounters and/or interactions with homeless individuals during trash collection activities. The possibility of unknowingly collecting items which may be deemed property of a homeless individual may create the potential for a serious altercation. During any cleanup or monitoring event, field staff are required to use discretion in all interactions with individuals in the field (standard for any encounter, homeless or not) and should handle themselves in a professional and courteous manner. If at any time field staff feel uncomfortable or in danger, activities must immediately cease and all staff must return to a safe location. Field staff will record the amount of monitoring that took place prior to the work interruption, and note on the field sheets the end point location and time. If any situation escalates to a perceived dangerous level, field staff must immediately leave the area and contact the appropriate authorities. In the event that trash items appear to be property of a homeless individual, field staff should thus consider the items “Legacy Trash” and follow procedures outlined in the **Hazardous Materials and Legacy Trash** section of the Health and Safety Plan. Care must be taken when collecting pertinent data, and as previously stated, if at any time during monitoring or cleanup field staff feel threatened or in danger, cease all activities and move to a more secure location.

STEEP CLIFFS AND ACCESS TRAILS

Some of the assessment sites are located near or at the base of steep cliff sides and access trails. Commonly paired with crumbling earth, sharp rocks, and uneven terrain, the potential to slip and fall causing serious injury is possible at these locations, even during the driest of weather. Steep cliffs may also present the danger of landslides. Field crews will need to ensure that all precautions are taken when sampling adjacent to environments exhibiting these conditions. Field crews should avoid cliff sides and precarious trails, and identify safe routes to the designated sites. During assessment efforts, field crews should take caution when using dirt access trails and ensure that all procedures as outlined in the Health and Safety Plan are followed. Dangerous environments are deemed off limits during all assessment events.

OCEAN TIDES AND CURRENTS

The combination of ocean tides and rocky terrain often produce slippery surfaces. Especially when working in close proximity to the water, strong waves and/or rip currents may present additional dangers. Field crews should be aware of their surroundings at all times, take precaution when walking on wet surfaces, and consider wearing a pack to keep their hands as free as possible.

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Collection, assessment, and evaluation events may be curtailed during periods of high surf.

CONFINED SPACES

At no time are field crews to enter any confined spaces, including storm drain outlets, freeway underpass tunnels, or any confined area located at or near a monitoring location. These confined spaces can include areas of dangerous gas buildup and other potential hazards that field crews will not be trained properly in addressing. If trash is accumulating in a confined space, notification will be given the project manager which will include a specific site location, a brief narrative of the observations, and the time and date of the observation.

Reporting Requirements

ANNUAL MONITORING REPORT

Each year, an annual monitoring report will be submitted to the Regional Board. The annual report will address Point Sources, Beaches, Harbors, and Non-Beach Open Space and Parks. Any instances of not attaining TMDL WLAs or LAs, TMRP, or MFAC/BMP Program provisions; and any BMPs proposed to address assessment metrics not meeting desired levels will also be described in the annual report.

Point Sources

For point sources, the County will:

- Include a report of the number and percent coverage of installed FCSs.
- State whether the County is attaining the TMDL schedule for installation.
- Provide an estimate of the number of point sources to be included in County efforts for the following year.
- Identify any point sources that cannot be fitted with a FCS (e.g., at a catch basin due to size constraints).

In the case that a point source is not suitable for or cannot be fitted with a FCS, the County will default to using a PCS or performing institutional controls to demonstrate the removal of trash at the daily generation rate (DGR). Institutional controls that are used at point sources without FCSs will be noted in the annual report.

Beaches

For Beaches, the County will:

- Provide a tabulation of the number of cleanup, assessment, and evaluation events conducted at shorelines and source areas.
- Include results from MFAC assessments.
- Include results from source area evaluations.
- State whether the County is attaining the following:
  - Zero trash after assessments
  - Trash generation rate below baseline
  - Trash generation rate at a reducing trend (evaluated beginning with the third annual report)

In the event any of the above are not achieved, the County will evaluate current BMPs and propose changes to existing BMPs or institute additional BMPs to ensure future assessment metrics are met in the future. Possible BMPs that may be implemented include providing additional training for field crew members, providing additional trash receptacles, or increasing legal enforcement for littering. If determined necessary, proposed modifications will be included in the Annual Report.

Harbors

For Harbors, the County will:

- Provide a tabulation of the number of cleanup, assessment, and evaluation events conducted at shorelines and source areas.
- Include results from source area evaluations.
- State whether the County is attaining the following:
    - Zero trash after assessments
    - Trash generation rate below baseline
    - Trash generation rate at a reducing trend (evaluated beginning with the third annual report)

In the event any of the above are not achieved, the County will evaluate existing BMPs and propose changes to existing BMPs or institute additional BMPs to ensure future assessment metrics are met in the future (e.g., additional training for field crew members, additional trash receptacles, and increasing legal enforcement for littering). If determined necessary, proposed modifications will be included in the Annual Report.

Non-Beach Open Space and Parks

For Non-Beach Open Space and Parks, the County will:

- Provide a tabulation of the number of cleanup assessment, and evaluation events conducted.
- Include results from MFAC assessments.
- Include results from source area evaluations.
- State whether the County is attaining the following:
    - Zero trash after assessments
    - Trash generation rate below baseline
    - Trash generation rate at a reducing trend (evaluated beginning with the third annual report)

In the event any of the above are not achieved, the County will evaluate existing BMPs and propose changes to existing BMPs or institute additional BMPs to ensure future assessment metrics are met in the future and include a description of any program modifications in the annual report.

TMRP/MFAC REVISION

All proposed revisions the County determines to be necessary to the TMRP and/or MFAC/BMP program will be proposed in the annual monitoring report. Revisions may include procedural modifications, increasing or reducing the frequency of MFAC assessment and collection, redefining "critical conditions" as given in the BPA, and changing the location or number of MFAC assessment and source area evaluation sites.

COMPARISON WITH ESTABLISHED BASELINES

To perform source area evaluation, the County will be using the baseline LAs and WLA as established in the BPA, for nonpoint sources and point sources, respectively.

Nonpoint Sources

For Beaches and Harbors, the data collected at Evaluation Sites will be used to compare trash generation rates to the TMDL default baselines. Additionally, monitoring sites are to show a decreasing trend of accumulation.[12] As mentioned in the BPA, compliance with the nonpoint source LAs may be achieved through the implementation of the MFAC/BMP program.

Point Sources

Point sources will be addressed using FCSs. A FCS "is any single device or series of devices that traps all particles retained by a 5 mm mesh screen and has a design treatment capacity of not less than the peak flow rate Q resulting from a one-year, one-hour, storm in the subdrainage area".[13,14] If there are physical constraints that prevent the usage of a FCS, alternative methods of compliance will be proposed on a case-by-case basis. As such, a small percentage of catch basins may require some combination of PCS/BMPs.

For the annual monitoring report, the County will prepare and include a plan outlining the proposed FCS installation schedule and/or PCS installation and BMPs to be implemented. Point sources will not be prioritized for FCS installation. For the TMRP, the County has identified 62 catch basins for inclusion as shown in Figure 2 of **Attachment A**. The projected general timeline for FCS installation at the identified point sources is given in Table 4.

Table 4. General Timeline for FCS Installation.

Final Date	Number of FCSs Installed[(1)]
March 20, 2016	13
March 20, 2017	25
March 20, 2018	38
March 20, 2019	50
March 20, 2020	62

(1) Based on 62 catch basins covered by the TMRP

CURRENT BMP EFFORTS

The County actively engages in a three-pronged approach for pollution prevention: 1) Education; 2) Incentives; and 3) Enforcement. Listed below are current trash management procedures or

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[12] A decreasing trend constitutes a negative slope when the data is graphed on a time series plot

[13] Per Resolution No. 04-023, adopted by the Regional Board on March 4, 2004

[14] "Rational equation is used to compute the peak flow rate: Q = C x I x A, where Q = design flow rate (cubic feet per second, cfs); C = runoff coefficient (dimensionless); I = design rainfall intensity (inches per hour, as determined per the rainfall isohyetal map), and A = subdrainage area (acres)."

BMPs that have been put in place by the County. The given BMPs, combined with the monitoring described in the TMRP, represent the initial MFAC/BMP program for the County. As new BMPs are implemented in the Watershed, this list will be updated to account for increased efforts. Each Annual Report will include the suite of BMPs employed for the corresponding year. Current BMPs include:

- Daily cleaning of all County-owned or operated beaches.
- Daily cleaning of all harbor waters.
- *Ordinances*
    - Title 12 Chapter 12.85 - Ban on plastic carryout bags
    - Title 17 Chapter 12.365 - Smoking prohibited on County beaches
    - Title 17 Chapter 4.645 - Smoking prohibited at County parks
    - Low Impact Development Ordinance - Reduce impacts from stormwater runoff
- *FCSs*
    - Ballona Creek Watershed - There are 368 catch basins that collect runoff from County-unincorporated communities located within the Ballona Creek Watershed. To date, the County has achieved a total 88.5 percent reduction to date with the installation of 333 full-capture devices and a 81.1 percent reduction based on a 3-year average for all of the County unincorporated areas within the Ballona Creek Watershed.
    - Malibu Creek Watershed - The County has installed 192 FCSs in catch basins within the Malibu Creek Watershed in unincorporated County areas.
- *Trash and Recycling Receptacles* - Wedded clamshell-lid trash and recycling cans have been installed at areas owned, operated, or otherwise maintained by the County. These receptacles are also marked with messages and images that encourage their usage.
- *Industrial and Commercial Inspections* - Annual inspections targeting facilities lacking minimum stormwater BMPs and housekeeping practices to reduce sources of trash.
- *Maintenance and Cleanup Activities* – Parking lot and street sweeping program with most streets swept on a weekly basis in unincorporated County areas.
- *Public Information and Participation Programs* - CleanLA public outreach program and website (www.888CleanLA.org) educates residents about stormwater pollution prevention. The CleanLA campaign teaches residents about proper disposal of waste and the importance of watershed protection. Information provided through these programs includes how to report illegal dumping, why it is important to prevent animal waste and general pollution from entering the storm drain system, and locations for proper RV sewage waste disposal. The creative multimedia campaign includes broadcast of stormwater pollution prevention messages through radio, television, billboards, newspapers, video aired on Metro buses, and the Internet.
- *Storm Drain Markers* - All storm drains in the unincorporated County are appropriately marked with a “no dumping” message.

- *Development Planning Program* - The County requires post-construction BMPs to reduce the impact of development on water quality including reducing the transport of trash via stormwater runoff.

ATTACHMENT C

RECEIVING WATER LIMITATIONS STATUS REPORT

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RECEIVING WATER LIMITATIONS STATUS REPORT

I. Introduction

The 2012 Los Angeles County Municipal Separate Storm Sewer System NPDES Permit (MS4 Permit) provides that Permittees electing to develop a Watershed Management Program (WMP) or Enhanced Watershed Management Program (EWMP) shall submit an Integrated Monitoring Program (IMP) or Coordinated Integrated Monitoring Program (CIMP). The County of Los Angeles (County) submitted draft WMPs, EWMP Work Plans, and draft CIMPs in June 2014.

Under the 2012 MS4 Permit, it is unclear as to whether Receiving Water Limitation (RWL) status reports should be submitted pending the approval of the CIMPs. The permit no longer requires the submittal of RWL Compliance reports or subsequent status reports with respect to those compliance reports. Instead, the permit now calls for an Integrated Monitoring Compliance report where there is a determination by either the Permittee or the Regional Water Board that discharges from the MS4 are causing or contributing to an exceedance of an applicable receiving water limitation. As set forth in the RWL Compliance Reports submitted under the old permit, there has been no such determination. In addition, the current permit's Integrated Monitoring Compliance report requires different information than the RWL Compliance and Status Reports submitted under the old permit.

Although it appears that submittal of an RWL Status Report is no longer required, because of the uncertainty that surrounds this issue, the County is submitting this RWL Status Report for the information of Regional Water Board staff during this transition period between the termination of the old permit and its monitoring program, and the executive officer's approval of the IMPs and CIMPs under the new permit.

The RWL Status Report in Sections II and III below provides the status of the County's RWL Compliance Reports from 2010, 2008, and 2006, respectively.

II. Status for 2010 RWL Compliance Report

The 2010 RWL Compliance Report was submitted voluntarily as a result of a March 2, 2010, United States District Court order in which the court concluded that the California Ocean Plan's prohibition against discharges of "waste" into an Area of Special Biological Significance (ASBS) is a water quality standard that is incorporated into the 2001 Permit and discharges from the MS4 into ASBS No. 24 violate this Permit requirement.

In June 2009, the State Water Board accepted the County's application for a general exception to discharge into the ASBS. The State Water Board adopted the general exception and the associated conditions (special protections) on March 20, 2012. Dischargers are required to submit a wet-weather compliance plan and implement any nonstructural Best Management Practices by September 20, 2013, and implement any structural Best Management Practices by March 20, 2016. (The date to submit a wet-weather compliance plan was thereafter extended to September 20, 2014.) Furthermore, dischargers are required to commence monitoring during the 2012-13 storm season. As such, observational monitoring of County and Los Angeles County Flood Control District (LACFCD) outlets for dry-weather direct discharges was performed, during which 39 storm drains were surveyed from February to April of 2012 along the following beaches: Broad, Zuma, Westward, and Escondido. Of these, the County is monitoring 12 storm drains.

On May 30, 2012, the State Water Board sent a letter requesting information regarding our plan to initiate monitoring in the next storm season. We responded to the State Water Board indicating that the County plans to participate in the Southern California ASBS Regional Integrated Monitoring Program. On September 6, 2012, we received written authorization to conduct regional and core monitoring within the ASBS for the upcoming storm season. The County's ASBS monitoring work plan was submitted in November 2012 as requested by the State Water Board.

As stated earlier, the ASBS General Exception required the submittal of a compliance plan and a pollution prevention plan by September 20, 2013, to the State Water Board. During the preparation of plans, the County determined that additional monitoring would be needed to produce accurate plans and subsequently requested a deadline extension from the State Water Board. In a letter dated February 20, 2014, the State Water Board granted an extension of the submittal deadline to September 20, 2014. The Draft ASBS Compliance and Pollution Prevention Plans were submitted to the State Water Board and courtesy copies were sent to the Regional Board on September 18, 2014.

III. Status for 2006 and 2008 RWL Compliance Reports

As stated in the 2006 and 2008 RWL Compliance Reports, there was no evidence showing that County discharges caused or contributed to an exceedance of an applicable water quality standard and the reports were submitted voluntarily to assist the Regional Board in identifying the sources of exceedances at various shoreline monitoring locations along Santa Monica Bay. As such, the submission of this status report should not be construed to mean that the County was the source of any exceedance of any applicable water quality standard, and no such inference should be drawn.

SMB-1-07, 1-08, and 1-09

The North Santa Monica Bay Source Identification Study was suspended in 2010 due to a lack of bacteria water quality exceedances at sites 1-07, 1-08, and 1-09, and based on study results to date. Results from summers of 2007 to 2009 in Ramirez Canyon Creek and Escondido Creek ruled out the upper watershed as a source of bacteria to the beach. Testing for bacteroides provided little evidence of human sources at Ramirez and Escondido Creeks. In spring 2010, beach samples rarely exceeded bacteria standards; as a result, the source identification study was suspended. Site SMB-1-09 at Latigo saw zero exceedances of bacteria WQS during summer dry-weather months in 2009 and 2010. In summer 2011, sites SMB 1-07, SMB 1-08, and SMB 1-09 saw an increase in exceedances of bacteria WQS. In summer 2012, there was a reduction in exceedances at SMB 1-08 and site SMB 1-09 had zero exceedances. In summer 2013, sites SMB 1-07 and SMB 1-08 had zero exceedances, whereas site SMB 1-09 had one exceedance. Lastly, in summer 2014, sites SMB 1-07 and SMB 1-09 had zero exceedances, while site SMB 1-08 had one exceedance.

SMB 2-07

Design plans were completed for construction of a rubber dam in Santa Monica Canyon Channel to increase capacity of a new City of Los Angeles low-flow diversion. Construction will be overseen by the LACFCD. Construction of Phase 1 began in March 2012, which included fence replacement and concrete work. Phase 2, which involves the installation of the rubber dam, began construction in July 2012. Due to delays associated with right-of-way/easement issues, we expect completion by the end of December 2014. The County is funding the design and construction of this project that provides a service to the City of Los Angeles. The City of Los Angeles will own and operate the rubber dam while the LACFCD will maintain it for a period of two years following construction, as part of an agreement with the City of Los Angeles.

<u>SMB BC-01</u>
The revised Santa Monica Bay Bacteria TMDL (effective 7/2/2014) removed site SMB BC-01 because it reflects conditions in Ballona Creek and there are sufficient monitoring sites in the Ballona Creek estuary as part of the Ballona Creek Bacteria TMDL.

<u>MdRH-5, 6, 7</u>
The County and LACFCD are currently preparing the Enhanced Watershed Management Program for the Marina del Rey watershed to address water quality improvements for bacteria, metals, and toxics. The plan will be submitted to the Regional Board in June 2015. The County and LACFCD were also issued a Time Schedule Order (TSO) for the dry-weather bacteria TMDL and are complying with the measures laid out in the TSO which includes construction of the Parking Lot BMP projects and the Oxford Basin Retention Project.

Topanga Source ID Study
FINAL Report Dec 2012- August 2014
23 October 2014

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LIST OF ABBREVIATIONS

AB411 – Assembly Bill 411: Ocean water standards
AB885 – Assembly Bill 885: OWTS policy
ATP – Microbiological alternate test procedure
BC – Ballona Freshwater Marsh
BH – BacHum Taqman human-associated assay
BMI – Benthic macroinvertebrates
BMP – Best management practices
BO – Beach outlet (located directly in front of lagoon, City sampling site)
BR – Brookside Drive (1700 m from ocean)
BSA – Bovine Serum Albumin
BT – Bacillus thuringiensis
BU – Beach Upcoast (located 175 m west of the beach outlet at the lagoon)
CFS – Cubic feet per second
CFU – Colony-forming unit
COC – Chain of custody
CPOM – Course particulate organic matter
D18 – Diatoms only
DO – Dissolved oxygen
EC – Escherichia coli
ENT – Enterococci
EPT – Ephemeroptera, Plecoptera, Trichoptera
FF – First flush = Rain events where greater than 0.75” of rain falls during a single storm.
FFG – Functional feeding group
FIB – Fecal indicator bacteria
H20 – Soft bodied algae and diatoms combined
HF- HF183 Taqman human-associated assay
IMS – Immunomagnetic separation method
LACDBH – Los Angeles County Department of Beaches and Harbors
LACDPH – Los Angeles County Department of Public Health
LACENVR – Los Angeles County Environmental Health
LARWQCB- Los Angeles Regional Water Quality Control Board
LG – Lifeguard station (located on Topanga Beach)
LOD – Limit of detection
LT – Lower Topanga (annual stream survey site beginning at 3200 m)
MC – Malibu Creek
MM – Mile marker
MPN – Most probable number
MST – Microbial source tracking
Narrows – The section of Topanga Creek between Owl Falls (6500 m) and Scratchy Trail (4800 m).
ND – Not detected
NRR – Non-removal reach for crayfish project (3700 -3900 m)
NTU - Nephelometric Turbidity Unit

OF – Owl Falls (located 6500 m upsstream of the ocean)
OWTS – On-site wastewater treatment system
PBS – Phosphate buffering saline
PCH – Pacific Coast Highway
PHAB – Physical Habitat Data collected with SWAMP protocol
PPM – Parts per million
QA/QC – Quality assurance / quality control
qPCR – polymerase chain reaction quantification
RA – Relative abundance (%)
RCDSMM – Resource Conservation District of the Santa Monica Mountains
RKM – River kilometer
RLU – Relative light units
ROQ – Range of quantification
RR – Removal reach for crayfish project (3500-3700 m)
RV – Recreational vehicle
S2 – Soft bodied algae only
SC-IBI Southern California Index of Biotic Integrity
SCC-IBI – Southern California Coastal Index of Biotic Integrity
SCCWRP – Southern California Costal Water Research Project
SIPP – Source Identification Protocol Project
SP – Snake Pit (located 300 m upstream of the ocean)
ST – Scratchy Trail (located 4800 m upstream of the ocean)
SWAMP – Surface Water Ambient Monitoring Program
SWRCB – State Water Resources Control Board
TAC – Technical Advisory Committee
TB – Topanga Bridge (located 3600 m upstream of the ocean)
TC – Total coliform
TKN – Ammonia and organic nitrogen
TL – Topanga Lagoon
TMDL – Total maximum daily load
TV – Tolerance value
UCLA – University of California, Los Angeles
UCSB – University of California, Santa Barbara
USC – University of Southern California
UT – Upper Topanga (annual stream survey sampling site beginning at 4500 m)
UTM – Universal Transverse Mercator
WQO – Water Quality Objectives
WY – Water year

EXECUTIVE SUMMARY

The purpose of the Topanga Source Identification Study was to examine the various locations where bacterial exceedances of fecal indicator bacteria (FIB) are occurring and to use state-of-the-art methods to identify the possible sources of fecal contamination (human, gull, dog, horse) in lower Topanga Creek and at Topanga Beach. Based on the information gathered, we have identified and suggest some Best Management Practices that could potentially reduce, mitigate or eliminate these inputs and thus improve water quality at Topanga Beach.

Topanga Beach received poor wet weather water quality ratings between 2006 and 2014. The beach exceeded the water quality objectives set for Fecal Indicator Bacteria (FIB) from the Ocean Standards (AB411) based on weekly samples collected by the City of Los Angeles Environmental Monitoring Division. This happened frequently enough for Topanga Beach to be identified by Heal the Bay as the 4th most polluted beach in the state for the 2010-2011 season and as the 10th most polluted in 2011-2012. From 2012-2014, overall precipitation levels were very low, and water quality throughout the Santa Monica Bay was excellent. However, Topanga Beach was listed as “B” for summer dry (April – October 2012), “C” for winter dry (Nov 2012– Mar 2013), and “F” for wet weather year-round (Heal the Bay 2013). In 2014, summer dry was "A", winter dry "B", and "C" for wet weather year-round (Heal the Bay 2014). One of the goals of the Ocean Standards water quality objectives was to reduce the number of exceedances during the recreational season (April 1- October 31). In 2013 there were 17 exceedances and thus far in 2014 there have been four confirmed exceedances.

The information provided in this report includes all data collected from December 2012 through August 2014. Input from the Technical Advisory Committee throughout the study (2012-2014) helped identify data gaps, as well as refined and focused the sampling efforts.

Hypotheses and Results

At the start of the study, we identified the following hypotheses to test.

HYPOTHESIS 1. ***Upper watershed sources of FIB are not conveyed to the beach via the creek.***

Result: The upper watershed is not contributing to the exceedances observed at Topanga Beach. Based on the data collected thus far, FIB levels in the creek upstream of the lagoon do not appear to correlate with exceedances observed at Topanga Beach.

Data indicated that except for a few occasions, mainly associated with either rain events or observed transient activity, fecal indicator bacteria levels were unlikely to affect surfzone and lagoon water quality. Samples collected from the Pacific Coast Highway (PCH) Bridge, within the lagoon and along the beach in the ocean had clearly different patterns than those observed upstream within Topanga Creek.

HYPOTHESIS 2. ***Concentrations of FIB and/or markers and nutrients decrease as the creek flows downstream from town through the Narrows. Benthic macro-invertebrate community species diversity, sensitivity, and abundance increases as the creek flows downstream.***

Result: Concentrations of FIB and nutrients decrease as the creek flows downstream from town through the Narrows.

Conditions of FIB in the creek in the Narrows section, located between Owl Falls (6500 m) and Scratchy Trail (4800 m) appear conducive to a decrease in EC and ENT levels and observed levels of human- and dog-associated marker.

Nutrient levels in Topanga Creek and Lagoon are low overall, and despite the very low flow conditions in 2012-2014, the pattern of decreasing levels of nutrients as the creek flows downstream are consistent with those observed in previous studies (Dagit et al. 2004). Exceptions to this pattern were observed during rain events and associated with transient activities.

Result: From Owl Falls to Scratchy Trail and Topanga Bridge, benthic macroinvertebrate species diversity increases as the creek flows downstream. However, overall SCC-IBI scores are low throughout Topanga Creek.

The biotic integrity of benthic macroinvertebrate communities in Topanga Creek, as measured by Simpson's Diversity Index and SCC-IBI, was highest at Scratchy Trail and Topanga Bridge. Lower downstream, Brookside Drive showed significant disturbance, as this site ran dry twice throughout the course of the study. Throughout the watershed, both low and high flow conditions resulted in decreased IBI scores. Average total coliform in 2014 was also significantly correlated to low SCC-IBI total and EPT taxa scores. Only 16 of a total of 35 samples analyzed (2003-2014) had 500 or more individuals, which limited the ability to apply the SCC-IBI metric. A regional comparison of Topanga Creek to other Santa Monica Mountain sites (Malibu, Cold Creek, Arroyo Sequit, Solstice) revealed that since 2003 Topanga has had very low scores, second only to Malibu. The onset of drought in 2002 has had significant impacts on Topanga Creek, in terms of both SCC-IBI scores and species composition. In spite of low SCC-IBI scores, Topanga remains an important reference creek for the region, as it continues to flow throughout most of the reaches where others run dry.

HYPOTHESIS 3. ***FIB and/or pathogens are not leaking from faulty septic systems in the lower watershed, from septic systems along Pacific Coast Highway in Topanga State Park or from the County Lifeguard facility.***

Result: Testing of the septic systems along PCH indicated that the system at the Ranger residence at the Topanga Ranch Motel was possibly leaking, so repairs were completed in summer 2013. It is no longer leaking. The system at the Feed Bin was also a potential source of leachate and requires repair and further testing to evaluate the input potential into Topanga Creek. The other systems within Topanga State Park do not appear to be leaking, nor does the County Lifeguard facility.

Although testing in Summer 2013 indicated that the majority of septic systems in the area adjacent to Topanga Lagoon are not likely to be actively contributing any leachate at this time, there are several studies that suggest that there can be a long lag time between input into the ground water table and emergence in either the ocean or a lagoon (Stone Environmental 2004). Since most of these systems have only been capped since 2008, additional testing in the future may be required in order to conclusively document any potential inputs.

HYPOTHESIS 4. ***Lower watershed and/or lagoon sources of FIB (human and non-human inputs such as gull, dog, etc.) are correlated with exceedances at Topanga Beach.***

Result: Contributions from Topanga Lagoon are correlated with FIB levels in the ocean during rain events and when the lagoon is connected to the ocean directly.

FIB levels are significantly increased when the lagoon is breached and connected to the ocean regardless of winter or recreational season.

Result: Dogs and gulls are a significant source of fecal contamination to the lagoon and ocean and likely contribute to exceedances of ENT state water quality standards at the ocean and lagoon sites.

Gull levels were detected 94% of the time in lagoon samples and 80% of the time in ocean samples, indicating that gulls are an important and chronic source of fecal contamination to Topanga Lagoon and ocean sites. Dog marker levels in Topanga waters were similar to those measured at Rosie's Dog Beach in Long Beach, CA and were detected on average 71% of the time at ocean sites and 64% of the time at lagoon sites. This confirms that dog waste is also a significant source of fecal contamination to Topanga Lagoon and ocean.

Result: Human marker was detected infrequently in the creek, lagoon and ocean.

In Topanga, continued sampling for human-associated marker is recommended. During Year 1 (July 2012 to June 2013), human-associated marker was detected in the ocean on five sampling dates, including first flush, and also on four dates in the lagoon, one of which was first flush. There was a total of seven dates with either ocean or lagoon detection. Results from Year 2 (July 2013 – June 2014) are encouraging, as human marker was detected in the ocean on just two days, one of which was first flush. For the lagoon, human hits were observed only during the first flush event of Year 2. Further sampling is needed to determine if this trend continues and if it will continue to occur under non-drought conditions.

Summary of Results

This DRAFT FINAL report (9.23.14) for the Topanga Source Identification Study includes extensive discussion of the following specific efforts in accordance with the deliverables required by the grant, however a summary of the most important results is included here for ease of use.

1. **Present physical and chemical water quality conditions in the main stem of the creek, and along Topanga Beach and Lagoon.** (See Chapters 6-7)

   - Rainfall was below normal for both years the study took place, and significant rain events were few and far between. Therefore, flow was consistently low throughout the study period as well.
   - The average wetted width of the creek remained fairly constant throughout the study but average depths decreased in some locations in 2014.
   - Water temperature, pH, and specific conductivity were relatively stable and consistent with previous data collected (Dagit et al 2004, 2000-2012 RCDSMM unpublished data).
   - Habitat types remained consistent during the course of the study with riffles, runs and glides dominant in the lower reach of the creek (below 3600 m) and a more complex mix of flow habitats (cascade/fall, riffle, run, glide and pool) found upstream. None of the flow habitats in study reaches were dry during either year.
   - Geomorphology and gradient affect the types of flow habitats present, with the lower gradient reach below 3600 m (<3%) being dominated by run-riffle complexes and the upper gradient (3-6%) being pool dominated.
   - Smaller substrates such as fines and gravel were more frequent in the lower reach, whereas larger substrate such as cobbles, boulder, and bedrock were more frequent in the upper reach, which has a higher gradient (> 3%).
   - Instream habitat complexity includes abundance levels of filamentous algae, aquatic macrophytes, boulders, woody debris, undercut banks, overhanging vegetation, living tree roots and artificial structures. In 2014, both the lower and upper reaches had greater habitat complexities than in 2013 despite the low flows.
   - The proportions of cover values for several riparian vegetation types were also estimated for the lower and upper reaches. Trees and saplings > 5m had the highest proportion of sparse cover in both the lower and upper reaches.
   - Overall, both reaches of Topanga Creek have relatively stable banks that can support a complex assemblage of aquatic organisms. The higher level of fines and gravel in the lower reach are highly mobile. Snorkel survey and habitat typing focused on habitat for endangered steelhead trout documented the pulses of sediment moving downstream with storm events over time (Dagit and Krug 2011). While the specific

location of the sediment slugs varies over time, and results in decreased pool habitat in certain reaches, the overall amount of pool habitat and refugia for fish remained fairly constant, despite a very wet year in 2005. Overall, channel morphology has also remained fairly constant over time (Dagit and Krug 2011).

- In-situ parameters (water temperature, dissolved oxygen, pH, conductivity, salinity) were, in general, within the standard tolerance ranges for wildlife.
- Nutrient and algae levels were, in general, low throughout the study period, with only occasional exceedances.
- On average, nitrate and orthophosphate levels decrease from Owl Falls (OF, 6500 m; the site closest to town) downstream to the lagoon but this decline is more pronounced between OF and Scratchy Trail (4800 m)
- On average, Brookside Drive (BR, 1700 m) had the highest levels of Ammonia.
- Owl Falls had the highest nutrient levels and Scratchy Trail has the lowest nutrient levels on average.

2. **Microbial source tracking results.** (See Chapter 3)

- The lagoon is a source of FIB to the ocean. FIB levels are significantly increased when the lagoon is breached.
- Levels of FIB and all markers increase from the most downstream creek site (SP) to the lagoon. The lagoon may serve either as a location where microbial levels may be increasing due to growth (FIB) or to the presence of new inputs (FIB and markers).
- FIB in the surfzone do not appear to originate from an upstream creek source, except on days when both flow and FIB levels in the upper watershed are elevated. Days where creek input had potential to significantly impact downstream levels occurred on two sampling dates during this study, including the first flush event during year two of the study.
- Winter samples were four to eight times higher than samples for the recreational season for the dog and gull marker, indicating that these markers follow a seasonal trend and may have more of an impact to water quality during the winter.
- Dog and gull marker levels indicate a significant source of fecal contamination to the lagoon and ocean, and both dog and gull sources are likely contributing to exceedances of ENT and EC state water quality standards at the ocean sites. When ENT levels were in exceedance, gull marker levels were higher than when ENT levels were in compliance at BO, and TL. When dog marker levels in Topanga water samples were compared to levels at two reference beaches and one dog beach, dog marker levels at Topanga were similar to levels at the dog beach. No dog marker was detected at the two reference beaches sampled (Dockweiler and Malibu).
- Human marker was detected infrequently in the lagoon and ocean (13%). Average human marker values were higher at ocean sites when ENT levels were in exceedance vs. in compliance of state water quality standards. During Year 1 (July 2012 to June 2013), human-associated marker was detected in the ocean on five sampling dates,

including first flush, and also on four dates in the lagoon, one of which was first flush. There was a total of seven dates with either ocean or lagoon detection. Results from Year 2 (July 2013 – June 2014) are encouraging, as human marker was detected in the ocean on just two days, one of which was first flush. For the lagoon, human hits were observed only during the first flush event of Year 2.

3. **Description of human health risk associated with human and non-human sources of fecal contamination. (**See Chapter 4)

- Previous studies have well established that there is a correlation between the levels of FIB in recreational waters and incidence of illness when the likely source of fecal contamination is human.
- The risks associated with exposure to non-human sources of fecal matter in recreational water are still not well characterized, as epidemiological data on this topic are insufficient. However, there is some evidence in the literature for greatly reduced risk in water polluted by nonhuman fecal matter.
- Interest is growing in quantitative microbial risk assessment (QMRA) as a framework for understanding risk of illness in recreational water exposure.
- Ongoing research is required to fill data gaps before QMRA can be applied as an effective approach for predicting risk in recreational coastal waters. While US EPA has opened a door, site-specific water quality criteria (as would be derived from QMRA) are still not accepted under California regulations.
- For Topanga to be a candidate for QMRA in the future, testing for host-specific markers and pathogens (viruses) must be continued to assess the downward trend observed in human-associated marker and to monitor reductions in dog and gull pollution as sources. These measurements must continue as the drought ends so the role of the creek can be fully assessed. Depending on those results, it may be possible to conduct a thorough risk assessment and move towards site specific objectives.

4. **Examination of changes in macro-invertebrates, aquatic species of special concern and endangered fishes in relation to water quality conditions.** (See Chapters 8-11)

- Benthic macroinvertebrate Southern California Coastal Index of Biotic Integrity (SCC-IBI) scores increase from upstream to downstream. The lower scores in the downstream sites appears related to lack of flow.
- Both the high and low flow conditions resulted in decreased SCC-IBI scores.
- Although the SCC-IBI score for Topanga Creek was initially documented as Good (46) in 2001, analysis of the samples collected between 2003 -2014 range from Fair to Very Poor, and in fact 19 of 35 samples had too few individuals to apply the metrics.
- Average Total Coliform per site in 2014 (excluding first flush) was significantly and negatively correlated to EPT taxa, and also to total SCC-IBI scores ($F<0.05$, $R2=0.88$, $R2=0.64$). Average nutrient levels did not seem to be correlated with SCC-IBI scores.

- Drought conditions have reduced IBI scores throughout the region
- Crayfish removal had no effect on water quality or nutrient levels.
- Crayfish removal improved BMI community compositions while on-going but the effect was not observed two months after removal ceased.
- Crayfish removal could be beneficial in improving ecosystem health and nutrient cycling within the creek.
- Examination of diatom and soft-bodied algae communities can provide secondary indicators and multiple lines of evidence to better characterize the responses of southern California creeks to both natural (floods, wildfire) and anthropogenic inputs will allow for better understanding of the dynamics of aquatic systems.
- Diatom data from Topanga 2013-2014 provides a baseline snapshot of low flow conditions.
- A total of 125 diatom species were observed in Topanga Creek in 2013-2014. 46 species, many of them of cosmopolitan distribution, were common to both years, with 40 different species found only in 2013 and 39 species found only in 2014.
- Cladophora glomorata is the most common taxa found throughout southern California, appears to be a reliable indicator of high total Nitrogen (3.5 mg l-1) (Stancheva et al. 2012) and was also the dominant species observed in both Topanga and Malibu Creeks despite their different nutrient levels. This could possibly be a result of inability to differentiate between species in the same genus that appear taxonomically similar, but in fact represent different species with different tolerance preferences. It could also mean that further refinement of the tolerance limits and preferences is needed.
- Applications of three different indices of biologic integrity showed a consistent picture between sites and creeks for the soft body algae only (S2), diatoms only (D18) and combination of both (H20). These metrics from the Southern California Index of Biotic Integrity (Fetscher et al. 2014) are only recently available, so it is not yet possible to compare the snapshot of conditions in Topanga and Malibu Creeks in 2013 to other sites regionally.

Identification of potential remedial actions and BMP's. (See Chapter 12 and 13)

We recommend that the following potential actions are considered for implementation in order to reduce exceedances at Topanga Beach and improve the water quality and habitat in the upper watershed. Additional recommendations for further studies to continue the investigation of sources of bacteria and other pollutants are detailed in Chapter 13.

Recommended BMP's for Topanga Beach:

1) Restore Topanga Lagoon and Lower Topanga Creek State Park. This is a longer-term project, but by restoring natural function to Topanga Lagoon, it would be possible to not only reduce the bacterial sources but also improve habitat for a variety of endangered species, especially tidewater gobies and southern steelhead trout.
2) Continued enforcement of the County code and additional signage may reduce impact and presence of dog feces. The marker data documents a rise in dog associated markers in the winter months when lifeguard supervision and peer-pressure from beach visitors are reduced. During the study, dogs and dog feces, were routinely observed on the beach. The winning student posters have been affixed to the lifeguard station to assist with public outreach.
3) Continue coordinated enforcement to reduce the number of homeless and transients camping in and around the beach and under the PCH underpass. A mass balance calculation of input of one direct deposit to the lagoon (~200g of human feces) was calculated to result in an exceedance of ENT (Riedel et al. 2014 submitted). Direct deposits were observed at both the lagoon and beach on multiple occasions during the study. Direct deposits associated with the transient population is again an enforcement issue but one that could potentially reduce exceedances.
4) Continued maintenance and monitoring of the Lifeguard Station shower and restrooms. Some drainage from the showers directly to the beach was observed on several occasions. When tides are high or storm events shift the lagoon mouth downcoast in front of the building, there is potential for this to become a source.
5) Investigate possible installation and maintenance of culvert filters along Pacific Coast Highway at Topanga Beach to prevent direct road surface run-off spills into Topanga Lagoon.
6) Upgrade the septic systems at the Topanga State Park along PCH as conditions change and opportunities arise. As the lagoon park plan evolves, incorporating state of the art septic systems into any visitor serving facilities is recommended.
7) Increase outreach to commercial facilities that are on septic systems along the beach. The Feed Bin has the last remaining septic system that is connected to a seepage pit. Upgrading that system should be a priority.
8) Additional patrolling of the state park for transient and RV dumping activity could help with any exceedances in the creek, similarly, further enforcement of the no-dogs-allowed-on-beach rule would probably help with the FIB issues at the beach/lagoon.
9) Increase public outreach concerning the problem with dog feces pollution. While changing behaviors is difficult, peer pressure to pick up after your dog, as well as to reduce the number of dogs visiting the beaches could help.
10) Participate in future monitoring and develop funding to initiate a quantitative microbial source identification study to evaluate the potential for developing appropriate site specific objectives.

Recommended BMP's for the Topanga Creek Watershed:

Although it does not appear that inputs into the upper watershed are associated with the exceedances at Topanga Beach, there are indications that they negatively impact the creek's ecosystem. A number of BMP's could be implemented throughout the watershed in order to reduce inputs to the creek and possibly improve overall conditions in Topanga Creek.

1) Establish a community outreach program to inform residents of potential septic system impacts to the creek and encourage them to upgrade their existing septic systems by installation of effluent-filters in septic tank outlets to reduce particulates into leach fields or seepage pits, thus reducing bacterial and nutrient contamination potential. The community outreach program should include identifying funding sources to assist property owners in upgrading their septic systems.
2) Establish a community outreach program to inform residents of potential impacts to the creek from sub-surface and surface graywater discharges.
3) Through community outreach, encourage the installation of additional trash receptacles behind Topanga Market and Abuelita's.
4) Through community outreach, encourage the availability of public restrooms in Topanga Center.
5) Continue coordinated efforts to remove transient encampments and illegal marijuana farms located adjacent to the creek.
6) Implement the Santa Monica Mountains Local Coastal Program policy for existing equestrian facilities to encourage such facilities to come into compliance with all of the LCP policies and regulations as soon as possible.

Additional recommendations for future research are included in Chapter 13.

Documentation of community participation:

One important element of this study was to educate the local community and engage elementary through undergraduate students in the investigation of bacterial sources and pollutants in Topanga Creek. To that end, the RCDSMM, Watershed Stewards Program Members and Dr. Jenny Jay's team at UCLA provided a series of in-class and field programs reaching over 400 students.

Community outreach documented in Appendix E included:

1) Yearly community meetings (May 2013 and 2014) to highlight care and maintenance of septic systems and graywater systems, share the preliminary results of the study, and discuss potential BMP's.
2) Yearly watershed field class and UCLA mentoring for 5th graders at Topanga Elementary School and 6-8th graders at Topanga Mountain School.
3) In 2014, students participated in an experiment at Topanga Beach to examine decay rates and levels of FIB contained in the sand along the beach. Students worked with their UCLA undergraduate mentors to collect and analyze data and then prepare posters to share results. These posters were presented at UCLA and to the community.
4) Students also participated in a poster contest to explain why dogs on the beach are a problem. The three winning posters are being made into signs that will be posted at Topanga Beach.
5) Yearly neighborhood meeting to discuss "hot spots" and brainstorm solutions. This action was not completed.
6) Two articles per year in the local newspaper and relevant web sites updating results of the study to the community. Copies of the articles are included in Appendix E.
7) Twice yearly training of Stream Team volunteers. Trainings took place on Saturday 1 December 2013, 5 June 2013, and again on 23 October 2013 to train new Watershed Steward and UCLA student interns.

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First and foremost, we wish to thank Supervisor Zev Yaroslavsky for the financial support for this effort. Chief of Staff Alisa Katz and Deputy Susan Nissman were key to developing a coordinated effort that will not only assist the County in learning more about the water quality issues at Topanga Beach, but will hopefully also provide innovative, cost-effective solutions for making sure the waters of LA County are safe for swimmers, as well as support a viable ecosystem.

Numerous Resource Conservation District of the Santa Monica Mountains (RCDSMM) and University of California at Los Angeles (UCLA) staff, students and volunteers cheerfully got up in the dark for many months to help collect data. We could not have collected and processed the samples without the assistance of: Uriel Cobian, Ian Davies, Steve Harrison, Raven Logiuroto, Sofi Peterson, Gabriel Sloggy, Ken Wheeland, and Steve Williams.

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2013: Uriel Cobian, Carrie Fong, Ariane Jong, Matt Kirby, Diana LaRiva, Gabby Njm, Katherine Pease, Tessa Reeder, Vanessa Thulsiraj, Karen Vu, Amy Zimmer-Faust, Mark Ziman.

2014: Kayti Christianson, David Gottesman, Allie Irwin, Monica Jarquin, Robert Ruzicka and Sylvia Zamudo.

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Dr. Richard Ambrose at UCLA also loaned us equipment to facilitate BMI analysis.

The members of the Technical Advisory Committee provided invaluable information that helped us refine our study plan and examine our results. Members included:

Name	**Affiliation**
Alisa Katz	Supervisor Yaroslavsky, District 3
Susan Nissman	Supervisor Yaroslavsky, District 3
Tim Pershing	Supervisor Yaroslavsky, District 3
Zuhey Espinosa	Supervisor Yaroslavsky, District 3
Rosi Dagit	RCDSMM
Jenna Krug	RCDSMM
Sandra Albers	RCDSMM
Dr. Jenny Jay	UCLA
Dr. Tim Riedel	UCLA
Amy Zimmer-Faust	UCLA
Dr. Vanessa Thulsiraj	UCLA
Dr. Catalina Marambio	UCLA
Dr. Jed Furhman	USC
Suzanne Goode	CA Department of Parks and Recreation
Richard Sherman	Topanga Underground
Steve Braband	BioSolutions
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Nick Brakband	LACDPH
Bernard Franklin	LACENVR
John Giles	LACDBH
Carlos Zimmerman	LACDBH
Rudolph Montoya	LACDBH
Shirley Birosik	LARWQCB
Shana Rapoport	LARWQCB
LB Nye	LARWQCB
Dr. Steve Weisberg	SCCWRP
Dr. John Griffith	SCCWRP

Purpose (as Proposed in 2012)

How does Topanga Creek decline from an "A" grade creek into an "F" grade beach?

1) Identify the likely sources (both physical location and source, i.e., human, bird, dog, horse, etc.) of elevated fecal indicator bacteria (FIB) at Topanga Beach by testing the creek from MM 2.02 to the beach. Test the hypothesis that the creek is grade "A," and sample in and around the lagoon to fine tune our understanding of when and investigate when and why the beach gets grade "F."
2) Identify best practices or remedial actions that could reduce or eliminate fecal contamination from human or animal sources.
3) Implement K-12 and community education and outreach to engage stakeholders in water quality problems and best management practices to solve them.

This report provides background information, documents methods used, summarizes data gathered and suggests recommended Best Management Practices for moving forward. This report is organized according to standards used in scientific publications, which results in some repetition of methods and results that interconnect between chapters. Our intention is to submit these chapters for peer-reviewed publication, in addition to completing the final report required by this grant.

The intended audience for this report includes County and agency staff, as well as interested citizens, Stream Team volunteers, and our student participants.

Community Outreach and Technical Oversight

Topanga is a small community with many active and concerned stakeholders. The proposed testing meets the needs identified in the Topanga Creek Watershed Management Plan (2002). Input from local experts and agency staff was solicited through the formation of a Technical Advisory Committee, which met in December 2012 to help guide sampling strategy, and again in April and October 2013, April, May and October 2014 to review preliminary results and suggest refinements. In May 2013, a community meeting held at the Topanga Public Library provided a wonderful opportunity to engage property owners in a collaborative effort to understand the preliminary results, and examine acceptable procedures for maintenance, monitoring and implementation of Best management Practices (BMP's) for septic and graywater systems that meet the regulatory standards of AB885. Building on the long-standing effectiveness of the RCDSMM Stream Team, volunteers and local students were solicited and trained to assist in data collection. Another community meeting was held in May 2014 to discuss the results regarding the inputs from dogs at the beach, and included a poster contest which resulted in student posters being deployed at Topanga Beach to educate the community.

Even though this study did not sample in the developed upper watershed, we recognize that inputs from the private inholding areas within the predominately public open space of the watershed could have negative impacts. Reaching out at the neighborhood level to property owners adjacent to previously identified "hot spots" is a difficult and sensitive endeavor. Due to the focused attention on the beach and lagoon, we did not conduct these meetings, however, we did provide detailed information to the whole watershed through articles in the Topanga Messenger, on Zev's blog and through community meetings.

In order to be successful in reducing pollutants entering Topanga Creek, Lagoon and Beach, an on-going education program was identified as critical. In-class watershed classes were provided to the Topanga Elementary School (TES) kindergarteners. In both spring 2013 and 2014, 5th grade students from TES, along with 6-8th graders from the Topanga Mountain School (TMS) participated in a collaborative project with UCLA undergraduate students to develop and test hypotheses about water quality that included both in-class and field studies. This culminated with the students working with their UCLA mentors to produce scientific posters explaining their hypothesis, results and conclusion that they presented on campus at UCLA and to the community. This was a great way for students to make the connections between what goes down the kitchen sink/tub and pollution in the creek. Getting the students into the ocean to collect and analyze samples was not only great fun, but gave them a real sense of how research works. The posters summarizing the student projects are found in Appendix E.

Need for Project

In spite of the removal of houses and their accompanying septic systems within the Rodeo Grounds area of the lower watershed (and other coastal engineering solutions described below), Topanga Beach received poor wet weather water quality ratings between 2006 and 2014. The beach has exceeded the water quality objectives set for Fecal Indicator Bacteria (FIB) based on the Ocean Standards (AB411) obtained from weekly samples collected by the City of Los Angeles Environmental Monitoring Division. This happened frequently enough for Topanga Beach to be identified by Heal the Bay as the 4th most polluted beach in the state for the 2010-2011 season and as the 10th most polluted in 2011-2012. No systematic sampling of the creek or adjacent up and downcoast reaches of the beach had been done since 2004.

Over the past few years, a number of actions have been implemented to reduce possible bacterial contamination of Topanga Beach. In 2008, Los Angeles County Department of Beaches and Harbors upgraded their septic system associated with the restrooms and lifeguard station. Since 2008, the septic systems located within the former Rodeo Grounds Road and Snake Pit area have been removed. The septic systems associated with the Topanga Ranch Motel (ranger house only), Reel Inn, Cholada's, Rosenthal Winery, and the Topanga Feed Bin have been sealed and are now being pumped weekly or as needed in compliance with California Department of Parks and Recreation requirements.

Topanga Creek was listed by the Regional Water Quality Control Board 303(d) list for lead in the upper watershed and bacteria at Topanga Beach. No other pollutants of concern have been listed for the watershed. Topanga Creek has no stormwater conveyance systems per se, but in actuality stormwater is "conveyed" and enters the creek in a variety of ways via surface flow, private and public culverts and natural drainages.

A variety of analytical methods now allow for identification of specific source-associated molecular markers, including human, dog, horse, and gull. In collaboration with the State of California Source Identification Project (SIPP), this MST study was completed in order to provide insight concerning sources of elevated FIB in the Topanga watershed.

The funding contributed by the County has:

1) enabled comprehensive sampling for FIB and molecular markers within the Topanga Creek watershed that has complemented and expanded on hypotheses and results generated during extensive SIPP MST study of the Topanga watershed;
2) allowed for analysis of the benthic macroinvertebrate Southern California Coastal Index of Biotic Integrity in Topanga Creek, which has provided a greater understanding of the biological health of the Topanga watershed;
3) provided sufficient information to develop/recommend possible remedies to the problems identified; and provided substantial outreach and education to local K-12 students and the general public.

1 Background Information (Previous Studies prior to 2012)

Functional bacterial communities are essential to both human and ecosystem health. The focused sampling and monitoring provides the County and the Regional Water Quality Control Board with information that will assist in identifying potential FIB sources and reducing contributions from these sources that lead to exceedances of state bacterial water quality standards.

This study provided an interesting opportunity to examine the biology of the Topanga Creek watershed as well as mechanisms that allows assimilation of fecal and nutrient pollution, processing upper watershed inputs in such a way that these inputs do not extend downstream to the extent that they influence the patterns observed on the beach.

1.1 2003-2004 Sampling Summary

The last comprehensive sampling and monitoring in the Topanga Creek Watershed took place in 2003-2004. At that time, several "hot spots" in the upper watershed were identified. Total and fecal coliform bacterial exceedances were associated with storm events when tested at the Bridge on Topanga Canyon Blvd. (3600m), which is located approximately halfway between the town and the ocean (Figure 2-1). Enterococcus limits were exceeded for 50% of total storm sampling events, and the Bridge was one of the few locations where enterovirus RNA tests were positive (two events of 24) (Dagit et al 2004). Tests for *Bacteroides* were negative in all sampling events (n=12). These results need to be examined in light of known transient encampments, but one of the conclusions from the 2003-2004 study was that due to the small sample size, insufficient data was collected and additional sampling was needed in order to fully understand the patterns of pollutants in Topanga Creek as they move towards the beach.

In addition to examining the FIB conditions, other variables such as nutrients (nitrate-N, nitrite-N, orthophosphates, ammonia-N and turbidity) were also documented. Again, the pattern indicated that nutrient levels decreased as the creek flowed downstream, and hot spots identified within the upper watershed remained on the low end of typical urban conditions.

1.2 2011-2012 SIPP Sampling Summary

In a review of historical data (January 2005 – November 2011) taken by the City of Los Angeles Environmental Monitoring Division and compiled by the Los Angeles County Department of Public Works an unusual pattern of bacterial exceedances occurring at Topanga Beach well into the dry season (as late as mid July) was noted. When these data were compared to creek flow data collected by the County at the same time as the bacterial data, it was apparent that bacterial exceedances correlated strongly with breaches in the Topanga Creek Lagoon (Figure 1-1). The Topanga Lagoon discharges episodically into the ocean as late as July. This correlation between Lagoon discharges and high FIB values in ocean water samples strongly suggested that Topanga Lagoon was the primary source of high FIB levels in the surf zone.

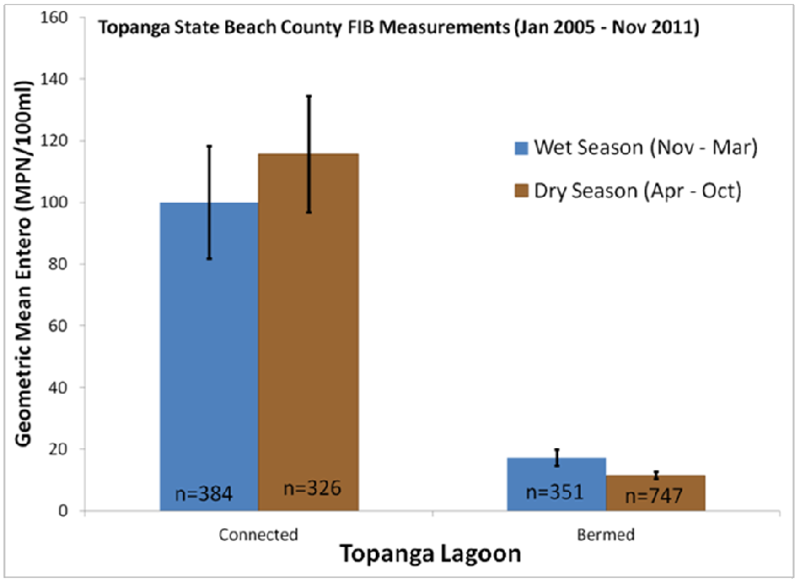

Figure 1-1 Geometric mean of Enterococcus (MPN/100mL) connected and bermed conditions for wet and dry seasons between January 2005 – November 2011.

Based on this historical analysis and the identification of the lagoon as an important source of FIB to the ocean, the UCLA SIPP team began a microbial source tracking study of those areas in October 2011. This effort began with a full watershed snapshot in October 2011 and continued through the summer of 2014. "Hot spots" identified with this snapshot were further analyzed with additional sampling and source associated markers were used to identify potential sources of fecal contamination to the watershed.

A "first flush" storm event occurred on 5 October 2011. Volunteers from the RCDSMM and UCLA collected representative water samples throughout the upper watershed downstream to the ocean at locations previously sampled in 2003-2004. Preliminary results reflected a pattern similar to that observed in the earlier study.

Results from the 2011 first flush sampling event indicated high bacterial levels throughout the watershed and, in most cases, samples were positive for the human-associated marker. Subsequent sampling events identified at least four "hot spots". These were Entrado/Highvale Road (not re-verified in 2012 due to lack of flow), Behind Abuelita's in town, Mile Marker 2.02 Bridge, and the Lagoon. The sampling effort of 2012 identified a hot spot of high ENT levels and related human-associated marker in the town region of the Topanga watershed. To better understand the nature and extent of this hot spot, samples were taken three times over two weeks in an attempt to bracket in the source (Figure 1-2 and Figure 1-3).

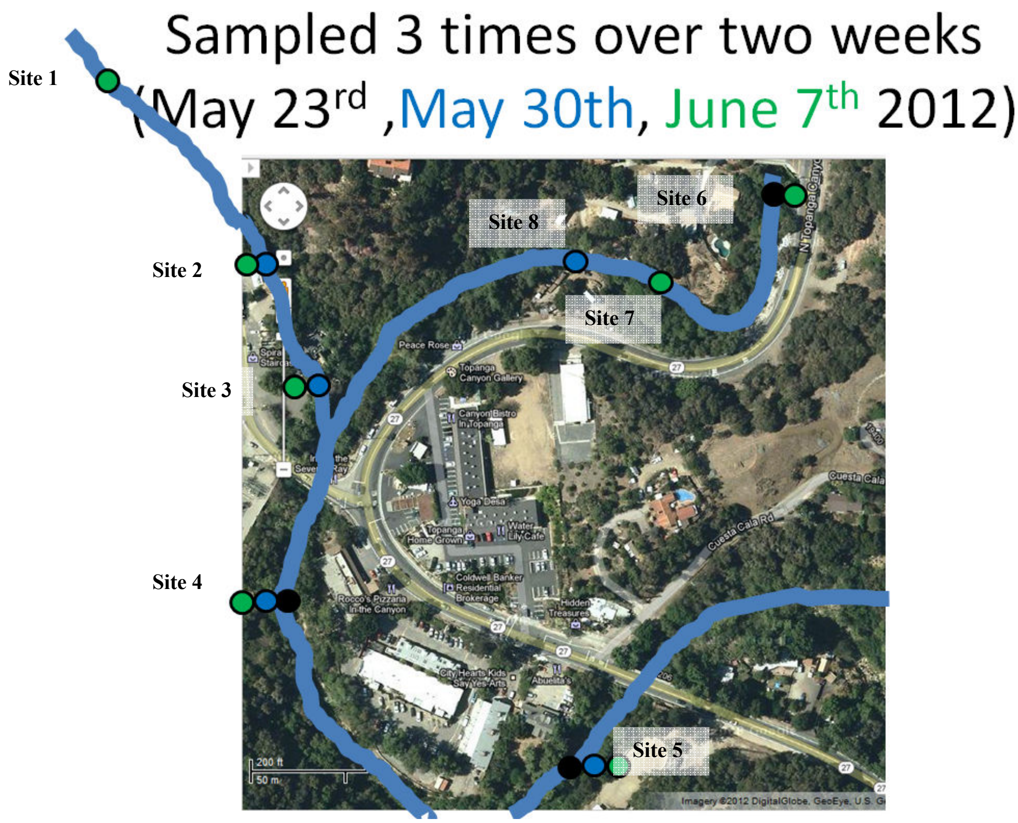

Figure 1-2 Locations of hot spot sampling taken three times over two weeks trying to locate source of large ENT levels originally detected at site 5 (Behind Abuelita's; BA).

The intensive sampling indicated that there was a source of FIB in both the main stem of the creek and the Old Topanga tributary. The main stem source did not extend above the School Road crossing, while the Old Topanga source was not definitively bracketed as exceedance levels were found at the northernmost site sampled (Backbone Trail Crossing). These sample were further analyzed for human, dog, and horse-associated markers (Table 1.1). Horse-associated marker was not detected at any of the sites sampled. High levels of human marker were detected along the Old Topanga Creek stem near the large power transformer box in addition to high levels of dog marker detected at the Inn of the Seventh Ray site. These sources may explain the concurrent hits of human and dog markers at the Post Office site. However, samples were not positive for either the human or dog marker at the Behind Abuelita's site (Figure 1-3).

The watershed sampling efforts in 2012 also expanded our understanding of the reduction in FIB levels within the Narrows, occurring between the confluence of Dix Creek with Topanga Creek at Owl Falls (6500 meters upstream from the ocean across from Jalan Jalan) and the Scratchy Trail access point (4800 meters upstream from the ocean and located near mile marker 3.75), in an area with little human development,

Sites along the main stem did not show markers except for one hit for BacHum at a level too low to quantify at the School Road site (Table 1-1). High levels of human marker were detected along the Old Topanga Creek stem near the large power transformer box in addition to high levels of dog marker detected at the Inn of the Seventh Ray site. These sources may explain the concurrent hits of human and dog markers at the Post Office site but either these sources were too diffuse to detect at Behind Abuelita's (BA) or another animal is the source of FIB seen at Behind Abuelita's (Figure 1-3).

Table 1-1 Results of hot spot sampling three times over two weeks in the summer of 2012. Map numbers correspond with sites labeled in Figure 1-2. ND indicates maker not detected, D indicates marker detected but at a level too low to quantify.

Site	Map #	ENT 5/23	ENT 5/30	ENT 6/7	HF183 5/23	HF183 5/30	HF183 6/7	BacHum 5/23	BacHum 5/30	BacHum 6/7	Dog 5/23	Dog 5/30	Dog 6/7
Backbone Trail	1			135			*			*			ND
	2		275	414		2400	*		4700	*			ND
	3		393	185		ND	*		D	*			*
School Road	6	52	65	30	ND	ND	*	ND	D	*	ND	ND	ND
	7			30			*			*			ND
	8		780			ND			ND			ND	
Post Office	4	256	223	146	8	9	*	50	ND	*	590	135	ND
Behind Abuelita's	5	233	132	63	ND	ND	*	ND	ND	*	ND	220	*

* sample taken but not yet analyzed.

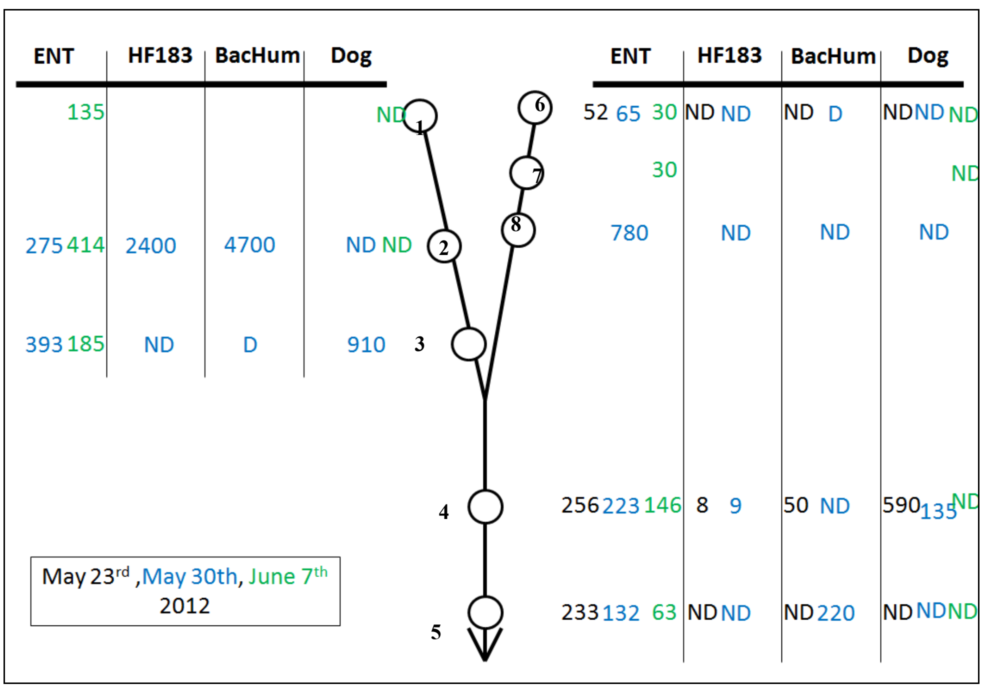

Figure 1-3 Results of hot spot sampling three times over two weeks.
Abstracted site map is shown in the middle of the figure with corresponding ENT or marker values shown (horse marker not shown because all results returned not detected (ND)). Color indicates date of sample with black 5/23/12, blue 5/30/2012, and green 6/7/2012.

1.3 Additional On-going Studies in Topanga Creek

Good water quality is essential to supporting populations of endangered species in the region, including the southern steelhead trout (*Oncorhynchus mykiss*). Topanga and Malibu Creeks are the only places where southern steelhead trout are still consistently present in the Santa Monica Bay. In 2006, there was a die-off of trout in Malibu, while those in Topanga remained healthy. The reason for this die-of remains unclear. Since 2009, the RCDSMM has deployed water quality monitoring sondes in Malibu, and in 2010, were able to compare the conditions in Malibu with those in Topanga. Those results are presented in a report on the status of steelhead in the Santa Monica Bay (Dagit and Krug 2011).

1.4 Sampling Plan 2012-2014

In December 2012, a two year tiered effort providing comprehensive sampling of the Topanga watershed was initiated. The Topanga study is a cooperative endeavor between the RCDSMM, the Jay Lab at UCLA (this lab was one of five core labs that participated in the state-funded Source Identification Protocol Project (SIPP) run by SCCWRP), the Fuhrman lab at USC, and the trained volunteers of the Topanga Creek Stream Team. Topanga Underground and BioSolutions, Inc. provided the septic tank tracing and testing information.

Building on the data collected by the SIPP MST study, this work provides the County with a better understanding of how and why exceedances occur at Topanga Beach.

A Technical Advisory Committee (TAC) was convened in December 2012 to provide oversight and assist in fine-tuning the sampling design and analysis. The TAC is comprised of stakeholder representatives including Los Angeles County Departments of Beaches and Harbors, Public Health, Public Works and the Third District Supervisorial representatives, as well as scientists from the Southern California Coastal Water Research Project (SCCWRP), California Department of Parks and Recreation, Caltrans, Regional Water Quality Control Board, University of California, Los Angeles (UCLA), BioSolutions, Topanga Underground, and RCDSMM. In addition, the proposed SIPP-related microbial source tracking (MST) efforts were evaluated and approved by the other three core labs involved in the project: the Southern California Coastal Water Research Project (SCCWRP), Alexandria Boehm's lab at Stanford, and Patricia Holden's lab at UCSB. A complete list of TAC members is found in the acknowledgements. Additional TAC meetings took place in April and October 2013, April and October 2014.

1.5 Sources of Bacteria to the Beach

Sources can be divided into two categories, lower watershed sources and upper watershed sources that travel to the beach via the main stem of the creek.

1.5.1 *Potential Lower Watershed Sources Examined*

Septic systems along Pacific Coast Highway in Topanga State Park. The systems at Cholada's, Ranch Motel Ranger residence, Reel Inn, Malibu Feed Bin, and Rosenthal Winery are being pumped weekly or more as needed in compliance with the contracts administered by the California Department of Parks and Recreation. They are all older systems and are disconnected from leach fields or seepage pits, these tanks were tested during summer 2013 to examined the conditions of outlet T's to ensure that they have been sealed to prevent any discharge into abandoned drainfields. The holding capacity and pumping protocol of these tanks was also examined. Results are included in Chapter 6 and Appendix H.

Beaches and Harbors restrooms and lifeguard station. While a stand-alone treatment facility exists at this site, it was evaluated and listed as a potential source in the event of a malfunction and/or maintenance issues.

Wildlife, including gulls and other seabirds, deer, coyotes. Although it is only 1.8 acres, the remnant lagoon at the mouth of Topanga Creek is consistently used by roosting and foraging waterfowl. Bacterial contributions from bird feces have been identified as the source of FIB in other coastal lagoons, such as Cowell Beach in Santa Cruz (Russell et al. 2013) and a beach in Racine, WA (Converse et al. 2012).

1.5.2 *Potential Upper Watershed Sources Moving Downstream Through the Creek to the Lagoon Examined*

Homes on septic systems throughout watershed. While many homes in Topanga were built in the 1920's and 1930's resulting in old septic systems, the County Public Health Department has a program in place to monitor existing systems. Approximately 200 of the 3,000 homes in the watershed are located directly adjacent to the creek.

Transient encampments. Several locations throughout the watershed are known to house transient populations. While encampments are dispersed whenever identified, it is possible that new encampments exist.

Horses. There are several establishments housing large numbers of horses, and many residents throughout the watershed have one or two horses on fairly small parcels. Horses are ridden in open land throughout the watershed, resulting in a potentially diffuse bacterial source. Horse feces at barns are sometimes composted and these piles could also serve as a bacterial source.

Dogs. Fecal matter from the many household dogs would be a potential diffuse source of bacteria in the watershed.

Wildlife including coyotes, deer and birds. 70% of the watershed is undeveloped; thus, the watershed is home to coyotes, deer, native pond turtles, mountain lions, and other species.

1.6 Hypotheses Tested

1) Upper watershed sources of FIB are not conveyed to the beach via the creek.
2) Concentrations of FIB and/or pathogens and nutrients decrease as the creek flows downstream as measured between the MM 2.02 bridge and the lagoon. Benthic macroinvertebrate community species diversity, sensitivity, and abundance increase as the creek flows downstream from the town.
3) FIB and/or pathogens are not leaking from faulty septic systems in the lower watershed along Pacific Coast Highway in Topanga State Park or from the County Lifeguard facility.
4) Lower watershed and/or lagoon sources of FIB (human and non-human inputs such as gull, dog, etc.) are correlated with exceedances at Topanga Beach.

1.7 References Cited

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2 Study Sites 2012-2014

The location of sampling sites (Table 2-1) includes County funded sites in the ocean and Topanga Lagoon, moving upstream as far as the Topanga Bridge (3600 m), which is located halfway between the ocean and the town of Topanga. Locations in Topanga Creek have been mapped and are identified by both pool name and meters upstream from starting place at the Pacific Coast Highway Bridge (Table 2-1). In addition, UCLA is also sampling further upstream using SIPP funding. Detailed information on the standard operating procedures and Quality Assurance/Quality Control protocols are found in Appendix G. Using the approaches described below, we have endeavored to test each hypothesis and identify both the locations of sources of FIB and/or pathogens, as well as identify the host species.

2.1 Sampling Locations

Sample sites were chosen in order to gain a comprehensive understanding of water quality within the Topanga watershed. Sites with high levels of FIB were retained, while additional sites were occasionally added in order to more effectively identify source of elevated FIB, or removed if patterns of FIB levels at that site varied little with sites directly above and below. A few locations above Owl Falls were sampled on several occasions as part of the SIPP study in 2013. However, due to a lack of flow in the upper watershed, the primary focus of the effort was downstream of the total upper watershed inputs (Table 2-1). All sites were sampled at the first flush rain events (17 Nov. 2012, 24 January and 8 March 2013, and 27 February 2014).

Photos were taken at each site to document specific conditions for that sampling event. These photodocumentation summaries are found in Appendix B.

Table 2-1 Sampling Locations (Coordinate System: UTM, Zone 11N). FF= first flush rain event.

Site Name	Easting (m)	Northing (m)	Elevation (ft)	Number Samples Wet Season	Number Samples Dry Season
Beach Upcoast -175m (BU)	353726	3767515	0	2/mo + FF	1/mo
Beach Outlet- 0 m (BO)	353896	3767506	0	2/mo + FF	1/mo
Lagoon Outlet-1m (LO)	353872	3767529	0	2/mo + FF	1/mo
Lifeguard Station Beach (LG)	353968	3767553	0	2/mo + FF	1/mo
Topanga Lagoon-25m (TL)	353887	3767573	0	2/mo + FF	1/mo
PCH Bridge - 35m (HB)	353868	3767649	0	2/mo + FF	1/mo
Lifeguard Station Septic (LS)	353994	3767655	0	1/mo	1/mo
Snake Pit – 300 m (SP)	354015	3767841	0	2/mo + FF	1/mo
Brookside Drive – 1700 m (BR)	354075	3768713	0	2/mo + FF	1/mo
Topanga Bridge – 3600 m (TB)	353522	3770391	200	2/mo + FF	1/mo
SIPP SITES					
Scratchy Trail – 4800 m (ST)	353518	3771500	500	2/mo + FF	1/mo
Owl Falls – 6500 m (OF)	352673	3772373	700	2/mo + FF	1/mo
Falls Drive (FD)	352535	3772259	750	occasional	
Behind Abuelita's (BA)	351570	3772891	700	occasional	

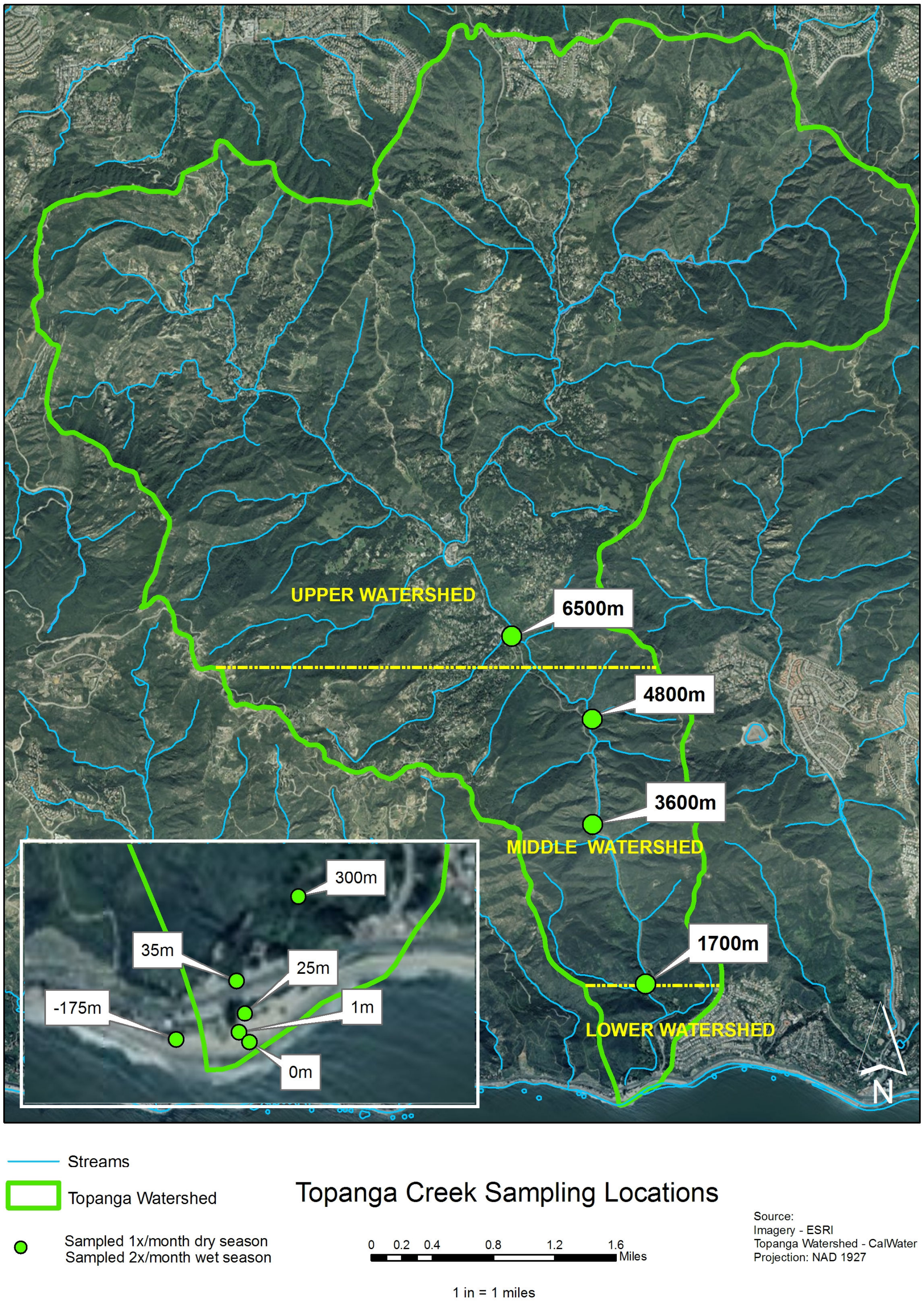


Figure 2-1 Map of the 2012-2014 (and 2003-04) Topanga Creek Watershed County funded sampling locations.

3 Microbial Source Identification Study

3.1 Background

Topanga Beach, California is frequently listed as one of the most impacted beaches in the state of California (Heal the Bay 2013) based on fecal indicator bacteria (FIB) levels, despite numerous projects within the lower watershed intended to improve water quality. Ranked 9th most polluted California beach in 2006, 4th in 2010-11, and 10th in 2011-12, Topanga Beach has FIB exceedances well into the summer season, but the sources of FIB to the ocean have been unknown. Potential sources of fecal contamination to the watershed include malfunctioning septic systems, transient populations, horses, dogs, gulls and other wildlife specific to the region. Topanga Creek and lagoon may also be potential sources of FIB to the surfzone; microbial contamination may be transported from the upper watershed via the creek to the lagoon and beach. Studies have also shown beach sand and sediments can harbor bacteria and serve as a source of FIB to the water column (Ishii et al. 2007, Yamahara et al. 2009).

A two-year microbial source tracking (MST) study was initiated in the Topanga Creek watershed that measured FIB levels and also utilized culture-independent molecular markers for detection of host-associated fecal contamination. Unlike FIB, which can originate from multiple hosts, MST methods can help identify unique sources of fecal pollution through use of host-associated markers that allow for identification of the likely original host of fecal pollution to environmental waters (Harwood et al. 2013, Boehm et al. 2013).

Hypotheses and Objectives

This study investigated sources of FIB to the Topanga Creek watershed and reports on the applicability of using MST technology. A combination of approaches including snapshot surveys, long-term monitoring during wet (winter) and dry (recreational) seasons, and the use of a suite of markers at all sites was utilized to identify likely sources of FIB. We hypothesized that:

1) Lagoon discharge negatively impacts water quality at Topanga Beach
2) Concentrations of FIB and/or host-associated markers decrease as the creek flows downstream towards the lagoon; therefore, creek inputs do not affect surfzone FIB during both normal and drought conditions.
3) Spatial and temporal patterns of FIB and host-associated markers exist between sites in the lower watershed
4) Lower watershed and/or lagoon sources of FIB (human and non-human inputs such as gull, dog, etc.) are correlated with exceedances at Topanga Beach.

A fifth hypothesis concerning the use of a rapid viability-based method (IMS/ATP) and a sixth hypothesis concerning differential decay rates for FIB and markers in sediment were also explored and results are included in Appendix J.

3.2 Methods

Field Site- Topanga Creek Watershed

Topanga Beach receives over 750,000 annual visitors and suffers from poor water quality. Due to the Mediterranean climate, this region experiences a dry recreation season (April – October) and wet season (November – March), with typical rainfall averaging 20 inches a year. However, rainfall during the course of this study was below average levels. Topanga Creek watershed (approximately 47 km^2) is 70% undeveloped (GeoPentech, 2006) and includes a creek and lagoon system. Topanga Creek drains the upper watershed and cumulates in Topanga Lagoon, a dynamic lagoon system that breaches and berms throughout the year, contributing variable flow to Topanga Beach. This site is critically important to several sensitive and endangered species including the steelhead trout, California newts and multiple species of frogs (Western toads, California tree frogs and Pacific frogs) (Dagit et al. 2007, Dagit et al. 2003). For additional information regarding site details including location and site descriptions please see Section 2 of this report.

Fecal Indicator Bacteria (FIB) Analysis

Water samples collected from Topanga watershed were analyzed for fecal indication bacteria (FIB) levels and host-associated molecular markers for human, dog, horse, and gull. To obtain FIB concentrations, Total Coliform (TC), *Escherichia coli* (EC), and enterococci (ENT) were measured with Colilert-18™ and Enterolert™ (IDEXX, Westbrook ME) reagents and protocols to determine the most probable number (MPN) of cells per 100 ml sample. Samples were analyzed at a 1:10 dilution as recommended by the manufacturer, or a 1:100 dilution on an as needed basis. The limit of detection (LOD) for these assays is 10 MPN/100ml and any sample below the limit of detection was assigned a value of 5 MPN/100ml for analysis. Samples above the range of quantification (ROQ) were assigned the maximum value depending on the dilution used. For example, samples with observed concentrations of >24196 MPN/100ml were set to 24196 MPN/100ml.

Host-associated Marker Analysis

Two human-associated markers were measured using the HF183 Taqman (HF) (Haugland et al. 2010) and the BacHum Taqman (BH) assays (Kildare et al. 2007). Results from year one showed strong correlation between HF and BH markers. Therefore, BH was used only to confirm a human signal in samples positive for the HF183 marker (n=42) during the second year of the study. Samples were also analyzed for animal sources with three additional markers. The Gull2 Taqman assay (Gull) (Lu et al. 2008) was used to measure gull-associated marker and the DogBac Taqman assay (Dog) (Dick et al. 2005) was used to measure dog-associated marker. A conventional endpoint PCR assay, HoF597 (Horse), was used to detect fecal inputs associated with horse waste. Marker selection was based on a previous multi-laboratory comparison study (Boehm et al. 2013). Primers and conditions used for each qPCR assay are listed in Table 3-1.

For the measurement of HF183, BH, Dog and Gull gene copies per 100 ml, sample water was filtered through 47 mm, 0.4 µm pore size, HTTP polycarbonate filters (EMD Millipore, Billerica, MA) in triplicate. Each filter was placed in an individual two ml polypropylene screw cap tube, containing 0.3 g, 212 – 300 µm (50 – 70 U.S. sieve) acid washed glass beads (Sigma-Aldrich, St. Louis, MO) and stored at -80°C until DNA extraction. DNA extraction was conducted with the DNA-EZ ST1 Extraction Kit (GeneRite, North Brunswick NJ) following the manufacturer's protocol. Eluted DNA samples were stored at -20°C until analysis of molecular host-associated markers with qPCR.

Table 3-1. List of host-associated molecular markers used in Source ID study within Topanga Watershed.

Name	Source	Type	Target	Forward Primer / Reverse Primer	Probe/Dye	Reference
HF183 Taq	Human	qPCR	*Bacteroides* 16S	ATCATGAGTTCACATGTCCG / CGTAGGAGTTTGGACCGTGT	FAM-CTGAGAGGAAGGTCCCCCACATTGGA-TAMRA	Haugland et al., 2010
BacHum	Human	qPCR	*Bacteroides 16S*	TGAGTTCACATGTCCGCATGA/ CGTTACCCCGCCTACTATCTAATG	FAM-CTGAGAGGAAGGTCCCCCACATTGGA-TAMRA	Kildare et al., 2007
Gull2 Taq	Gull	qPCR	*Catellicoccus marimammalium*	TGCATCGACCTAAAGTTTTGAG/ GTCAAAGAGCGAGCAGTTACTA	FAM-CTGAGAGGGTGATCGGCCACATTGGGACT-BHQ1	Shibata et al., 2010
DogBact	Dog	qPCR	*Bacteroidales spp.*	CGC TTG TAT GTA CCG GTA CG CAA TCG GAG TTC TTC GTG	FAM-ATTCGTGGTGTAGCGGTGAAATGCTTAG-BHQ1	Sinigalliano et al., 2012
HoF597	Horse	Endpoint	*Bacteroidales spp.*	CCA GCC GTA AAA TAG TCG G CAA TCG GAG TTC TTC GTG	N/A	Dick et al., 2009

FIB and Marker Analysis

Geometric means and standard deviation of the geometric mean were calculated for FIB and host-associated markers and are shown in Tables 3-3 and 3-4 and Figures 3-1, 3-2, 3-4 to 3-7 for creek, lagoon, and ocean sites. The number of samples analyzed for each site is listed below (Table 3-2).

Table 3-2. Number of samples used to calculate geometric mean for FIB and markers at creek, lagoon, and ocean sites: OF (Owl Falls), ST (Scratchy Trail), TB (Topanga Bridge), BR (Brookside Drive), SP (Snake Pit), BU (Beach Upcoast), BO (Beach Outlet), LG (Lifeguard Station), HB (Hwy 1 Bridge), TL (Topanga Lagoon), and LO (Lagoon Outlet). Data are entered for each site and indicator as follows: n for total site/ n for winter season/ n for recreational season for each site.

	Site	TC	EC	ENT	HF	BH	Gull	Dog
Creek	OF	22/7/15	22/7/15	22/7/15	22/7/15	15/5/10	22/7/15	21/6/15
	ST	22/9/13	22/9/13	22/9/13	22/9/13	12/4/8	22/9/13	21/8/13
	TB	32/18/14	32/18/14	32/18/14	33/18/15	18/10/8	33/18/15	33/18/15
	BR	26/15/11	26/15/11	26/15/11	25/15/10	13/7/6	25/15/10	24/14/10
	SP	29/12/17	29/12/17	29/12/17	27/12/15	19/10/9	26/11/15	27/12/15
Ocean	BU	34/20/14	34/20/14	34/20/14	33/20/13	19/12/7	34/20/14	34/20/14
	BO	38/21/17	39/21/18	38/21/17	37/20/17	23/15/8	38/21/17	38/21/17
	LG	25/12/13	25/12/13	25/12/13	25/12/13	9/4/5	25/12/13	24/12/12
Lagoon	HB	35/19/16	35/19/16	36/19/17	36/18/18	19/11/8	35/17/18	36/18/18
	TL	37/21/16	37/21/16	37/21/16	36/20/16	24/14/10	37/21/16	36/20/16
	LO	15/10/5	15/10/5	15/10/5	15/10/5	15/10/5	15/10/5	15/10/5

Host-associated Marker and FIB QA/QC

The qPCR reaction mixture consisted of 2 µL of DNA template combined with the appropriate primer probe sets and thermal cycling conditions, depending on the assay used. Samples and calibration standards were run in triplicate. A five-point standard calibration curve was run alongside samples on each well plate. Standard curves had efficiencies between 90 - 110% and $R^2 > 0.99$. Filter blanks, consisting of 50 mL of PBS passed through the polycarbonate filter, were also generated with each set of processed samples. Negative controls (no template controls) and filter blanks and extraction blanks were included to ensure contamination of samples did not occur during either the filtration or extraction processes, or while plating samples in the 96 well plate during the qPCR procedure. In addition, FIB values recorded in this study were compared with FIB values measured during regular water quality monitoring conducted by the county Public Health department. A strong linear relationship between both data sets were observed for measured TC and EC values ($R^2 = 0.7$).

Dog-associated marker survey

A survey of FIB and dog marker concentrations in water and sand was conducted at four beaches in May 2014, with the goal of comparing dog marker levels from Topanga to both references beaches and a dog beach. Water and sediment samples were collected during morning hours (6 AM – 11:30 AM) on May 2, 2014 from Topanga (n=24), Malibu (n=4) and Dockweiler (n=4), both of which served as controls as they have minimal dog activity, and Rosie's Dog Beach in Long Beach (n=16).

Marine sites were sampled using autoclaved 125 mL Nalgene bottles that were submerged ankle deep in ocean waters on an incoming wave. The top one cm of sediment was collected with sterile 50 ml Falcon tubes by sliding the tube across the surface; 10 composite scrapes collected within a one square meter made up the sediment surface samples for both wet and dry sediment. Wet sediment was collected within the tidal wash zone. Approximately 4 m inland of that location, a dry surface sediment sample and a depth sample was also collected. Trowels cleaned with ethanol were used to dig six inches below the surface of the sand; a clean falcon tube was then used to collect sand at this depth. Samples were processed on-site for TC, EC and ENT, with the help of Topanga Elementary School and Topanga Mountain School as part of the community involvement and outreach effort. Extra sediment and water samples were then transported on ice, to the lab, within six hours of collection and filtered/preserved for DNA extraction at UCLA. Samples were stored at -80^{o}C until further processing for qPCR.

Analysis of isolates with 16S rRNA Sequencing

Enterococcus (ENT) isolates were characterized in order to help determine whether ENT originating from water samples collected at Topanga Lagoon and ocean sites are predominately fecal or environmental-associated species . *E. faecalis* and *E. faecium* are the most prevalent ENT species in human feces and can be distinguished from other species (e.g. *E.casseliflavus* and *E.mundtii*) that are more often associated with plants and soil (Byappanahalli et al. 2012). Bacterial isolates were selected and isolated from lagoon and ocean sites after three consecutive sampling trips on July 2, 2014, July 15, 2014, and August 11, 2014 as well as from a subset of samples collected during summer 2013. Bacterial isolates were cultured with mEI media following the membrane filtration USEPA Method 1600 and with the Enterolert^{TM} defined substrate test (IDEXX, Westbrook ME). For USEPA Method 1600, presumptive enterococci isolates (identified with a blue halo) were selected from each plate and subcultured onto Todd Hewitt plates. For Enterolert, 70% ethanol was used to disinfect the back of the Quanti-Tray and media was removed from fluorescing wells with a sterile 1 ml syringe following methods used for isolation in Ferguson et al. 2013. Bacterial isolates were purified from both Enterolert and mEI because these two culture-based methods can differ due to substrate differences and/or differences in selectivity of the two methods (Ferguson et al. 2013).

Following purification of bacterial isolates, DNA was extracted according to Shanks et al. (2011). Universal primers were used to amplify partial 16S rRNA genes by PCR. The MoBio 12500-50 UltraClean PCR Clean-Up kit was used according to manufacturer's guidelines for DNA purification. Further processing and sequencing of the 16S gene was performed at UCLA Genotyping and Sequencing Core (GenoSeq, Los Angeles, CA) with the Biosystems 3730 Capillary DNA Analyzer, using capillary technology. Sequences were realigned with CLUSTALW (SDSC WorkBench 3.2) and blasted against the NCBI nucleotide database (NCBI-BLAST).

Horse PCR Sensitivity Analysis

To investigate whether negative samples analyzed from Topanga were a factor of poor LOD, an experiment was conducted to ascertain if the horse LOD varies depending on water matrix. HoF597 (horse marker) LOD was determined at our field site in creek (CW), lagoon (LW) and marine (MW) waters.

Fresh fecal matter from 12 individual horses was collected in the summer of 2013. Samples were collected into falcon tubes using sterile spatulas from fresh deposits, stored on ice and transported back to the lab for analysis. Approximately one gram of feces per horse was combined to make a composite sample of 12g, which was then diluted in 50mL of artificial freshwater (AW) (for AW recipe see Riedel et al., 2014) to create a final horse feces slurry concentration of 0.24g/mL. This procedure was repeated and new slurries created by spiking composite samples into the different water types: creek, lagoon or marine. A 1:100 dilution was then made from the initial slurry type (AW, CW, LW and MW) and used as the starting concentration for analysis (.00024g/mL).

3.3 <u>Results</u>

Comparison of geomeans for winter and recreational seasons for FIB and host-associated markers

Seasonal and weather effects on FIB/marker concentrations were examined by grouping data collected in the winter (November - March) versus recreational (April - October) season, or during active rainfall (raining) versus dry event (not-raining) samples.

For the overall study, when geometric means of the watershed FIB and marker values from winter season were compared to the geometric means of the recreational season, the winter season samples were four to eight times higher than recreational season samples for the Gull and Dog markers (Table 3-3). However, the geomeans of the winter and recreational season values for FIB (EC, ENT, and TC) as well as the human marker were within a factor of two of each other.

Table 3-3. Winter (Nov. 1 to Mar. 31) and Recreational Season (April 1 to Oct. 31) geometric means of FIB and marker values from Oct. 5th, 2011 to Aug. 11th, 2014. Values in parentheses indicate number of data points (N). Rain data not used in this analysis.

	TC MPN/100ml	**EC** MPN/100ml	**ENT** MPN/100ml	**HF** gene copies/100ml	**BH** gene copies/100ml	**Gull** gene copies/100ml	**Dog** gene copies/100ml
Winter	613.4 (180)	47.0 (180)	46.4 (188)	18.7 (176)	58.8 (121)	1855 (176)	1229.0 (174)
Recreation	1060 (184)	35.2 (184)	69.1 (207)	21.3 (200)	56.3 (119)	488.3 (201)	171.6 (199)

Comparison of geomeans for FIB and host-associated markers during active rain and not-raining events

Several sampling events occurred during active rainfall with largest rain events occurring on 10/5/11, 11/17/12, 1/24/13, 3/8/13, 2/27/14. When geometric means of the watershed FIB and marker values of samples taken during rain were compared to the geometric means of non-rain samples, the rain samples were three to nine times higher than non-rain samples with the exception of Gull marker (Table 3-4). Geometric means for all markers and FIB were higher in samples collected during active rainfall, which is typical of other studies throughout southern California (Noble et al. 2003, Boehm et al. 2002, Surbeck et al. 2006).

Table 3-4. Geometric means of FIB and marker values for all samples collected during active rainfall versus all samples collected when not actively raining from Oct. 5th, 2011 to Aug. 11th, 2014. Values in parentheses indicate number of data points (N).

	TC MPN/100ml	**EC** MPN/100ml	**ENT** MPN/100ml	**HF** gene copies/100ml	**BH** gene copies/100ml	**Gull** gene copies/100ml	**Dog** gene copies/100ml
Raining	3340.4 (50)	361.5 (51)	278.4 (59)	69.6 (51)	324.2 (42)	1082.0 (50)	4007.1 (49)
Not Raining	808.8 (364)	40.6 (364)	61.8 (379)	20.1 (376)	57.1 (242)	910.5 (377)	430.0 (373)

Relationship between FIB levels and environmental variables

The relationship between the following physical and chemical variables (conductivity, temperature, dissolved oxygen, pH, turbidity, and nutrients) and FIB levels was compared. Temperature, conductivity, and pH levels were not correlated with FIB levels. Turbidity levels were highly correlated with ENT and EC measurement at several of the creek sites: BR (ENT R=0.76, EC R=0.96), ST (ENT R=0.99, EC R=0.99), and OF (ENT R=0.90, EC R=0.91). Nutrient levels (nitrate and phosphate) were also correlated with ENT and EC levels at the upper watershed sites: ST (R>0.75) and OF (R>0.90). Fecal sources may contain increased levels of nutrients and turbidity, which could result in the correlations seen here. At the lower watershed sites (TB, BR, and SP), nutrients and FIB levels were not correlated.

Spatial analysis along the creek of geometric means of FIB and host-associated markers

Five sites along the creek (OF, ST, TB, BR and SP) were analyzed for FIB and host-associated markers. Geometeric means of TC remained high at all sites sampled, suggesting a natural background signal of total coliform bacteria in the creek. Highest levels of all three FIB were observed just downstream of the developed portion of the watershed near the town of Topanga at Owl Falls site (6500 m). A decrease was seen immediately downstream of this site at Scratchy Trail (4800 m) for geometric means of EC and ENT. Values increased somewhat by SP (300 m), the site just upstream of Topanga Lagoon for EC (Figure 3-1).

In addition, a selection of samples from creek sites was analyzed for the horse marker. All samples analyzed, including samples from the first flush rain event during year two of the study, were negative for the horse marker (n=34). Further, the limit of detection was calculated for the horse marker assay. Using a slurry of fecal matter collected from twelve horses from the Hansen Dam Equestrian Center on September, 17th, 2013, endpoint PCR was performed on a series of ten-fold dilutions. In all waters tested, the LOD was between 0.01 and 0.1 CFUs/µL of DNA extract.

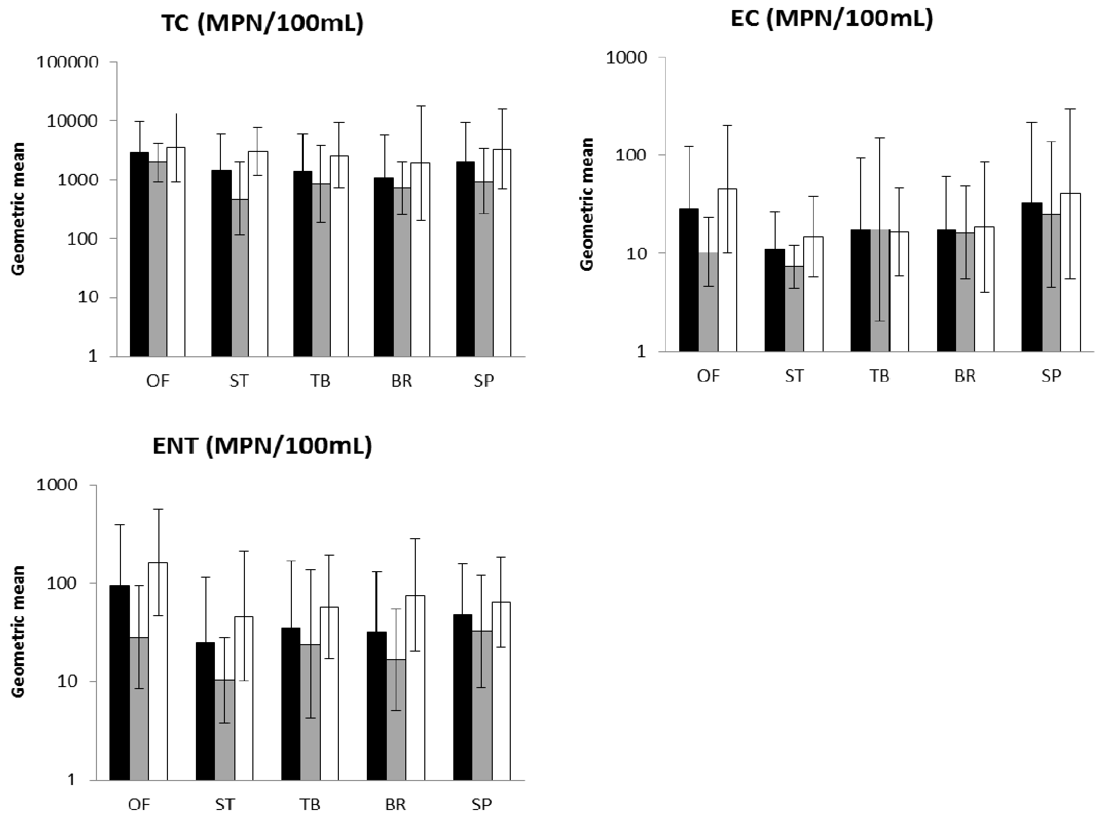


Figure 3-1. FIB values for Topanga Creek sites: Owl Falls (6500m OF), Scratchy Trail (4800m ST) Topanga Bridge (3600m TB), Brookside Dr. (1700m BR) and Snake Pit (300m SP) from 5 Oct 2011 to 11 August 2014. Note the log scale vertical axis to accommodate the large range of values and the scale range changes. The sites are ordered from north (left) to south (right). The overall geomean for each site is shown in black while gray indicates the winter season geomean and white indicates the recreational season geomean.

As with EC and ENT, the geomeans of the human- and dog-associated markers were highest at OF and decreased at the next downstream site, ST. For most of the creek, dog marker had a geomean of 100 copies/100 mL. Levels of the gull-associated marker were low throughout the creek with a geomean of approximately 100 copies/100 mL (Figure 3-2).

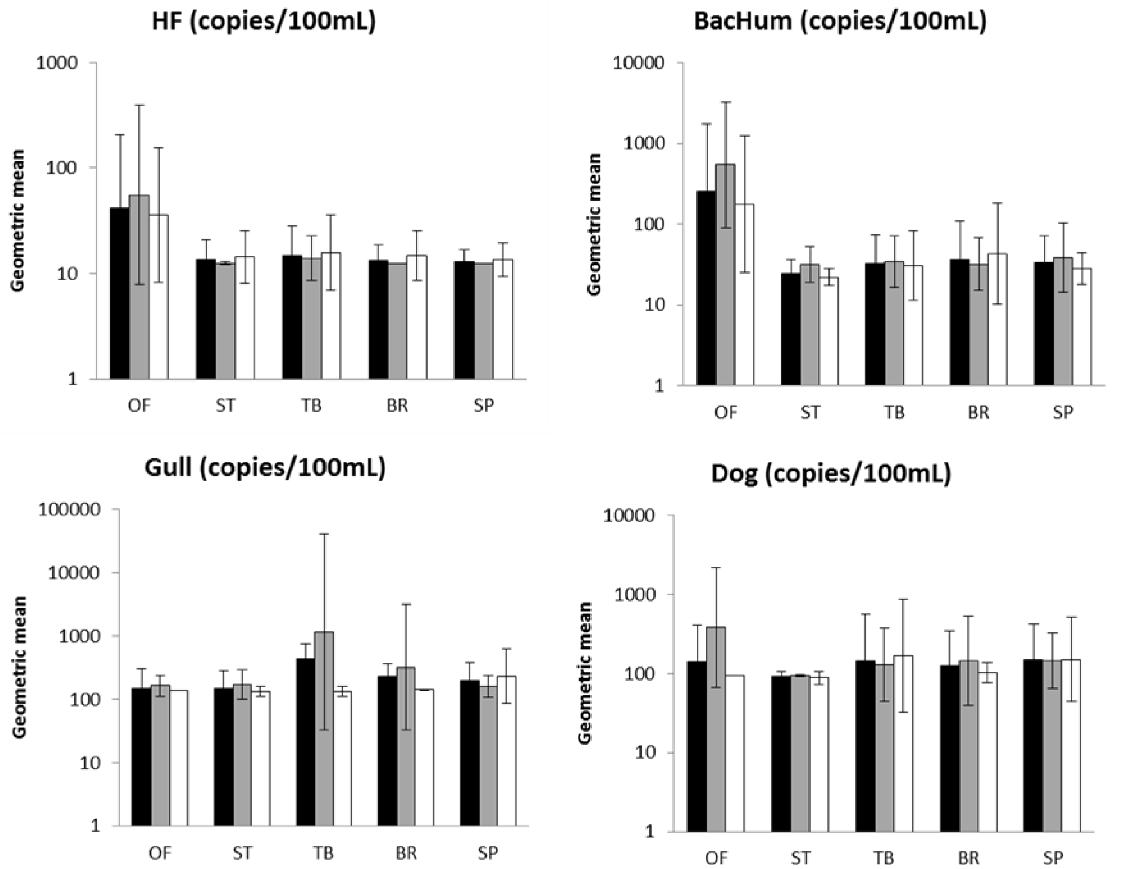


Figure 3-2. Marker values for Topanga Creek sites: Owl Falls (6500m OF), Scratchy Trail (4800m ST) Topanga Bridge (3600m TB), Brookside Dr. (1700m BR) and Snake Pit (300m SP) from 5 Oct 2011 to 11 August 2014. Note the log scale vertical axis to accommodate the large range of values and the scale range changes. The sites are ordered from north (left) to south (right). The overall geomean for each site is shown in black while gray indicates the winter season geomean and white indicates the recreational season geomean.

Analysis of Predicted Surfzone FIB From Creek Input During Drought and Normal Rainfall Conditions

In order to gauge relative impact of creek fecal inputs on surfzone water quality, predicted surfzone FIB was calculated based on creek flow and creek FIB concentrations from the current study period (2012-2014) and from historical data taken between 2003-2004. During the 2003-2004 study period Topanga received 18.71 inches of cumulative rainfall compared to 9.99 in 2013 and 6.85 so far in 2014.

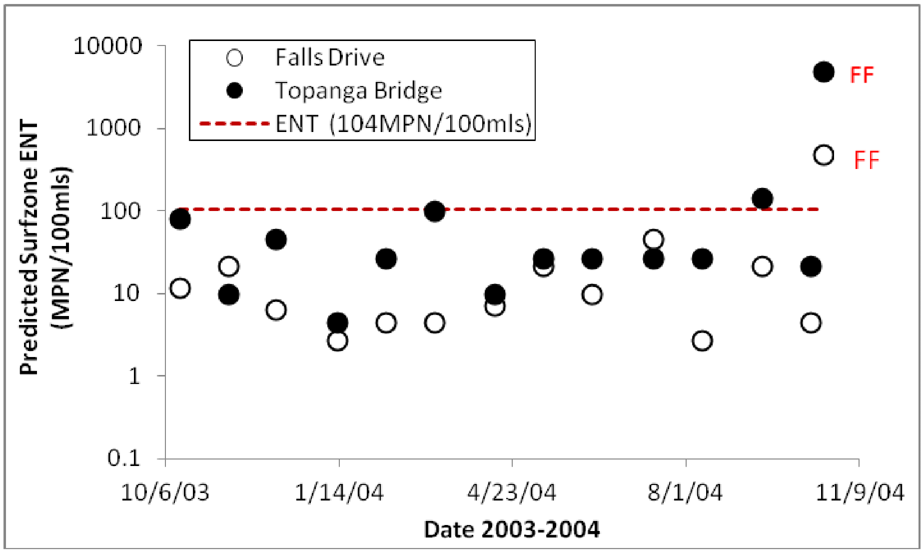
In the period that was studied for this report, Topanga Lagoon and Creek acted as primarily disconnected systems, with inputs to the upper watershed decreasing prior to reaching the lower watershed. In order to speculate about potential impacts from the upper watershed on surfzone FIB during different flow regimes, dilution factors were calculated for creek inputs to the ocean. The contribution of freshwater discharge to surfzone FIB was approximated using a two end-member conductivity model, modeled after McLaughlin et al. (2007).

Conductivity at the Beach Outlet site was used as a conservative tracer to predict fraction of creek input to surfzone on days when the lagoon was connected. 100% creek was estimated based on average conductivity of all creek sites and 0% creek conductivity was estimated based on maximum conductivity at Beach Upcoast when the lagoon was not discharging. Using the end-member model, contribution of creek water to beach outlet on days when the lagoon was connected was calculated. This was then converted to a range of dilution factors for creek to ocean and related to creek flow at each time point. The relationship between dilution factor at Beach Outlet and creek flow rate was not linear, due to various mixing mechanisms, and had a logarithmic relationship ($y = -6.193\ln(x) + 11.207$, $R^2=0.85$). This relationship was then used to predict a conservative dilution factor for each sampling date based on creek flow. Creek flow data available for the 2003-2004 analysis were qualitative and ranked 1-4. These values were converted to an estimated quantitative flow measurement.

Once dilution factors had been calculated, as described above, these were applied to actual creek FIB values in order to speculate on predicted contribution of creek FIB to surfzone FIB levels, for a connected system. This analysis was speculative and assumed an open lagoon to the ocean, which would be the conservative approach. For the 2003-2004 season, when FIB and flow data from Topanga Bridge were used, creek FIB could have potentially led to exceedances in the surfzone on two out of 14 dates sampled. One of these dates was first flush (10/19/2004) and the other date (9/14/2004) had extremely elevated ENT (ENT>1500MPN/100 mls). When FIB and flow levels were applied from Falls Drive, predicted surfzone ENT levels were in exceedance only during the first flush event.

For the 2012-2014 season, when FIB and flow data from Topanga Bridge were used, this analysis predicted that creek FIB could have led to one exceedance of surfzone FIB levels, this date corresponded to the 2014 first flush event, and two exceedance events if Owl Falls flow and FIB data were applied, with one of these two events corresponding to the 2014 first flush event. Based on this analysis, it does not appear that creek FIB contribute significantly to elevated surfzone FIB, except during events of elevated flow and elevated FIB, such as a first flush event (Figure 3-3). Further, analysis of FIB data from 2003-2004 confirms that this trend may carry over to rainier years, which experience increased flow and connectivity between upper and lower watershed sites.

A.



B.

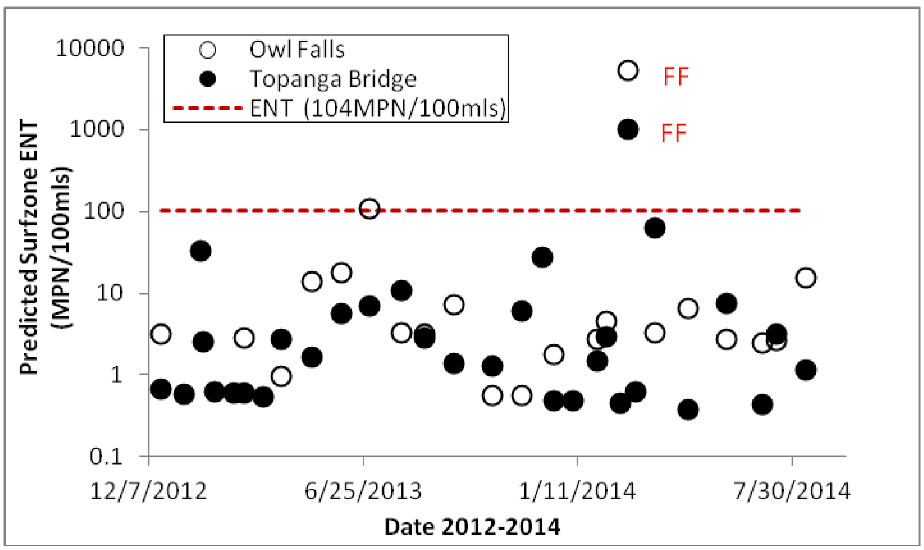


Figure 3-3. Predicted ENT concentration for surfzone FIB based on creek flow and corresponding dilution factor plotted against date. FF=first flush event. A. Predicted ENT concentration in surfzone based on FIB input from Falls Drive and Topanga Bridge during 2012-2014 study.

Spatial analysis in the lagoon of geometric means of FIB and host-associated markers

Levels of FIB in Topanga Lagoon did not vary with location or season (Figure 3-4). For the human-associated marker, a higher geomean was observed during recreational season at the lagoon outlet. However, data plots included for lagoon outlet are from year one of sampling only, though May 28, 2013. Also, there was a marked difference in the observed levels of dog-associated markers by season. Levels of the dog-associated marker in recreational season were lower than those observed in the winter for all three lagoon sites. This marker increased by ten to 100 times from the creek to the lagoon. Geomean for the gull-associated marker was 100 to 1000 times greater than levels seen in the creek. FIB levels were comparable between the three sites for wet and recreational season, indicating that FIB is fairly homogenous throughout the lagoon.

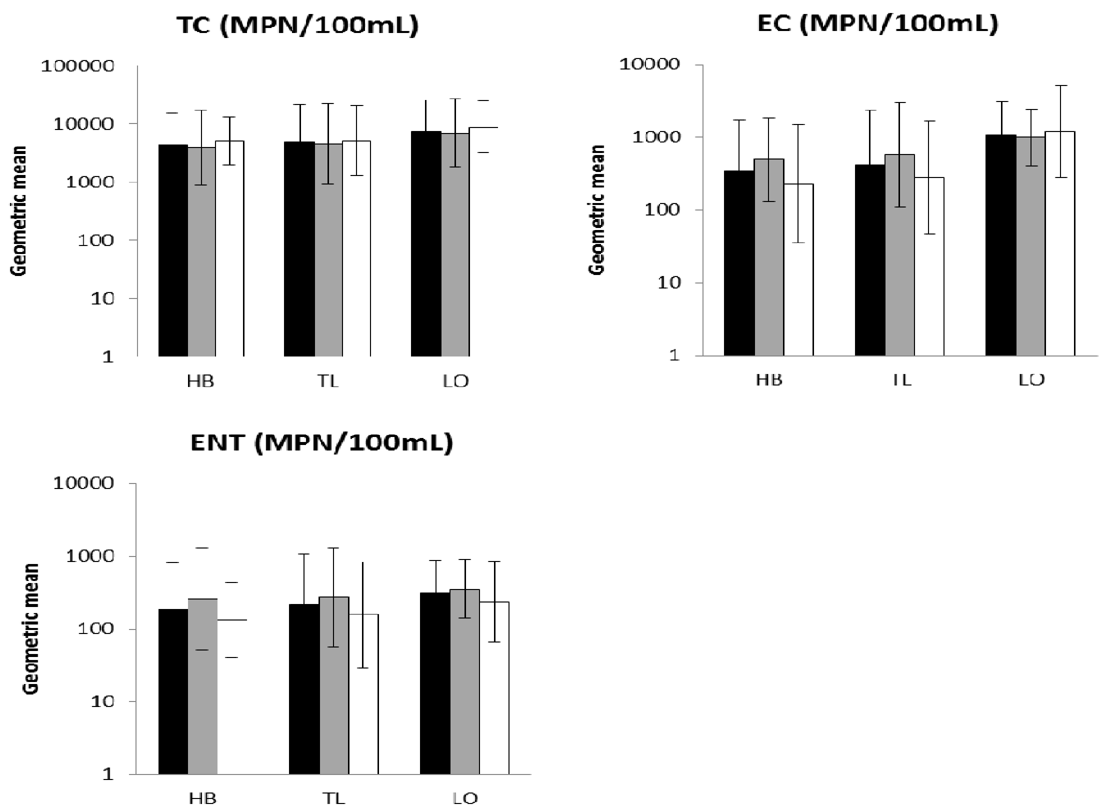


Figure 3-4. FIB values for lagoon sites (PCH Bridge over upper end of the lagoon-HB), Topanga Lagoon east wall-TL, Lagoon Outlet-LO) from 5 Oct 2011 to 11 August 2014. Note the log scale vertical axis to accommodate the large range of values and the scale range changes. The sites are ordered from north (left) to south (right). The overall geomean for each site is shown in black while grey indicates the winter season geomean and white indicates the recreational season geomean. ND indicates the limit of detection. Numbers under the x-axis indicate quantity of observations for each geomean.

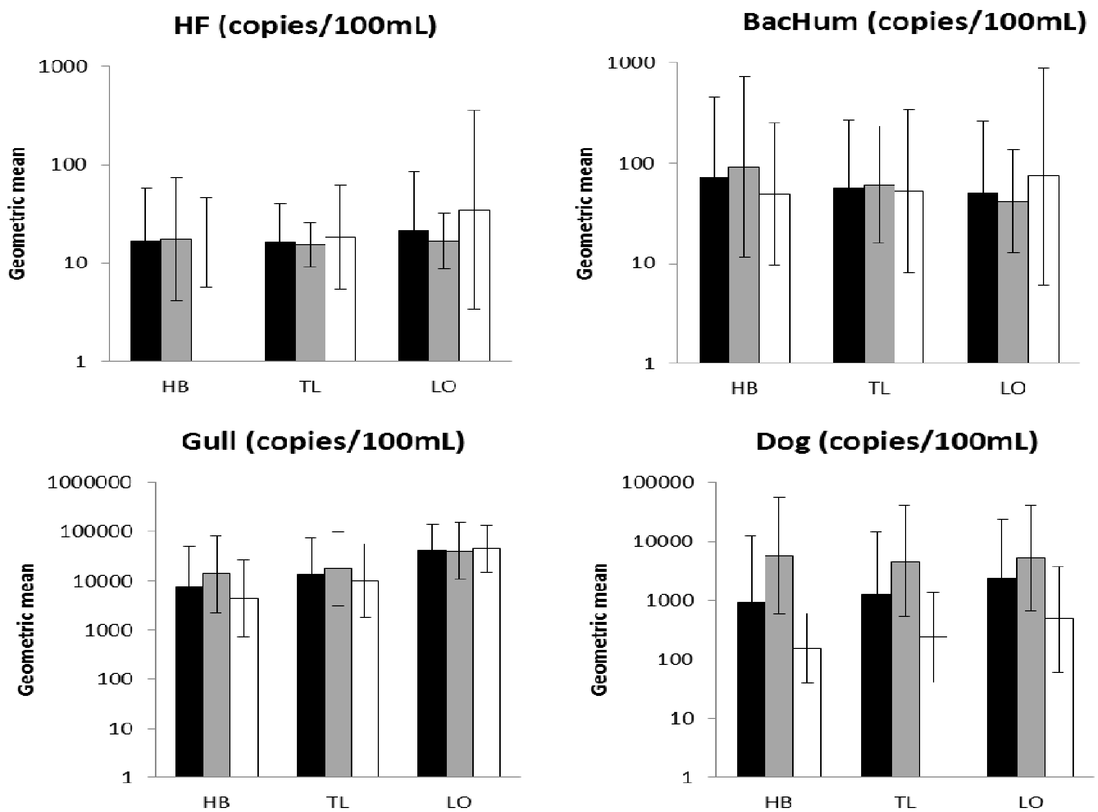


Figure 3-5. Geometric means for host-associated marker values for lagoon sites (PCH Bridge over upper end of the lagoon-HB, Topanga Lagoon east wall-TL, Lagoon Outlet-LO) from 5 Oct 2011 to 11 August 2014. Note the log scale vertical axis to accommodate the large range of values and the scale range changes. The sites are ordered from north (left) to south (right). The overall geomean for each site is shown in black while grey indicates the winter season geomean and white indicates the recreational season geomean. ND indicates the limit of detection. Numbers under the x-axis indicate quantity of observations for each geomean.

Spatial analysis in the ocean of geometric means of FIB and host-associated markers

The most striking trend for FIB levels in the ocean was the marked increase in the geomean for ENT observed from Beach Upcoast (BU), to Beach Outlet (BO), to Lifeguard (LG). The prevailing current is eastward at Topanga Beach; thus, these results suggest that the lagoon serves as a source of FIB to the ocean. Further, FIB levels at the ocean sites were higher at BO and LG (especially for ENT), indicating that upcoast sources are not likely contributing to FIB levels at BO and LG.

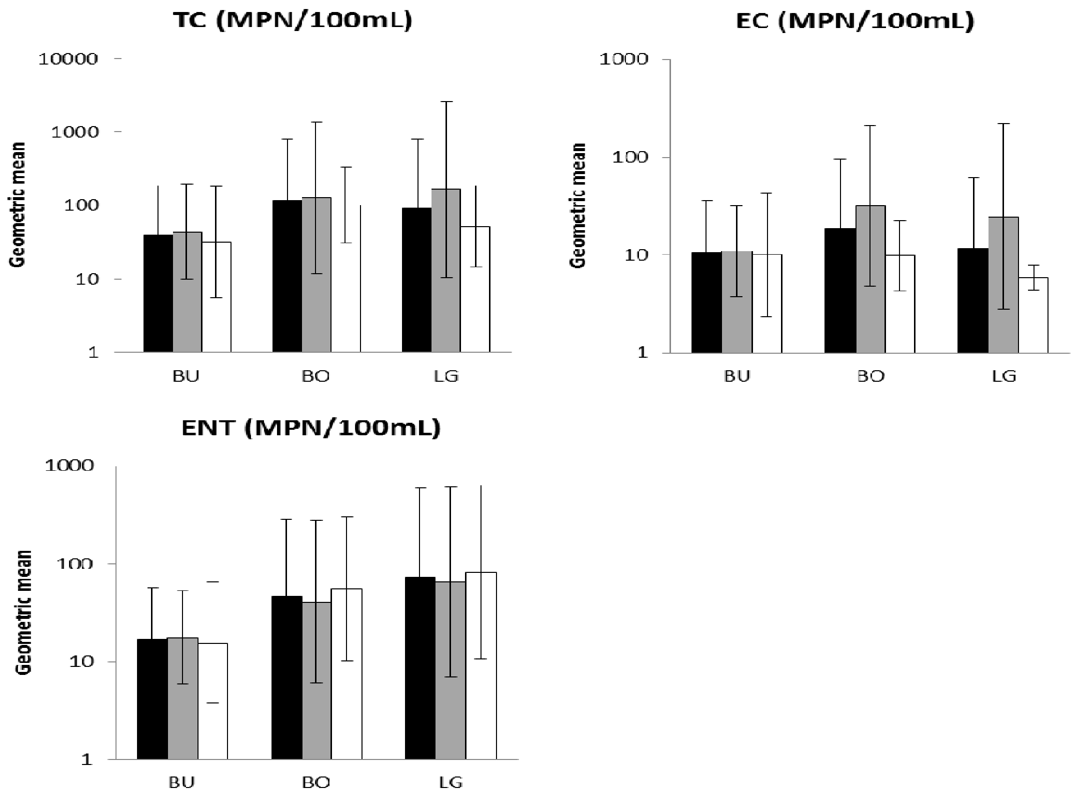


Figure 3-6. FIB values for ocean sites (Beach Upcoast-BU, Beach Outlet-BO) from 5 Oct 2011 to 11 August 2014. Note the log scale vertical axis to accommodate the large range of values and the scale range changes. The sites are ordered from west (left) to east (right). The overall geomean for each site is shown in black while grey indicates the winter season geomean and white indicates the recreational season geomean. ND indicates the limit of detection. Numbers under the x-axis indicate quantity of observations for each geomean.

In the recreational season, the human-associated marker tends to decrease in the west to east direction. This may correlate with the transient population frequenting this section of beach. Levels of dog-associated marker were also highest at BU. As seen in the lagoon, levels of dog-associated marker were higher in the winter season.

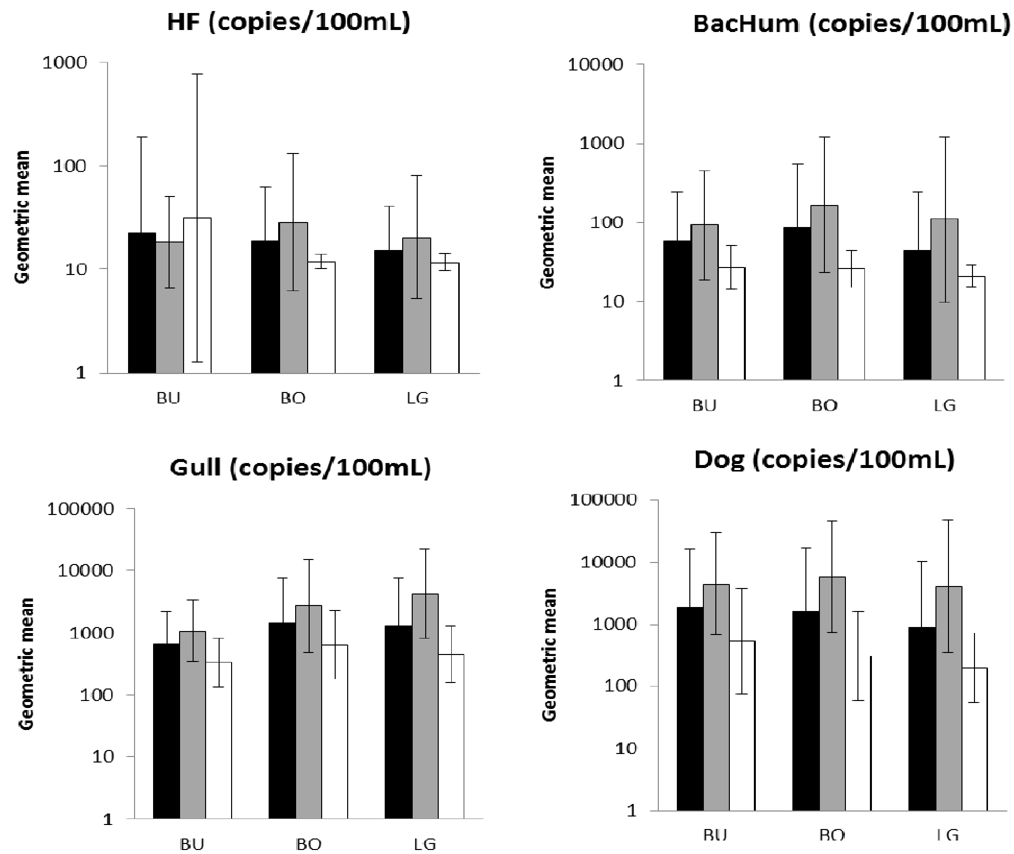


Figure 3-7. Geometric means of host-associated marker values for ocean sites (Beach Upcoast BU, Beach Outlet BO) from 5 Oct 2011 to 11 August 2014. Note the log scale vertical axis to accommodate the large range of values and the scale range changes. The sites are ordered from west (left) to east (right). The overall geomean for each site is shown in black while grey indicates the winter season geomean and white indicates the recreational season geomean. ND indicates the limit of detection. Numbers under the x-axis indicate quantity of observations for each geomean.

Analysis of Frequency of Exceedances of Bacteria Standards at Lagoon and Ocean Sites

Frequency of samples that exceeded the single sample standards of: 104 MPN/100 ml for ENT, 400 MPN/100 ml for EC, and 10,000 MPN/100 ml for TC were analyzed for BU, BO, LG, and TL. Tables 3-5 and 3-6 show the percentage of sampling dates when either TC, EC, or ENT was in exceedance.

Table 3-5. Frequency of exceedance of state bacteria standards for TC, EC, ENT at BU, BO, LG, and TL during winter and recreational seasons (April1 –Oct 31). Sampling events occurring during active rain were excluded from analysis.

	BU		BO		LG		TL	
	Winter	Recreation	Winter	Recreation	Winter	Recreation	Winter	Recreation
TC	0%	0%	10%	0%	8%	0%	33%	31%
EC	0%	0%	5%	0%	8%	0%	52%	44%
ENT	15%	14%	19%	33%	25%	31%	81%	69%

Table 3-6. Frequency of exceedance of state bacteria standards for TC, EC, ENT at BU, BO, LG, and TL for all sampling dates. Sampling events occurring during active rain were excluded from analysis.

	BU	BO	LG	TL
TC	0%	5%	4%	32%
EC	0%	3%	4%	49%
ENT	15%	26%	28%	76%

TC and EC exceedances were infrequent for the ocean sites, with BU in compliance of TC for all sampling dates included in analysis (all dates sampled except active rain events). However, TL exceeded 32% of the time for TC and 49% of the time for EC. For ENT, BO, BU, and LG exceeded more often, exceeding the state bacterial standard between 15 and 28% of the time. Overall, the frequency of exceedances for FIB was higher at LG and BO than at BU. TL was in exceedance for ENT and EC on more than half of sampled dates.

Analysis of ENT isolates with 16S rRNA Sequencing

Speciation of a selection of ENT isolates was completed in order to provide complementary information regarding ENT measured at the lagoon and ocean sites. Twenty isolates were isolated from mEI agar at Topanga State Beach and Topanga Lagoon, during summer 2013, and 100% of these isolates were identified as *E. faecalis*. *E.faecalis* is thought to be more fecal-associated than other species of enterococci such as *E.gallinarum* or *E.casseliflavus* (Ferguson et al., 2013).

Analysis of Frequency of Marker Detection at Lagoon and Ocean Sites

Human marker detections were infrequent at the ocean and lagoon sites, with three detections during Year one and two detections during Year two. For both years, one of these detections (and the highest level of human marker detections) corresponded with the first flush event. Presence of transients and human feces were recorded for each sampling event. Human feces were observed on seven different sampling days, while transients at Topanga Beach were recorded on 14 different sampling days. Only on February 24, 2013 did a positive human signal at BU (82 copies/100 ml) coincide with recorded observations of both transients and human feces. For the remaining 13 dates when transient activity was recorded, all samples collected at marine and lagoon sites (BO, BU, LG, HB and TL) were negative for the human marker. For human feces, the human marker was positive when the presence of human direct deposits was observed on two separate dates (Feb 24 2013 and July 2 2014). In addition, a second ocean site, LG, was also positive for the human marker on the February 24, 2013 sampling date.

Overall, the human-associated marker was detected in 13% of ocean water samples and in 14% of lagoon water samples collected during the course of the study. The human-associated HF183 marker was detected six times throughout the study at the Beach Outlet (BO), four times in the first period of the study (Oct 11 2011 – July 1 2013) and twice during the second period of the study (July 31 2013 – August 11 2014). Other marine sites were also positive for the human marker on two (LG) and four (BU) occasions (Figure 3-8).

A.

Marker	Site			Total
	BU	**BO**	**LG**	**Ocean**
HF183	12%	16%	8%	13%
Gull	76%	84%	80%	80%
Dog	76%	74%	58%	71%

B.

Marker	Site			Total
	HB	**TL**	**LO**	**Lagoon**
HF183	8%	17%	20%	14%
Gull	91%	95%	100%	94%
Dog	58%	64%	80%	64%

Figure 3-8. Frequency of detection of gull, dog, and human marker at lagoon and ocean sites for all sampling dates. A) Frequency of marker detection at ocean sites. B) Frequency of marker detection at lagoon sites.

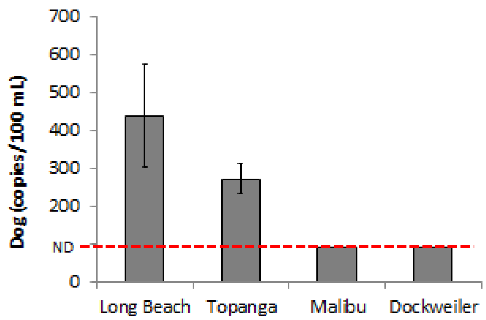
Dog and gull marker were both detected in high frequency at lagoon and ocean sites. Gull levels were detected 94% of the time in lagoon samples and 80% of the time in ocean samples. Dog marker levels were detected on average 71% of the time at ocean sites and 64% of the time at lagoon sites.

In order to better understand levels of dog marker seen in Topanga, a dog survey study was conducted to determine the impact of dog fecal waste on Topanga water quality. Sediment and water samples were collected from four beaches and analyzed for FIB and the dog marker. Levels measured at Topanga were compared to reference sites that are free of dogs and to a dog beach where dogs are permitted and regularly frequent the designated beach area. Reference beaches (Malibu and Dockweiler) were negative for the dog marker in all sediment and water samples collected. Sediment samples collected from Rosie’s Dog Beach in Long Beach, CA were also negative for the dog marker. However, all water samples from Rosie’s Dog Beach had detectable levels (219 – 823 copies/100 ml) of the dog-associated marker. Highest average ENT concentrations (91 MPN/100 ml) from all four sites sampled was measured from Rosie’s Dog beach (Figure 3-9).

Although dogs are prohibited at Topanga, levels measured from Topanga Beach were similar to those seen at the Rosie’s Dog Beach. All sediment samples were negative for the marker, except one (Site 6 – 159,303 copies/100 ml). Three of seven water samples (43%) collected on May 2, 2014 were positive for the dog marker at Topanga Beach. Water samples had dog marker concentrations ranging from 193 – 334 copies/100 ml (Figure X). FIB measured from sediment were typically low (0.5 – 7.1 MPN/g) for ocean sites. Average FIB concentrations for water samples were 51MPN/100 ml and 29 MPN/100 ml for EC and ENT, respectively.

In this single day dog survey, fecal waste did not appear to impact the sand at beaches sampled, however, there was a measureable impact on water quality.

A.



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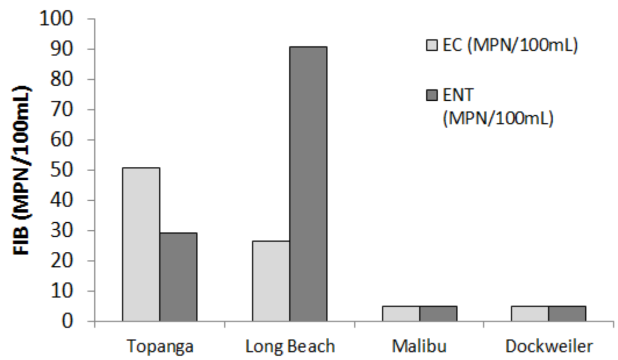


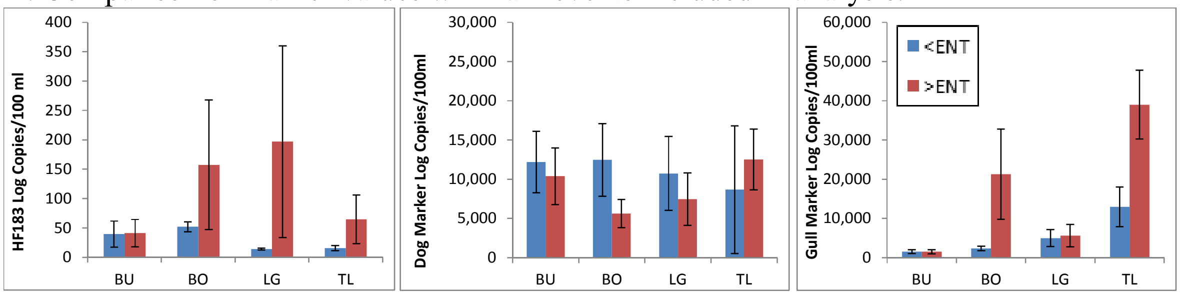
Figure 3-9. A) Average dog marker levels in water sampled during dog survey at the dog beach (Long Beach), Topanga, and the two reference beaches (Malibu and Dockweiler). B) Average FIB levels in water sampled during dog survey at the dog beach (Long Beach), Topanga, and the two reference beaches (Malibu and Dockweiler).

Relationship between FIB and DNA-marker levels at the lagoon and ocean

To determine whether exceedances in ENT or EC are indicative of a higher magnitude of host-associated fecal markers, data were combined for each of the three ocean sites and for the TL (Topanga Lagoon) site according to whether the water quality standard for enterococci of 104 MPN/100mL was exceeded or in compliance.

For the BO (Beach Outlet), LG (lifeguard Station), and TL (Topanga Lagoon) sites, there was a clear trend for increased human marker levels when ENT was in exceedance versus in compliance both when rain events were included and excluded from analysis. At BO (Beach Outlet) and TL (Topanga Lagoon) there was also a trend for increased gull marker levels when ENT was in exceedance versus in compliance.

A. Comparison of marker values with rain events included in analysis.



B. Comparison of marker values with rain events excluded from analysis.

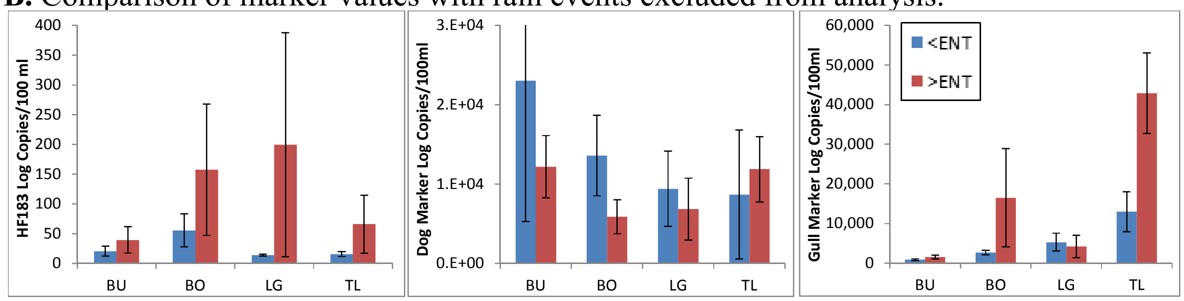


Figure 3-10. Average marker data were grouped and compared by whether ENT exceeded state water quality standards at the three ocean sites and one lagoon site: BO (Beach Outlet), BU (Beach Upcoast), LG (Lifeguard Station), and TL(Topanga Lagoon), Figure depicts average marker concentrations when ENT was in compliance (blue bars) versus in exceedance (red bars) and standard error of the mean.

Due to potential differences in environmental decay rates of these markers, it is difficult to directly compare contribution of different sources to FIB concentrations. Analysis below is solely an approximation of potential FIB concentration resulting from dog and gull sources. The geomean for the dog and gull marker for ocean and lagoon sites, on days when gull and dog marker were detected, is listed below in Table 3-7. The concentration of dog and gull marker detected was converted to gram feces per 100 ml based on 10*10^10copies per gram wet dog feces and 8.15 *10^6 copies per gram wet gull feces from prior studies (Ervin et al. 2014, Riedel et al. 2013). This was then converted to approximate CFU/100 ml *Enterococcus* based on an estimated 2.38*10^4 MPN/gram gull feces (from this study) and 8.8*10^7 CFU/gram dog feces (from Ervin et al. 2014). The relationship between grams of wet gull feces and ENT concentration was based on measurement of ENT from gull feces collected from 15 gulls at Topanga Beach on October 30, 2013.

Average input to Topanga Lagoon and ocean, based on best estimates from the literature, shows that both dog and gull are likely contributing to elevated FIB in the lagoon and surfzone. In particular, gulls appear to contribute to impaired water quality at the lagoon.

Table 3-7. Estimated enterococci concentration resulting from average dog and gull marker concentration at lagoon and ocean sites.

Marker	Site	Geomean copies/100 mls	Estimated gram feces/100 ml	Estimated ENT cfu/100 ml
DOG	BO	5705	6.E-07	50
	BU	4083	4.E-07	36
	LG	3518	4.E-07	31
	TL	4425	4.E-07	39
Gull	BO	2206	3.E-04	89
	BU	1057	1.E-04	43
	LG	2655	3.E-04	107
	TL	17542	2.E-03	710

3.4 Discussion

Within the MST portion of this study, the following hypotheses were tested and results are as follows:

1. *Lagoon discharge negatively impacts water quality at Topanga Beach.*

Based on the historical analysis, the lagoon is a source of FIB to the ocean. FIB levels are significantly increased when the lagoon is breached and connected to the ocean regardless of winter or recreational season.

2. *Concentrations of FIB and/or host-associated markers decrease as the creek flows downstream towards the lagoon.*

FIB in the surfzone do not primarily originate from an upstream creek source, except under extremely elevated FIB levels and high flow events (during first flush events). Conditions in the creek along the Narrows section, located between Owl Falls (6500 m) and Scratchy Trail (4800 m) appear conducive to a decrease in EC and ENT levels and observed levels of human- and dog-associated marker. This observed sink is also confirmed in the laboratory microcosms conducted to explore decay of FIB and markers (see Appendix J for more detail). Inactivation rates of FIB and the human marker were highest in ST and OF sediment, likely due to sediment characteristics.

Further, our predictive analysis confirms that creek FIB do not contribute significantly to surfzone FIB, except under extremely elevated FIB levels and high flow events (such as first flush events). This pattern is likely to hold during years that have increased rainfall.

3. *Spatial and temporal patterns of FIB and host-associated markers exist between sites in the lower watershed.*

Levels of FIB and all markers increase from the lower watershed creek site (SP), located 300m upstream of the lagoon, to lagoon sites. For TC, an increase of a factor of five is seen, while for EC a factor of 10-20 increase is observed. For ENT, a factor increase of 3-30 is observed. Thus, the lagoon may serve either as a location where microbial levels may be increasing due to growth or to the presence of new inputs. The host-specific markers do not multiply in the environment, thus their increase in the lagoon indicates lower watershed sources. FIB, on the other hand, may result from those fecal inputs or from environmental growth. Regardless, the lagoon appears to be a source of both FIB and host-associated markers.

4. *Lower watershed and/or lagoon sources of FIB (human and non-human inputs such as gull, dog, etc.) are correlated with exceedances at Topanga Beach.*

Dog and gull marker appear to be a significant source to the lagoon and ocean and likely contribute to exceedances seen in FIB data. Based on best estimates from the literature, when gull and dog marker concentration was converted to an estimated ENT concentration, both gull and dog marker levels were high enough to elevate surfzone and lagoon FIB. Gull levels were detected 94% of the time in lagoon samples and 80% of the time in ocean samples, indicating that gulls are an important and chronic source of fecal contamination to Topanga Lagoon and ocean sites. Further, dog marker levels in Topanga waters were similar to those measured at Rosie's Dog Beach in Long Beach, CA and were detected on average 71% of the time at ocean sites and 64% of the time at lagoon sites. This confirms that dog waste is also a significant source of fecal contamination to Topanga Lagoon and ocean.

Human marker was detected infrequently in the lagoon and ocean. There was a clear trend for increased average human marker level when ENT was in exceedance at BO, LG, and at TL. During Year 1 (July 2012 to June 2013), human-associated marker was detected in the ocean on five sampling dates, including first flush, and also on four dates in the lagoon, one of which was first flush. There was a total of seven dates with either ocean or lagoon detection. Results from Year 2 (July 2013 – June 2014) are encouraging, as human marker was detected in the ocean on just two days, one of which was first flush. For the lagoon, human hits were observed only during the first flush event of Year 2. Further sampling for the human-associated marker is recommended to determine if this trend continues and if it will continue to occur under non-drought conditions.

Summary

- The lagoon is a source of FIB to the ocean. FIB levels are significantly increased when the lagoon is breached.

- Levels of FIB and all markers increase from the most downstream creek site (SP) to the lagoon. The lagoon may serve either as a location where microbial levels may be increasing due to growth (FIB) or to the presence of new inputs (FIB and markers).

- Upstream creek sources do not appear to be a primary contributor to FIB in the surfzone, except on days when both flow and FIB levels in the upper watershed are elevated. Days where creek input had potential to significantly impact downstream levels occurred on two sampling dates during this study, including the first flush event during year two of the study.

- Winter samples were four to eight times higher than samples for the recreational season for the dog and gull marker, indicating that these markers follow a seasonal trend and may have more of an impact to water quality during the winter.

- Dog and gull marker appear to be a significant source to the lagoon and ocean and are likely contributing to exceedances of ENT and EC state water quality standards at the ocean sites. When ENT levels were in exceedance, gull marker levels were higher than when ENT was in compliance at BO, and TL. When dog marker levels in Topanga water samples were compared to levels at two reference beaches and one dog beach, dog marker levels at Topanga were similar to levels at the dog beach. No dog marker was detected at the two reference beaches sampled (Dockweiler and Malibu).

- Human marker was detected infrequently in the lagoon and ocean. Average human marker values were higher at ocean sites when ENT was in exceedance vs. in compliance of state water quality standards. During Year 1 (July 2012 to June 2013), human-associated marker was detected in the ocean on five sampling dates, including first flush, and also on four dates in the lagoon, one of which was first flush. There was a total of seven dates with either ocean or lagoon detection. Results from Year 2 (July 2013 – June 2014) are encouraging, as human marker was detected in the ocean on just two days, one of which was first flush. For the lagoon, human hits were observed only during the first flush event of Year 2.

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4 Description of human health risk associated with human and non-human sources of fecal contamination

In Topanga, continued sampling for human-associated marker is recommended. Detailed description of human marker results are provided in the MST chapter of this report. Briefly, during Year 1 (July 2012 to June 2013), human-associated marker was detected in the ocean on five sampling dates, including first flush, and also on four dates in the lagoon, one of which was first flush. There were a total of seven dates with either ocean or lagoon detection. Results from Year 2 (July 2013 – June 2014) are encouraging, as only human hits were detected in the ocean on just two days, one of which was first flush. For the lagoon, human hits were observed only during first flush of Year 2. Further sampling is needed to determine if this trend continues and what occurs under non-drought conditions.

This study showed attenuation of upper watershed FIB sources through the creek, including the human marker. Notably, however, this study occurred under drought conditions, and extension of findings to typical conditions should be done with care. As described in detail in the MST chapter, using flow and FIB levels from both this work and a previous study conducted in 2003 - 2004 taken together, the extent to which upper watershed sources have the capacity to affect beach water quality under higher flow conditions was estimated. Conductivity measured at the beach outlet was used with flow measurements to estimate a relationship between flow and the dilution factor, which is a non-linear function of flow due to various mixing mechanisms. Using FIB data along with qualitative flow estimates from the previous study, and assuming steady flow at the lagoon, creek FIB had the capacity to cause exceedances on the beach when both flow and FIB levels are high. Specifically, ENT present at greater than approximately 1500 MPN/100 mL, which occurred twice from the 2003 – 2004 sampling effort and twice during the two-year period of this work, were projected to impact beach water quality.

Previous studies have well established that there is a correlation between the levels of FIB in recreational waters and incidence of illness when the likely source of fecal contamination is human. Landmark studies (Cabelli et al. 1982, Kay et al. 1994) provide dose-response curves between levels of FIB and observed ailments in swimmers. The risks associated with exposure to non-human sources of fecal matter in recreational water are still not well characterized, as epidemiological data on this topic are still insufficient.

Studies of the relevance of these relationships to beaches with nonhuman sources of FIB show various outcomes. There is some evidence in the literature for greatly reduced risk in water polluted by nonhuman fecal matter. Cheung et al. (1991) studied nine beaches in Hong Kong and mentioned that one beach with primarily livestock sources did not show increase risk of illness in accord with what would be predicted by the traditional models. However, differentiating between pathogenicity of sources was not a focus of the study and sources at the other beaches are not discussed.

Other studies conducted at beaches without a direct human source show increased risk of ailments in swimming populations, but not in a dose-response relationship with indicators. For example, at a marine beach without a known source of sewage, Fleisher et al. (2010) did not observe increased illness at higher levels of ENT. However, for the group of participants randomly assigned to swim, the risk of gastrointestinal, acute febrile respiratory, and skin illness increased by factors of 1.76, 4.46, and 5.91, respectively.

Similarly, in Mission Bay, CA, where FIB are primarily from nonhuman sources, a large epidemiology study showed that the incidence of illness was not associated with FIB levels (Colford et al. 2007). However, with swimming defined as any water contact at all, swimmers had significantly higher rates of diarrhea and skin rash than non-swimmers. With swimming defined as having swallowed water, the risk for diarrhea increased, and the risks for skin rash, cramps, and eye irritation were all significantly higher than for non-swimmers.

A third group of epidemiological studies do show relationships between illness and FIB levels that are comparable to those observed at beaches impacted with human waste. For example, a local epidemiological study was conducted at Doheny Beach in Orange County in 2007 and 2008 (Colford et al. 2012). Urban runoff via San Juan Creek is the largest source of FIB to this beach. In this study, 9,525 individuals were studied to determine the relative illness rates at various levels of exposure (non-swimming, body immersion, head immersion, and swallowed water.) Water quality parameters were measured traditionally; in addition, enterococci were measured by three rapid methods. Some notable findings from this study include: 1) The risk of diarrhea was significantly increased among all swimming groups compared to non-swimmers; 2) Eye infections and earaches occurred at higher rates for swimmers; and 3) FIB levels were strongly positively associated with diarrhea. The strongest association was observed for those swallowing water on days San Juan Creek was flowing into the ocean.

At beaches in Santa Monica Bay, Haile et al. (1999) studied health effects due to swimming in coastal water impacted by storm drain runoff (which had tested for presence of human associated viruses). While most epidemiological studies compare swimmers with non-swimmers, this study compared only swimmers, and took into account the distance from a storm drain and the water quality at that time and location. The three major findings: 1) The risk of many ailments was higher among subjects swimming near the storm drain; 2) There was a positive association between adverse health outcome and the levels of bacterial indicators; and 3) The relative risk was in general higher for swimming in water containing observable levels of enteric viruses.

McBride et al. (1998) studied the risk of illness at seven beaches in New Zealand. The study included two control beaches with minimally impacted water quality, two beaches impacted by animal fecal matter, and three beaches with elevated human fecal waste. The results showed risks at beaches impacted with human and non-human fecal matter to be similar, and much higher than risks at control beaches.

Thus, while the World Health Organization assumes that non-human fecal sources pose less of a risk compared to human fecal sources (WHO, 2003), data are still needed to fully understand this issue.

Interest is growing in quantitative microbial risk assessment (QMRA) as a framework for understanding risk of illness in recreational water exposure. It is based on hazard assessment (understanding which pathogens pose a risk), an exposure assessment (based on known information regarding many factors including ecology of the microorganisms), and knowledge of the dose-response relationships. A drawback to this approach is that the etiological agents in many epidemiological studies are still unknown,

Soller et al. (2010) conducted a QMRA to investigate risks following recreational water exposure to gull, chicken, pig, and cattle fecal pollution. The major findings include: 1) risks of gastrointestinal illness were found from exposure to water contaminated with both cattle and human fecal matter may be similar. While a number of human pathogens are known to be present in cattle feces, some of which are capable of causing more serious harm than a self-limiting gastrointestinal illness, the prevalence of these pathogens is unknown; and 2) risks of illness after exposure to fecal matter from gulls, chickens, and pigs seems to be much lower than those estimated after exposure to human waste in a recreational water setting. One exception could be human illness resulting from pig hepatitis E virus genogroup C (Rutjes et al. 2009).

Thus, it appears that the risk of exposure to avian sources of fecal pollution poses less of a risk than exposure to human waste. Based on a QMRA approach applied to known pathogens, Soller et al. (2014) present ENT levels that represent equivalent risk to water quality standards for waters containing mixtures of fecal sources. The authors calculate that for waters with 30% of the ENT from human sources, risk of illness is predicted to be lower; thus, higher standards could be allowed.

There is much ongoing research to fill in the data gaps required for QMRA to be an effective approach for predicting risk in recreational coastal waters. While US EPA has opened a door, site-specific water quality criteria (as would be derived from QMRA) are still not accepted in California. Increased information on etiological agents and their ecology is needed. Also, there is a dire need for QMRA predictions to be anchored with epidemiological studies.

For Topanga Beach to be a candidate for QMRA in the future, testing for host-specific markers must be continued to assess the downward trend observed in human-associated marker and to monitor reductions in dog and gull pollution as sources. These measurements must continue as the drought ends so the role of the creek can be fully assessed.

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5 Septic System Testing Results

5.1 Introduction

Topanga Beach received poor wet weather water quality ratings between 2006-2014. The beach has exceeded the water quality objectives set for Fecal Indicator Bacteria (FIB) based on the Ocean Standards (AB411) based on weekly samples collected by the City of Los Angeles Environmental Monitoring Division. This happened frequently enough for Topanga Beach to be identified by Heal the Bay as the 4th most polluted beach in the state for the 2010-2011 season and as the 10th most polluted in 2011-2012. Overall precipitation levels were very low in 2012-2013, and very low in 2013-2014 and water quality throughout the Santa Monica Bay was excellent. However, Topanga Beach was listed as “B” for summer dry (April – October 2012), “C” for winter dry (Nov 2012– Mar 2013), and “F” for wet weather year round. This pattern was repeated in 2014 however the lack of rain resulted in a wet weather grade of “C” (Heal the Bay 2014).

Los Angeles County is responsible for maintaining water quality levels at Topanga Beach that meets receiving water standards not only for FIB, but also for nutrients, trash, and several other identified beneficial uses (Table 6-21). The Regional Water Quality Control Board set TMDL’s for the Santa Monica Bay overall, but not specifically for Topanga Beach, lagoon or creek. In 2012, Topanga Beach had a total of 35 exceedances of FIB levels, which was reduced to 19 exceedances in 2013 (Heal the Bay Beach Report Card 2014). One of the goals of this study is to identify potential sources of FIB so that appropriate actions can be taken to reduce the number of exceedances per year, and meet the 25% reduction goal in 2013 required by AB 411.

The septic systems located along Pacific Coast Highway (PCH) were identified as potential sources of FIB to Topanga Lagoon and beach (Hypothesis 3). Although it was not feasible to test the privately owned systems on the south side of PCH, west of Topanga Lagoon, it was possible to test the systems managed by California Department of Parks and Recreation in Topanga State Park on the north side of PCH, as well as the lifeguard station restrooms managed by Los Angeles County Department of Beaches and Harbors. These systems are physically closest to the lagoon and examining their condition and function to confirm that they are not contributing FIB was a high priority.

Aerial and ground surveys to map locations of the septic systems and their potential connectivity were completed in summer 2013. The topographic survey was conducted by Chris Nelson and Associates. Details of the system plans and locations are provided in Appendix H.

All of the septic systems located in the former Rodeo Grounds Road area were removed in 2008. The septic systems associated with the houses along Malibu Lane and in the Snake Pit area behind the Reel Inn were also removed as of 2011. In most cases, the tanks were either physically removed or backfilled. The leach fields were also backfilled and disconnected from the old tanks. Although these old systems are no longer functional, it is possible that leachate from these systems could still be trickling in through the water table to the lagoon. Modeling of the movement of septage through the water table surrounding Malibu Lagoon and Creek suggested that the time lag for movement could be years (Stone Environmental 2004). However, examination of these sites and testing with florescent dyes did not support contributions from these systems to the lagoon at this time.

Additionally, the Los Angeles County Lifeguard Station restroom facility at Topanga Beach was upgraded in 2008 with a state of the art Advantex treatment system. The renovated system incorporates state of the art chlorination, de-chlorination, and UV treatment to eliminate bacterial contamination.

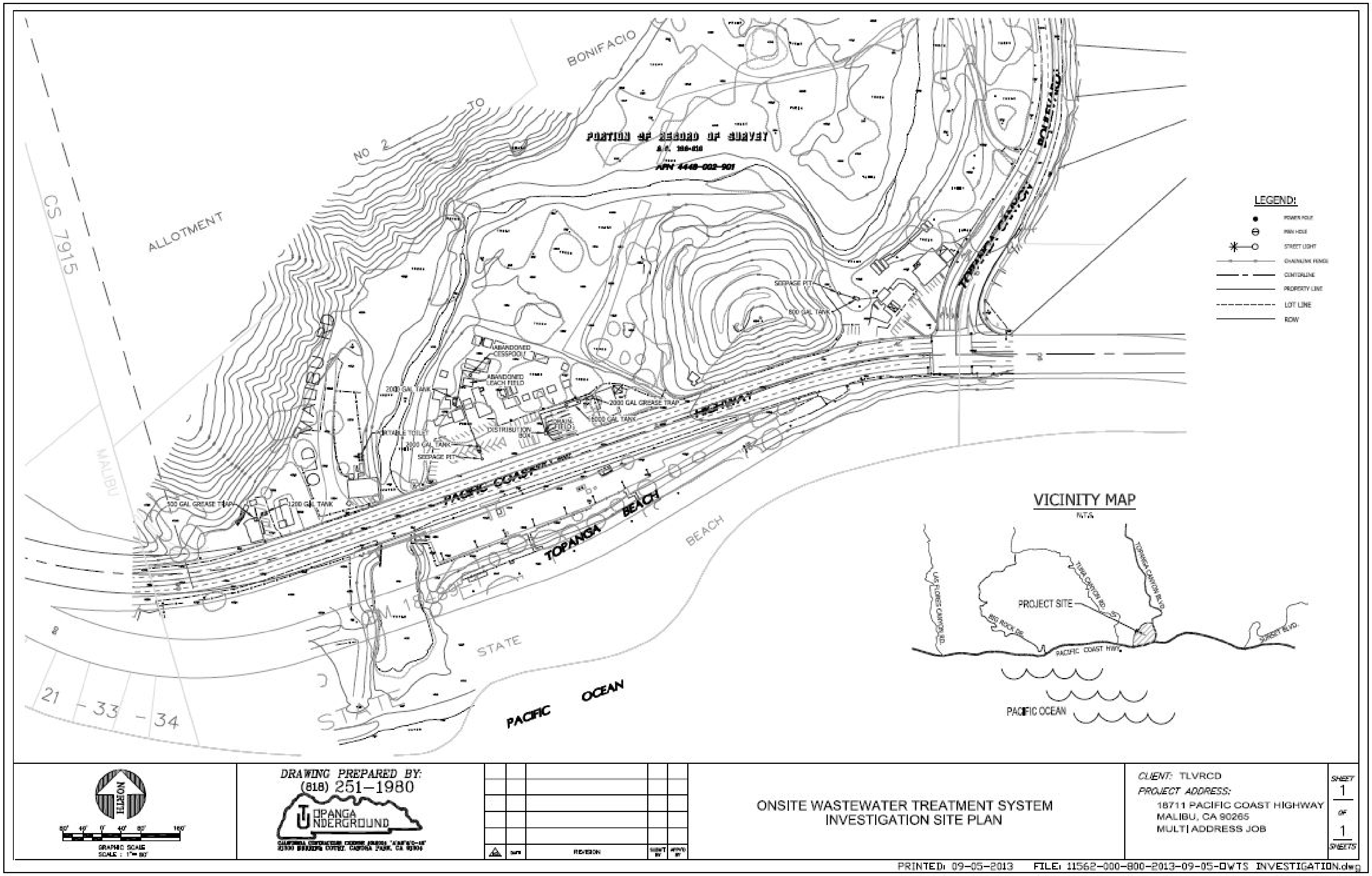

Figure 5-1 Map of Public Septic Systems adjacent to Topanga Lagoon.

5.2 Methods

Topanga State Park

Existing tanks within Topanga State Park were pumped out, then tested by backfilling to a minimum depth of 2" above the riser seam to prevent damage from hydrostatic uplift. They were then monitored for two hours. No tank was accepted if there was any leakage over the two hour period. Topanga Underground conducted testing in spring and summer 2013.

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Water samples were pulled from the system at a sampling port where fluids pass between the UV disinfection system and the distribution box, which connects to a subsurface leach field. Samples were collected monthly from January 2013 through July 2013 by technicians from BioSolutions. Each 2 liter sample was collected and processed according to the sampling protocol, within the normal holding time by the Jay Lab at UCLA. A 500 mL sample was collected and tested for nutrients by the RCDSMM. BioSolutions also collected samples tested by Pat-Chem Inc, Moorpark, CA for: biological oxygen demand (BOD), dissolved oxygen, total suspended solids (TSS), pH, turbidity, total alkalinity, carbonate alkalinity, bicarbonate alkalinity, and hydroxide alkalinity.

Samples were held in a cooler with the Chain of Custody forms and placed within the gated area. In February 2013, we were unable to coordinate sample collection. In May and June 2013, the cooler with the empty bottles was stolen but by coordinating with the BioSolutions technician we were able to obtain samples in any case. Subsequently, we have set it up to coordinate via phone and take bottles to the technicians when they arrive on site.

5.3 Results

5.3.1 Topanga State Park

The septic systems along Pacific Coast Highway within Topanga State Park were evaluated as described above. These septic systems are being pumped weekly or more as needed, in compliance with the contracts administered by the California Department of Parks and Recreation. They are all older systems and even though no longer connected to leach fields or seepage pits, the potential for leakage is present.

SITE-3931 S. Topanga Canyon Blvd- Malibu Feed Bin- **NOT FUNCTIONAL AND POTENTIAL CONTRIBUTOR TO CREEK**

The On-site wastewater treatment system (OWTS) was located in the area to the west side of the site, on the west side of the west driveway. The system is between 40 and 50 feet from the stream bank, depending on how the top of bank is defined. The tank had a single 4" cast iron pump riser. The tank was excavated and inspected. The tank is a poured-in-place concrete septic tank, (5' x 10' x 3') with a capacity of 800+/- gallons. A radio locator, inserted into the tank outlet pipe, found a 4' x 26' seepage pit located N/W of and 15' from the tank.

The system is not functional at this time. The seepage pit was 100% full and backed up into the tank during the inspection. We notified the Feed Bin manager that the tank and the pit needed to be pumped. Two 8" pumping risers were installed on the tank and the pit has an existing 4" pumping riser. There was no evidence of sewage or effluent surfacing over the tank or the pit. The seepage pit servicing this system could be a contributor to bacteria in the creek, if there is a below-grade path, which permits the effluent seeping out of the pit to travel to the creek. This connection was not documented at this time and would require use of dyes to test connectivity. As pointed out, the distance is probably less than 50 feet from the pit to the creek.

Recommendation: The tank outlet line should be capped so that the seepage pit is no longer in use. The septic tank will then have to be pumped as required. If the total use causes the tank to fill up weekly, a 6,000 gallon holding tank can be rented, and a float operated pump placed in the septic tank, discharging to the tank. A larger truck can then be used to dispose of the sewage. Pumping cost will have to be determined and the cost of tank rental and installing the pump looked at to determine the least expensive option.

SITE-18661 Pacific Coast Highway-Reel Inn – **Not expected to be a contributor**

The system is located at the parking lot west of the restaurant. The system consists of a 2000 gallon grease trap, a 6000 gallon septic tank, a D-Box and a 3900 sq. ft. leach field. The leach field is at least 200 feet from the creek both to the west and the north. It does not appear that this system is a contributing factor to the problems in Topanga Lagoon and beach.

Both the tanks are being pumped on a regular basis. We believe that the timing of the pumping and the rate at which the tanks fill up do not coincide and that occasionally the system discharges effluent to the leach field.

Recommendation: Develop and implement a more effective pumping plan to avoid discharges.

SITE-19711 Pacific Coast Highway-Ranger Station – **May be a contributor**

This system has several components. There is a 4" clean out on the sewer line behind the partially occupied Ranger cabin. There is an abandoned 14 foot cesspool located between a palm tree & the nearby small tree adjacent to the ranger house. This is apparently not connected to anything & was dry. By water testing and some pipe cleaning, we determined that the Ranger Cabin was draining to the tank west of the main driveway (#1), between the first row of cabins and the ranger cabin. This tank (#1) was checked and it was basically empty. We believe that the bottom of the tank is cracked and effluent is seeping out and that is the reason the tank is empty. This tank is closer to the top of bank north of the bridge that any other tank on all the sites. Tank (#1) was pumped empty and 6" of concrete placed over the existing floor. This should prevent any future leakage.

By water testing the Tank #1 outlet we believe that if full, it would overflow into the larger tank (#2) located in the front parking lot adjacent to PCH, which served the former market (removed in 2002). Tank #2 had some water in it, but there is nothing flowing into it at this time. Tank #2 is connected to seepage pits in the front PCH parking lot. This system is close to the creek and could be a contributor to bacteria levels.

Recommendation: Repair the leak in Tank #1 (completed in September 2013). Plug both the inlet and outlet to test the tank following the repair. Repair the cracked manhole covers located in the PCH parking lot. Conduct dye tests to determine if any leaching is making it to the creek/lagoon.

SITE-19741 Pacific Coast Highway-Rosenthal Wine- **Not contributing from an OWTS.**

This site was inspected and there does not appear to be any OWTS in use on the site. The bathroom in the building had no fixtures and there are several Portable Toilets outside the building. This site is actually the closest building to the creek, however as there is no system in use, this location does not contribute to the bacteria levels via an OWTS. However, there is regular surface run-off from the site associated with irrigating the lawn.

Recommendation: Reduce irrigation and prevent run-off directly from the surface to the lagoon.

SITE-19753 Pacific Coast Highway-Something Fishy – **Not contributing**

The OWTS for this site is still in place, however the building was removed some years ago and the system is not in use. We believe that when this system was in use it was located behind the building and was over 100 feet from the creek.

This system is not contributing to the problem.

SITE-18757 Pacific Coast Highway-Wiley's Bait Shop – **Not contributing**

The building has no bathroom facilities. There is a single sink discharging into a 3' X 3' gravel packed pit. The shop uses the toilet facilities at Cholada's. This site is over 200 feet from the creek.

This system is not contributing to the problem.

SITE-19763 Pacific Coast Highway-Cholada Restaurant – **Not contributing**

The OWTS consists of an 800± gallon Grease Trap and a 1500± gallon septic tank. The grease trap is located under the kitchen floor and the septic tank is in the parking lot east of the building. This system is over 250 feet from the creek.

The system is not connected to the original leach field. Both tanks are being used as holding tanks and they are being pumped as needed.

This system is not contributing to the problem.

5.3.2 Los Angeles County Department of Beaches and Harbors Restrooms and Lifeguard Station

FIB and Marker results are summarized in Table 5-1 through Table 5-7. It was interesting to note that even after advanced septic processing that kept FIB levels quite low, DNA from dead cells was detected by both human marker tests and are present in almost every sample (Table 5.4-5-5). The detection of Dog DNA in April 2013 (Table 5-6) is consistent with additional information from 2014 (see Figure 3-7). Based on the FIB results summarized in Tables 5-1 to 5-3, it does not appear that the lifeguard septic system is contributing FIB to either the lagoon or ocean.

Table 5-1 Total coliform levels at Lifeguard treatment system, Topanga Lagoon, Beach Outlet, Beach Upcoast. FF=First Flush.
(Exceedance >10,000 MPN/100mL)

Date	Lifeguard MPN/100mL	Ocean in front of Lifeguard Copy/100mL	Topanga Lagoon MPN/100mL	Beach Outlet MPN/100mL	Beach Upcoast MPN/100mL
11/17/12 FF	ND*	Not collected	54750	638	Not collected
11/29/12	Not collected	Not collected	29090	341	341
12/19/12	ND	Not collected	13760	98	75
1/9/13	<10	Not collected	1664	41	20
2/6/13	ND	Not collected	4611	327	605
3/6/13	2400	Not collected	4352	41	10
4/10/13	794	Not collected	4786	75	<10
5/8/13	185	97	2254	63	52
6/5/13	2224	199	2282	2489	10
7/1/13	414	86	2098	141	20
7/31/13	Not collected	52	7270	201	960

*ND= Not detectable

Table 5-2 E. coli levels at Lifeguard treatment system, Topanga Lagoon, Beach Outlet, Beach Upcoast. FF=First Flush.
(Exceedance >235 MPN/100mL)

Date	Lifeguard MPN/100mL	Ocean in front of Lifeguard Copy/100mL	Topanga Lagoon MPN/100mL	Beach Outlet MPN/100mL	Beach Upcoast MPN/100mL
11/17/12 FF	ND*	Not collected	1723	97	Not collected
11/29/12	Not collected	Not collected	2098	160	110
12/19/12	ND	Not collected	1376	10	20
1/9/13	<10	Not collected	327	31	<10
2/6/13	ND	Not collected	712	41	52
3/6/13	<10	Not collected	933	20	<10
4/10/13	<10	Not collected	1835	<10	<10
5/8/13	<10	<10	41	<10	<10
6/5/13	<10	<10	52	<10	<10
7/1/13	41	<10	41	10	<10
7/31/13	Not collected	<10	171	<10	187

*ND= Not detectable

Table 5-3 Enterococcus levels at Lifeguard treatment system, Topanga Lagoon, Beach Outlet, Beach Upcoast.
(Exceedance >104 MPN/100mL saltwater and >61 MPN/100mL for freshwater)

Date	Lifeguard MPN/100mL	Ocean in front of Lifeguard Copy/100mL	Topanga Lagoon MPN/100mL	Beach Outlet MPN/100mL	Beach Upcoast MPN/100mL
11/17/12 FF	ND*	Not collected	2014	121	Not collected
11/29/12	Not collected	Not collected	495	10	31
12/19/12	ND	Not collected	171	63	20
1/9/13	<10	Not collected	86	31	20
2/6/13	ND	Not collected	142	10	31
3/6/13	50	Not collected	455	52	148
4/10/13	30	Not collected	350	20	20
5/8/13	10	3873	10	279	<10
6/5/13	327	4106	30	480	10
7/1/13	399	52	52	86	<10
7/31/13	Not collected	97	5794	75	231

*ND= Not detectable

Table 5-4 Human Marker (HF183 copy/100mL) levels at Lifeguard treatment system, Topanga Lagoon, Beach Outlet, Beach Upcoast.

Date	Lifeguard Copy/100mL	Ocean in front of Lifeguard Copy/100mL	Topanga Lagoon Copy/100mL	Beach Outlet Copy/100mL	Beach Upcoast Copy/100mL
11/17/12 FF	Not collected	Not collected	Not collected	375.0	Not collected
11/29/12	Not collected	Not collected	ND*	286.26	672.98
12/19/12	Not collected	Not collected	ND	ND	ND
1/9/13	2616.37	Not collected	ND	69.50	ND
2/6/13	Not collected	Not collected	ND	2.02	ND
3/6/13	1600.4	Not collected	ND	ND	ND
4/10/13	36894.7	Not collected	41.5	ND	ND
5/8/13	ND	ND	ND	ND	1.60
6/5/13	1335.41	ND	ND	ND	ND
7/1/13	357984.86	ND	ND	ND	ND
7/31/13	Not collected	ND	ND	ND	ND

*ND= Not detectable

Table 5-5 BacHum Marker levels at Lifeguard treatment system, Topanga Lagoon, Beach Outlet, Beach Upcoast.

Date	Lifeguard Copy/100mL	Ocean in front of Lifeguard Copy/100mL	Topanga Lagoon Copy/100mL	Beach Outlet Copy/100mL	Beach Upcoast Copy/100mL
11/17/12 FF	Not collected	Not collected	52.0	ND	Not collected
11/29/12	Not collected	Not collected	6.05	2538.48	2777.04
12/19/12	Not collected	Not collected	ND*	ND	ND
1/9/13	23238.23	Not collected	136.3	ND	203.0
2/6/13	Not collected	Not collected	ND	ND	139.8
3/6/13	29700.91	Not collected	ND	ND	ND
4/10/13	246173.94	Not collected	ND	ND	ND
5/8/13	387.9	ND	ND	ND	ND
6/5/13	8511.73	ND	ND	ND	ND
7/1/13	2874282.3	ND	ND	ND	ND
7/31/13	Not collected	Not collected	Not collected	Not collected	Not collected

*ND= Not detectable

Table 5-6 Dog Marker levels at Lifeguard treatment system, Topanga Lagoon, Beach Outlet, Beach Upcoast.

Date	Lifeguard Copy/100mL	Ocean in front of Lifeguard Copy/100mL	Topanga Lagoon Copy/100mL	Beach Outlet Copy/100mL	Beach Upcoast Copy/100mL
11/17/12 FF	Not collected	Not collected	2994.2	4035.6	Not collected
11/29/12	Not collected	Not collected	1426.68	53923.28	17000.46
12/19/12	Not collected	Not collected	10269.38	4975.98	1624.98
1/9/13	ND*	Not collected	73633.80	24444.72	3297.54
2/6/13	Not collected	Not collected	37148.38	42461.54	28518.41
3/6/13	ND	Not collected	2158.12	15952.18	15615.57
4/10/13	1743.10	Not collected	8405.10	1728.21	ND
5/8/13	ND	ND	ND	281.8	745.56
6/5/13	ND	ND	ND	96.8	152.4
7/1/13	ND	263.4	ND	ND	3434.6
7/31/13	Not collected	ND	ND	ND	ND

*ND= Not detectable

Table 5-7 Gull Marker levels at Lifeguard treatment system, Topanga Lagoon, Beach Outlet, Beach Upcoast.

Date	Lifeguard Copy/100mL	Ocean in front of Lifeguard Copy/100mL	Topanga Lagoon Copy/100mL	Beach Outlet Copy/100mL	Beach Upcoast Copy/100mL
11/17/12 FF	Not collected	Not collected	22068.5	4469.8	Not collected
11/29/12	Not collected	Not collected	5501.23	2450.21	519.44
12/19/12	Not collected	Not collected	5439.32	2409.06	747.99
1/9/13	ND*	Not collected	51901.53	566.8	560.7
2/6/13	Not collected	Not collected	81223.73	9152.85	3087.84
3/6/13	ND	Not collected	108604.31	1292.57	777.99
4/10/13	ND	Not collected	122849.0	2524.8	746.1
5/8/13	ND	ND	2179.4	ND	ND
6/5/13	ND	32.32	3428.15	652.27	705.97
7/1/13	ND	893.47	12599.36	698.80	22.77
7/31/13	Not collected	ND	5911.6	4252.8	501.6

*ND= Not detectable

In May 2013, surface runoff was observed from the concrete apron of the showers at the Lifeguard station to the ocean. Between May and July 2013, samples were collected in the swash zone of the ocean near the location drainage was observed. Based on high enterococcus readings documented in May 2013 during a rain event, the Los Angeles County Department of Beaches and Harbors examined the plumbing to make sure that all shower water is being captured by the septic system as per design, and conducted the maintenance required to keep the connections functioning (Figure 5-2). Subsequent testing suggests that this may be a wet weather problem only. The high enterococcus numbers could also be related to the detection of both dog and gull markers. It was interesting that no human markers were detected.

Figure 5-2 Photograph of the collection system at the Topanga Beach Restroom showers

Nutrient levels in the lifeguard septage samples tested by the RCDSMM were consistently extremely high and most required a 1/100 dilution in order to even test given the limitations of the colorimeter. Nitrate-N, ammonia–N, orthophosphates were in exceedance (Tables 5-8 to 5-12) in all samples. On 5 June 2013, the samples were not diluted and thus were completely over-range.

Table 5-8 Nitrate-N (ppm) comparison between Lifeguard septage and Topanga Lagoon
Water Quality Objective < 1 ppm

Date	Lifeguard (ppm) 1/100 dilution	Topanga Lagoon (ppm)
1/9/13	12.00	0.00
2/6/13	No data	0.00
3/6/13	45.00	0.00
4/10/13	62.00	0.00
5/8/13	48.00	0.11
6/5/13	No data	0.06
7/1/13	21.00	0.00
7/31/13	74.00	0.00

Table 5-9 Nitrite-N comparison between Lifeguard septage and Topanga Lagoon
(Water Quality Objective < 1 ppm)

Date	Lifeguard (ppm)	Topanga Lagoon (ppm)
1/9/13	0.13	0.0
2/6/13	0.09	0.04
3/6/13	0.09	0.0
4/10/13	28	0.05
5/8/13	0.45	0.0
6/5/13	No data	0.02
7/1/13	0.0	0.01
7/31/13	0.61	0.0

Table 5-10 Ammonia–N comparison between Lifeguard septage and Topanga Lagoon
(Water Quality objective for freshwater is < 0.4 ppm, ocean < 2.4 ppm)

Date	Lifeguard (ppm) 1/100 dilution	Topanga Lagoon (ppm)
1/9/13	12	0.13
2/6/13	16	0.0
3/6/13	30	0.0
4/10/13	33.6	0.1
5/8/13	11	0.13
6/5/13	No data	0.15
7/1/13	71	0.0
7/31/13	36	0.0

Table 5-11 Orthophosphate comparison between Lifeguard septage and Topanga Lagoon
(Water Quality Objective < 0.10 ppm)

Date	Lifeguard (ppm) 1/100 dilution	Topanga Lagoon (ppm)
1/9/13	9.9	0.05
2/6/13	33	0.03
3/6/13	25	0.04
4/10/13	33	0.01
5/8/13	27	0.08
6/5/13	No data	0.06
7/1/13	24	0.03
7/31/13	68	0.06

Table 5-12 Turbidity comparison between Lifeguard septage and Topanga Lagoon
(Water Quality Objective < 5 NTU)

Date	Lifeguard (ppm)	Topanga Lagoon (ppm)
1/9/13	2.16	No data
2/6/13	0.97	0.13
3/6/13	45	3.86
4/10/13	8.97	8.42
5/8/13	3.21	2.26
6/5/13	No data	3.11
7/1/13	2.26	0.79
7/31/13	1.6	0.89

The following table shows the results of using only the available alkalinity.

Table 5-13 Pat-Chem Laboratory Test Results

Pat-Chem Lab- Biosolutions								
Parameter	1/9/13	2/6/13	3/6/13	4/10/13	5/8/13	6/5/13	7/1/13	7/31/13
Biological Oxygen Demand (mg/l)	28	18	40	29	29	26	23	16
Dissolved Oxygen (mg/l)	7.8	8.3	6.8	7.6	7	4.2	6.5	7.2
pH	3.3	3	4.1	7.6	4.4	5.7	6.8	4.2
Total Alkalinity (mg/l)	1	1	1	54	1	12	216	1
Carbonate Alkalinity (mg/l)	1	1	1	1	1	1	1	1
Bicarbonate Alkalinity (mg/l)	1	1	1	54	1	12	216	1
Hydroxide Alkalinity (mg/l)	1	1	1	1	1	1	1	1
Total Suspended Solids (mg/l)	13	7	180	28	12	12	6	6
Turbidity (NTU)	4.3	1.5	103	10	5.4	4	2.7	3.8

5.4 Discussion

The function of septic systems located adjacent to the beaches, wetlands, and lagoons, are a concern throughout the country. The combination of high water tables, limited filtration distance through sandy soils, and close proximity to inundation by high tides can cause unintended connectivity between septic leach fields and the ocean (Izbecki 2011). The proximity of septic systems located at Topanga Beach, and adjacent to the beach and lagoon were identified as possible contributors to the exceedances recorded at Topanga Beach.

There is always a remote possibility that there is some historical sewage effluent that is leaking into the creek from old systems. Note that presently and in the past all the sewage effluent was discharged to either seepage pits or leach fields and this eventually ended up in the water table below the area. If the geology at the below-grade elevation of the upper part of the water table was such that there is or was geologic features that eventually permitted the water table to migrate to the creek, there could be contamination.

A study in the Malibu Civic Center concluded that the septic systems, in the shopping centers along Cross Creek Road ended up in the Malibu Lagoon rather quickly and that there were some systems around the perimeter, of the Civic Center that may take 75 years to migrate to the Lagoon (Izbicki 2011, Stone Environmental 2004). The siting of the leach field for the Lifeguard treatment system suggests that effluent would have to travel through the fill material into groundwater at least 393 feet before it would discharge into Topanga Lagoon. It would have to travel at least 285 feet before discharging into the ocean.

With the 2008 upgrade of the Topanga Beach Lifeguard Station Restrooms, waterless urinals were installed to reduce water consumption along with the installation of an Advanced Treatment System to meet the California Ocean Plan. The goal for the treatment plant is to nitrify the existing TKN (ammonia and organic nitrogen) to the California Ocean Plan standard of <2.4 mg/L ammonia (SWRCB 2009). With the addition of the waterless urinals and water reduction faucets and showerheads, water dilution for the incoming ammonia was reduced and TKN before treatment increased.

The nitrification process consists of a recirculation of water over a textile media utilizing ambient air for oxygen. An alkalinity of 7.14 ppm is required to convert 1 ppm ammonia to nitrate. The available alkalinity provided in the incoming potable water from LA County Water District 29's 2012 report was an average of 79 ppm. Any additional demand for alkalinity would start coming from the pH in the wastewater until this was consumed. As the pH falls, the treatment process loses efficiency and recirculation has to be reduced to prevent die-off of beneficial bacteria. The necessary alkalinity needed to convert the ammonia is as follows:

> 132 ppm TKN x 7.14 ppm alkalinity = 942.48 ppm alkalinity.
>
> 942.48 ppm needed alkalinity – 79 ppm available alkalinity = 863.48 ppm supplemental alkalinity needed to convert TKN and maintain neutral pH.

The function of the Lifeguard treatment system could be improved with the addition of a chemical feed alkalinity system, similar to that installed at all the new Zuma, Point Dume, and Surfrider Beach systems. By installing an automatic injection system of soda ash to supplement the alkalinity needed for proper nitrification and TKN (ammonia) conversion, the system could knock down the ammonia content to below 2.4mg/L and bring the pH up to an acceptable level between 6.5 and 9. The monitoring results from the Surfrider Beach Treatment system illustrate the reductions possible (Table 5-14). This would also help with other treatment factors, as the beneficial bacteria in this system are being significantly affected and possibly killed by the acidic pH.

Table 5-14 Los Angeles County Sampling Results for Surfrider Beach Treatment System

LA County –Malibu Monitoring Project					
Parameter	2/24/12	4/20/12	10/26/12	2/8/2013	5/10/13
Biological Oxygen Demand (mg/l)	5.81	15.4	4.85	5.95	ND*
ammonia-N(mg/l)	0.160	0.180	0.411	0.570	1.67
pH	8.34	6.88	6.08	8.09	7.88
Total coliform (MPN/100mL)	ND	ND	130	ND	2400
Fecal coliform (MPN/100mL)	ND	ND	ND	ND	20
Enterococcus (MPN/100mL)	ND	ND	ND	ND	ND
Turbidity (NTU)	2.95	1.05	2.13	11.7	0.560

*ND= Non Detect

Nitrates and nitrites are expected to be high as they are part of the chemical breakdown of ammonia in the nitrification process. If necessary, Total Nitrogen could also be lowered by adding additional equipment to de-nitrify the effluent. Currently that is not required at beach areas under the California Ocean Plan (SWRCB 2009). This upgrade has been discussed with Los Angeles County Public Works and a quote was provided to then a year or so ago. They seemed open to the idea of retrofitting these older beach treatment systems. Funding for such upgrades may be available through the State Water Resources Control Board, as recommended in SWRCB resolution 2012-0032.

5.5 References Cited

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6 Nutrient and In-situ Testing Results

6.1 Introduction

Although bacteria levels are a main focus of this investigation, the aquatic health of Topanga Lagoon and creek is influenced by numerous other factors. In 2003-2004, we identified total suspended solids and nutrients as potential problems in the upper watershed above the town of Topanga. Eutrophication describes the excessive growth of algae and plant matter due to the increased input of factors needed to photosynthesize, such as nutrients. Eutrophication occurs naturally in freshwater ecosystems over time with sedimentation; however, the process has been accelerated in many places due to nearby human activity. Input of nutrients can be from point (e.g., wastewater treatment plants, culverts) or non-point (e.g., fertilizer runoff) sources.

Aquatic species typically tolerate levels of nutrient loading that are lower than drinking water standards used to evaluate water quality. For instance, the drinking water standard used by the Regional Water Quality Control Board to regulate discharge from sewage treatment facilities for nitrogen–N is 10 mg/L. The EPA limit for freshwater aquatic systems for nitrogen-N is 1 mg/L (EPA 2012). In Malibu Creek that is also the target proposed.

Additionally, excessive nutrients typically lead to algae blooms, which can affect in-situ water quality parameters, such as pH and dissolved oxygen. For instance, when algae and plants are photosynthesizing during the day, dissolved oxygen levels will be high, however, when they respire at night, or die, oxygen is depleted. Aquatic organisms typically require a consistent level of 5 mg/L or above of dissolved oxygen to survive, and when levels drop below this, it can be detrimental to the aquatic wildlife (LARWQCB 1994 with 2011 updates).

The goal of this part of the study was to determine if nutrient loading was an issue in Topanga Creek and if so, if nutrient levels, along with bacteria levels, decreased from upstream sites to downstream sites as water moves through the natural section of the Narrows and the lower watershed below town.

6.2 Methods

Samples were collected just below town at Owl Falls (OF; 6500 m), further downstream at Scratchy Trail (ST; 4800 m), Topanga Bridge (TB; 3600 m), Brookside Drive (BR; 1700 m), Snake Pit (SP; 300 m), and in Topanga Lagoon (TL; 0 m) from 2012 to 2014. Samples collected from OF and ST were done so with funding from SIPP (Source

Identification Project). All other samples were collected thanks to funding from LA County Supervisor Zev Yaroslovsky's office. Standard Citizen Water Quality Monitoring parameters were incorporated into the sampling effort, which provided an outreach opportunity for RCDSMM Stream Team volunteers, local students, and during the 2013-2014 year, members of the Watershed Stewards Project.

Water samples were collected in the field in 500 mL bottles. Bottles were rinsed three times and filled and capped underwater. Samples were collected monthly during the dry season (April – October) and bi-weekly during the wet season (November – March), and at the first flush rain event (> 0.75") at the same time and locations as FIB samples. Nutrient testing (nitrate-N, nitrite-N, orthophosphates, ammonia-N) of grab samples was done within six hours of collection using a LaMotte SMART3 Colorimeter. Turbidity was tested using a LaMotte Turbidimeter 2020we.

In-situ parameters included water temperature, pH, salinity, conductivity, and dissolved oxygen. Water temperature (ºC) and dissolved oxygen (mg/L and % saturated) were tested using a handheld YSI 55 DO meter. Conductivity (µS/cm) and pH were tested using handheld Oakton probes (waterproof ECTestr11 and waterproof pHTestr 30, respectively). Salinity (ppm) was tested using a handheld refractometer (ATC 300011 SPER SCIENTIFIC salt refractometer). Air temperature was measured using a mercury thermometer.

Algae cover was measured and recorded in two ways: 1) visual estimate of percent cover, and 2) random point contact (RPC) where a random point is generated on a transect stretching across the creek where flow is taken and the substrate below that point is recorded. Substrate was recorded as: terrestrial plant, aquatic plant, algae unknown, *Cladophora, Enteromorpha,* diatoms, bare bedrock, bare boulder, bare cobble, bare gravel, or sand. A complete description of the methodology is found in Appendix G.

6.3 Results

6.3.1 Physical Conditions

6.3.1.1 Lagoon-Ocean Connection

The connection between Topanga Lagoon and the ocean was monitored at every rain event and sampling event by the project team as well as daily by the Los Angeles County Lifeguards until June 2013. When possible, breaches were noted as manual or natural as well. We also relied upon daily monitoring using the web camera located on top of the lifeguard station. Although images were blurry, they did allow us to detect lagoon connections.

Substantial rainfall events were minimal and total rainfall was below normal for 2012-2013 and 2013-2014 water years (WY; Table 6-1). Similarly, breach events that connected the lagoon to the ocean were quite limited in both years (Table 6-2). Connection lasted for less than ten days in 2012-2013, and fewer than seven days in 2013-2014. The breach in April 2013 was manually done by a local shovel brigade and recorded by the lifeguards.

Table 6-1 Rainfall events and water year (WY) totals in Topanga, CA, 2012-2014.

Wet Spell Dates	Rainfall Amount (in.)
20 Oct 12	0.02
23 Oct 12	0.03
8 Nov 12	0.08
16-18 Nov 12*	0.87
28 Nov to 3 Dec 12	2.55
12 Dec 12	0.42
14-18 Dec 12	0.67
22-26 Dec 12	1.59
23-27 Jan 13*	1.65
8 Feb 13	0.06
19 Feb 13	0.23
6-8 Mar 13	1.06
30-31 Mar 13	0.18
24 Apr 13	0.01
6 May 13	0.54
2012-2013 WY TOTAL	9.96
09 Oct 13	0.06
20-22 Nov 13	0.80
29 Nov 13	0.03
07 Dec 13	0.18
02 Feb 14	0.02
06 Feb 14	0.24
09 Feb 14	0.01
26-28 Feb 14*	5.34
01-02 Mar 14	0.20
2013-2014 WY TOTAL	6.88

*First flush events (>0.75”) 17 Nov 2012, 24 Jan 2013, 27 Feb 2014

Between Dec 2012 and Aug 2014, there were several “king” tide events, where unusually high tides (generally over 6.5’) caused overwash from the ocean to the lagoon, although they did not always results in a full breach (Table 6-2).

Table 6-2 Topanga Lagoon high tides, overwash, and breach events, November 2012 – August 2014.

Date	High Tide Time	Tide Height (ft)	Breach Events and Rain event Date, inches	Sand Berm Condition
16-20 Nov 12				Overwash at high tide/rain pulse
11 Dec 12	18:46	6.9		Closed
12 Dec 12*	19:30	7.2		Closed
13 Dec 12	20:16	7.3		KING TIDE Overwash at high tide
14 Dec 12	21:02	7.1		Overwash at high tide
09 Jan 13	06:35	6.7		Cosed
11 Jan 13	09:41	6.4		Overwash at high tide
25 Jan 13	07:42	5.8	Breached, 23-27 Jan 13, 1.65”	Overwash at high tide
26 Jan 13	08:14	5.9		Connected
27 Jan 13	08:46	5.8		Overwash at high tide
28 Jan 13	09:19	5.6		Overwash at high tide
30 Jan - 2 Feb 13			Breached, rain same as above	Connected
6 Feb 13	05:34	5.9		Overwash at high tide
9 Feb 13	08:04	6.5		Overwash at high tide
26-28 Feb 13			Breached, 26 Feb-01 Mar 13, 5.51”	Connected/OW at HT
6 Mar 13	04:17	5.1	Breached, rain same as above	Closed-perched**
8-14 Mar 13			Breached, rain same as above	Connected/OW at HT
16 Mar 13	12:13	4.9	Breached, rain same as above	Overwash at high tide
20 Mar 13	04:31	4.0	Breached, rain same as above	Connected
24 Mar 13	08:42	5.1	Breached, rain same as above	Overwash at high tide
10 Apr 13	10:14	4.5		Closed-Perched
23 Apr 13			Breached, manually	
29 Jan 14*	7:27	6.8		Closed
27 Feb 14	7:23	6.2		Closed
28 Feb 14			Breached, 26-28 Feb 14, 5.34”	
06 Mar 14	12:16	4.9	Breached, rain same as above	Connected
12 Jun 14	21:13	6.7		Closed
13 Jun 14	21:56	6.7		Closed
11 Jul 14	21:00	7.0		Closed
12 Jul 14	21:46	7.0		Closed
13 Jul 14	22:34	6.7		Closed
10 Aug 14	20:53	6.9		Overwash at high tide

*LA County Lifeguard data was available until June 2013. Data since June comes from observations during water quality sampling events.

**Sand berm connection was open at the time of water quality sampling (5:58 am), but closed when the Lifeguard data was recorded. High tide was at 4:17 am, height was 5.1 ft

6.3.1.2 Site Conditions

At each sampling event, qualitative information concerning site conditions was noted. These included water clarity, color and odor, surface conditions, and presence of foam, debris and trash. Compliance was indicated by an ability to clearly see the bottom, lack of discernable odor, and lack of surface oil or foam (Table 6-3). Table 6-7 summarizes the observations of site conditions and compliance. The two sites in Upper Topanga, Owl Falls (6500 m) and Scratchy Trail (4800 m) had the highest percentage of sample dates where water conditions were not compliant, whereas two Lower Topanga sites, Topanga Bridge (3600 m) and Brookside Drive (1700 m) had the lowest percentage. The percentage of dates when not compliant increased again further downstream at the two sites closest to the PCH and nearby development. Lack of compliance was typically due to poor water clarity or unclear water, and only occasionally due to the presence of an odor, surface oil or foam/bubbles.

Table 6-3 Summary of qualitative water conditions data, Dec 2012- Aug 2014.

Site	Total Dates Sampled	Number Dates not Compliant*	% Not Compliant	Number of dates not compliant				
				Water Clarity (not clear)	Water Color (not clear)	Water Odor Present	Surface Oil Present**	Foam/ Bubble Present**
Topanga Lagoon 0 m (TL)	28	10	36	3	7	5	0	3
Snake Pit – 300 m (SP)	22	10	45	4	3	3	5	0
Brookside Drive- 1700 m (BR)	26	3	12	1	1	0	1	1
Topanga Bridge – 3600 m (TB)	29	4	14	1	1	1	2	0
Scratchy Trail- 4800 m (ST)	21	15	71	9	11	0	1	1
Owl Falls – 6500 m (OF)	19	11	58	3	10	0	0	1

*Each sampling date that was not compliant may be associated with multiple water condition values that are not compliant or compliant. To calculate the percentage of dates not compliant, the number of sampling dates not compliant was used (not the number of water conditions not compliant).
**Surface oil and foam/bubbles could be from biological or non-biological sources.

Impacts from transients, careless visitors, or dumping from RV's were observed throughout the study period. Human, dog and bird feces were observed at various sites and times, but fairly consistently at Topanga Lagoon (Table 6-4). The presence of bird feces at the lagoon, which was mainly gull, was not surprising. Topanga Beach does not permit dogs on the beach. However dogs were observed frequently and their feces were observed occasionally. Human feces were observed on several occasions in the pedestrian underpass below PCH, as well as along the creek (Figure 6-1). Observations of human feces in the underpass often coincided with observations of transient activity. We also documented RV discharge along the shoulder of Topanga Canyon Blvd. (Figure 6-2) that was associated with a strong urine smell, and suspected discharge into the culvert from the shoulder of PCH that connects directly to Topanga Lagoon (Figure 6-3).

Table 6-4 Summary of feces observations by sampling date and location, where H=Human, D=Dog, and B=Bird. (gray boxes indicate transient activity observed).

Date	Topanga Lagoon (TL)	PCH Bridge (HB 0 m)	Snake Pit (SP 300 m)	Brookside Dr. (BR 1700 m)	Topanga Bridge (TB 3600 m)	Scratchy Trail (ST 4800 m)	Owl Falls (OF 6500 m)
19-Dec-12	H,D,B			H			
9-Jan-13	B						
24-Jan-13	H,B						
27-Jan-13	H,B	H					
6-Feb-13	H,B	H					
24-Feb-13	H,B	H					
6-Mar-13	H,B	H					
24-Mar-13	B						
8-May-13	H,B						
1-Jul-13	B						
31-Jul-13	B						
21-Aug-13	B						
20-Nov-13	B		B				
19-Dec-13	B,D						
6-Jan-14	B						
29-Jan-14	B				H		
7-Feb-14	B				H		
20-Feb-14			D				
27-Feb-14	B				H		
6-Mar-14	B						
24-Mar-14	B						H
29-May-14	B						
15-Jul-14							

Figure 6-1 Direct deposit and transient activity under PCH Bridge, 29 March 2013.

Figure 6-2 RV discharge on shoulder of Topanga Canyon Blvd., May 31, 2013

Figure 6-3 RV near culvert at PCH Bridge over Topanga Lagoon

Trash was observed in light abundance (1-10 pieces) fairly regularly at Topanga Lagoon and Topanga Bridge, the two most easily accessible sites, and episodically at the other sites along Topanga Creek (Figure 6-4). Moderate (11-50) and heavy (>50) amounts of trash were observed fairly often at Topanga Lagoon, however, rarely observed in the creek. The majority of the trash observed consisted of discarded plastic, bottles and cans (Figure 6-5). Spray paint cans were routinely picked up and removed from under the Topanga Bridge and Lagoon, two places where tagging is typically observed.

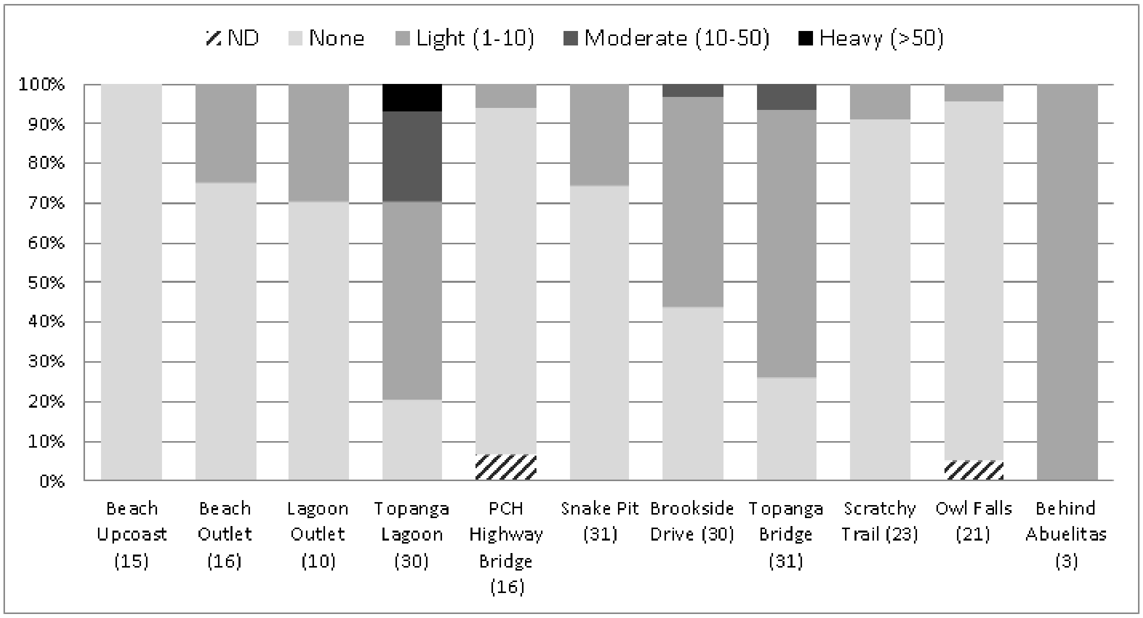

Figure 6-4 Percentage of sampling events when trash was observed and in what abundance at sampling sites along Topanga Creek, Lagoon and Beach between Dec 2012-Aug 2014. Number of dates each site was sampled is in parentheses below site name.

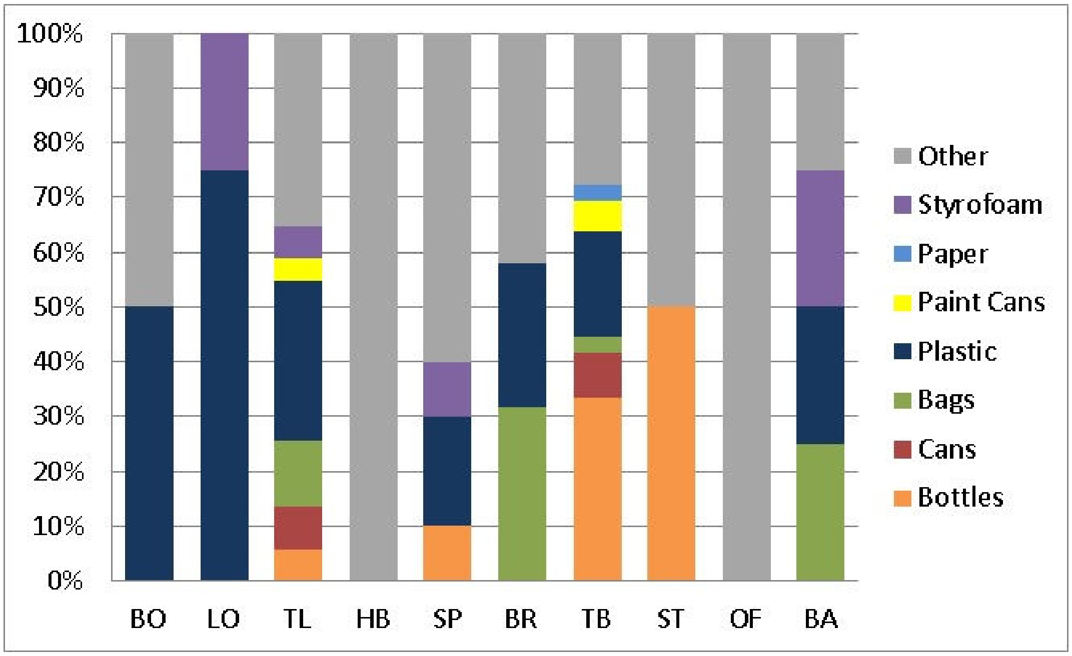

Figure 6-5 Percentage of sampling events where various types of trash were observed. Occurrences and types of trash observed during 31 sampling events from Dec 2012-August 2014.

6.3.1.3 First Flush, Flow and Depth

First flush sampling events occurred on January 24, 2013 and February 27, 2014. These were events where greater than 0.75” of rain fell during a single storm. January 24 was considered first flush for water year 2012-2013 because it had been almost two months since a considerable rainfall event. Data for these two events is presented separately from non-first flush events in the tables below.

There was very little rainfall between Dec 2012 and Aug 2014, which resulted in very low flow conditions, even during rain events (Table 6-5). In fact, the creek never recharged sufficiently to reach continuous base flow. The reach between 400-1650 m connected during a short rain event in January 2013 and late-February to early-March 2014, but otherwise flowed sub-surface with a few pools during rain events. Depth is one of the most variable parameters measured, even though we attempted to measure at the same location each time. Depth is directly related to rainfall, except in Topanga Lagoon, where depth increases when the sand berm is closed, causing a pooling effect. Compared with the flow and depth recorded in 2003-2004, levels were generally much lower (Dagit et al. 2004). For instance in 2003-2004, the lagoon had an average depth of 50 inches versus 17 during this study, and the Topanga Bridge averaged 40 inches versus 8 during this study. Additionally, a slug of sandy sediment continues to accumulate in the lagoon since 2011, and reduce overall depth (Table 6-6).

Table 6-5 Summary of flow (cfs) in Topanga Creek, Dec 2012- Aug 2014.

		First Flush (FF) Events		Non-FF Events		
Site	**Total # Dates Sampled**	**01/24/13**	**02/27/14**	**Max Flow (cfs)**	**Min Flow (cfs)**	**Mean Flow (cfs)**
SP (300 m)	30	0.27/3.54*	DRY	0.78	0.00	0.18
BR (1700 m)	21	No data	7.12	0.72	0.00	0.20
TB (3600 m)	26	4.73	3.04	0.84	0.05	0.26
ST (4800 m)	30	No data	2.76	0.69	0.03	0.18
OF (6500 m)	23	No data	2.94	0.41	0.05	0.20

*Two sets of data were taken at Snake Pit (300 m) during the first flush event on 24 Jan 2013. The first set was taken at 13:30, followed by a surge in flow and re-sampling at 14:45. Both data points are presented respectively.

Table 6-6 Summary of water depth (inches) for Topanga Lagoon and Creek sites, Dec 2012- Aug 2014.

		First Flush (FF) Events		Non-FF Events		
Site	Total # Dates Sampled	01/24/13 Depth (in)	02/27/14 Depth (in)	Max Depth (in)	Min Depth (in)	Mean Depth (in)
TL (0 m)	30	20	14	34 (02/24/13)	7	17
SP (300 m)	21	7.2/11.2*	DRY	10 (08/21/13)	3	7
BR (1700 m)	26	No data	19	20 (05/08/13)	7	13
TB (3600 m)	30	12.4	14	32 (03/06/14)	1	8
ST (4800 m)	23	No data	14	32 (12/19/13)	5	12
OF (6500 m)	21	No data	20	16 (7/31/2013)	2	8

*Two sets of data were taken at Snake Pit (300 m) during the first flush event on 24 Jan 2013. The first set was taken at 13:30, followed by a surge in flow and re-sampling at 14:45. Both data points are presented respectively.

6.3.2 *Chemical Conditions*

6.3.2.1 Water Temperature

Snapshot water temperatures taken in the early mornings using the YSI Model 55 dissolved oxygen meter varied seasonally, but average temperatures were highest in the Lagoon and Snake Pit (300 m). Although Snake Pit (300 m) is fairly well shaded, it is consistently shallow and, throughout the study period, often disconnected from the 1700 m site by an approximate 1000 m stretch through lower Topanga that ran subsurface. Average temperatures throughout the rest of the creek up to town did not vary much, but did increase slightly from lower to upper sites (Table 6-9).

Table 6-7 Summary of water temperature (ºC) in Topanga Lagoon and Creek, Dec 2012- Aug 2014.

		First Flush (FF) Events		Non-FF Events		
Site	Total # Dates Sampled	01/24/13 Temp (ºC)	02/27/14 Temp (ºC)	Max Temp (ºC)	Min Temp (ºC)	Mean Temp (ºC)
TL (0 m)	30	14.2	12.6	22.5	7.4	16.3
SP (300 m)	21	17/14.3*	DRY	17.9	11.3	15.8
BR (1700 m)	26	No data	11.2	18.9	6.0	12.7
TB (3600 m)	30	10.4	10.6	19.3	6.5	13.4
ST (4800 m)	23	No data	9.3	19.0	8.0	13.6
OF (6500 m)	21	No data	No data	19.1	8.4	13.9

*Two sets of data were taken at Snake Pit (300 m) during the first flush event on 24 Jan 2013. The first set was taken at 13:30, followed by a surge in flow and resampling at 14:45. Both data points are presented respectively.

Water temperature was also monitored in several locations throughout Topanga Creek at 30-minute intervals using Tidbit v2 temperature data loggers (Onset Hobo; Figure 6-6). Data from Ski Pole Pool, a site located at 2000 m, is shown here as it is representative of the creek and has both air and water temperature data associated with it. The endangered southern steelhead (*Oncorhynchus mykiss*) is also typically observed in this location, and monitored consistently. Despite relatively warm air temperatures, especially in Spring 2014, water temperatures in Ski Pole Pool remained below 25ºC throughout the study period. On the low end, water temperatures rarely dropped below 10ºC.

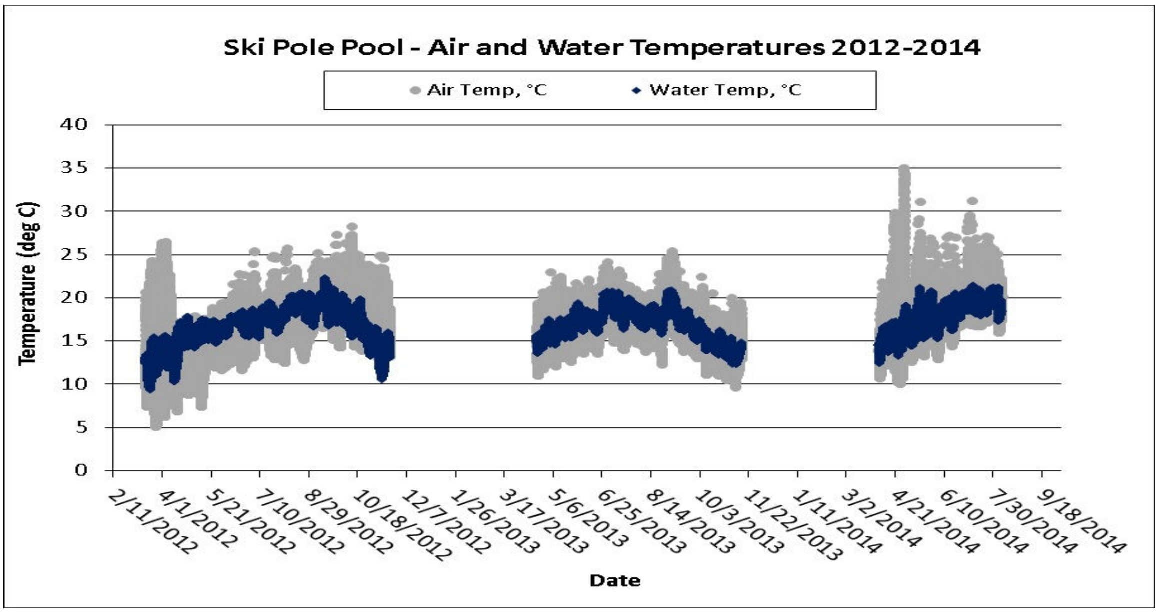

Figure 6-6 Air and water temperatures (ºC) from Onset Hobo Tidbit v2 loggers at Ski Pole Pool (2000 m). Gaps in data are from when hobos were removed during the wet season.

To date, *O. mykiss* have been observed only rarely in Topanga Lagoon and only for short periods of time when they are present. The lagoon, however, is an important habitat for endangered tidewater gobies (*Eucyclogobius newberyii*). *E. newberyii* have a wider temperature and dissolved oxygen tolerance than *O. mykiss,* and, despite the higher average temperatures in the lagoon, thrive there and approximately 200 meters upstream (RCDSMM, *unpublished data*). Water temperature was monitored in upper Topanga Lagoon (50 m above PCH bridge) at 30-minute intervals using a Tidbit v2 logger between Dec 2013 and Aug 2014. Additionally, water temperature and dissolved oxygen levels were monitored continuously using a YSI 6600 water quality probe in lower Topanga Lagoon (below PCH bridge) by Southern California Coastal Water Research Project (SCCWRP) between November 2013 and June 2014 (Figure 6-7).

Water temperatures were mostly comparable in the lower and upper lagoon except for during a period of time from April to June 2014 when temperatures were considerably higher in the lower lagoon. This could be a result of reduced water depth in the lagoon following the late-February storm and associated sedimentation accompanied by high air temperatures during that time. Dissolved oxygen levels in the lower lagoon were consistently over 6 mg/L from Nov 2013 to early Mar 2014 prior to that storm. The resulting sedimentation following the storm and perhaps a glitch in the probe caused a lapse in data from early March to April 2014. The probe appeared to start working properly again in late-April and showed variable, and generally low DO levels until the end of May. Readings then became more consistent, however remained lower than before the Feb storm. DO readings were taken throughout the creek as well during regular sampling events and are discussed further in Chapter 6, section 6.3.2.2.

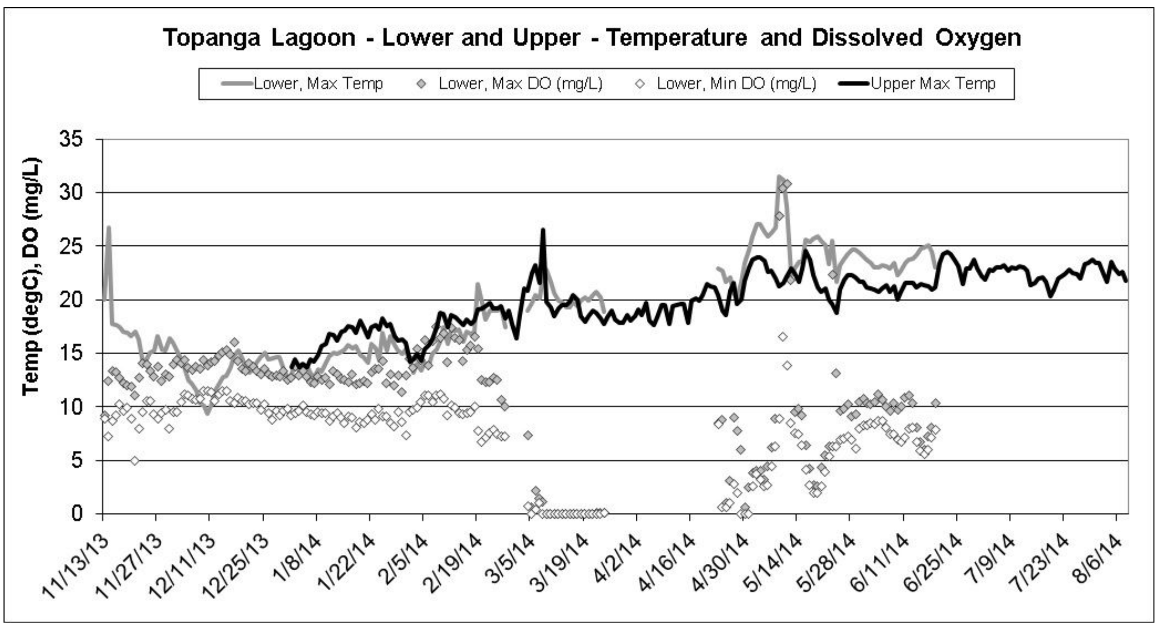

Figure 6-7 Daily maximum water temperatures (ºC), maximum and minimum dissolved oxygen (mg/L) levels of the lower (below PCH bridge) Topanga Lagoon, as well maximum temperatures in the upper (50 m above PCH bridge) Topanga Lagoon, Nov 2013 to Aug 2014. (Temperature and DO data for lower lagoon courtesy of the Southern California Coastal Water Resources Project)

6.3.2.2 <u>Dissolved Oxygen</u>

Dissolved oxygen (DO) levels naturally vary during the day, and are typically highest in the middle to late in the day when plants and algae are photosynthesizing, and lowest in the early morning, after plants and algae have been respiring throughout the night.

Samples should be representative of lowest DO levels as they are collected just before, at, or just after dawn. Every attempt was made to collect samples within the same time frame at each sampling event, thus reducing the variability related to normal diurnal fluctuations. The Los Angeles Regional Water Quality Control Plan (LARWQCB 1994 with 2011 updates) has a water quality objective of greater than 5 mg/l for any single determination in cold water, and greater than 7 mg/l for all waters, except where natural conditions cause lesser concentrations.

Snake Pit (300 m) had by far the lowest DO levels overall (Table 6-7). This site is fairly well shaded and the least variable over time (Figure 6-8), but was disconnected from the upper creek, or stagnant for much of the study period. The other site with lower levels of DO was Owl Falls (6500 m), located at the upper end of the study reach and although the minimum DO recorded was under 5 mg/L, the average was above 5 mg/L. Brookside Drive (1700 m) had the highest average DO, followed by Topanga Lagoon.

Table 6-7 Summary of dissolved oxygen (mg/L and % saturation) in Topanga Lagoon and Creek, Dec 2012- Aug 2014.
(Water Quality Objective >5 mg/L)

		First Flush (FF) Events		Non-FF Events		
Site	**Total # Dates Sampled**	**01/24/13 mg/L (%sat)**	**02/27/14 mg/L (%sat)**	**Max DO mg/L (%sat)**	**Min DO mg/L (% sat)**	**Mean DO mg/L (%sat)**
TL (0 m)	30	10.2 (100.4)	9.4 (95.0)	11.8 (127.7)	1.4 (14.2)	8.1 (85.5)
SP (300 m)	21	2.6/8.5 (83.4)*	DRY	7.0 (64.5)	2.2 (23)	4.4 (44.3)
BR (1700 m)	26	No data	10.0 (97.3)	11.2 (100.1)	5.3 (54.3)	8.2 (77.8)
TB (3600 m)	30	11.03 (99.2)	10.3 (98.7)	10.5 (92.9)	5.6 (60.9)	7.9 (75.1)
ST (4800 m)	23	No data	9.7 (93.3)	10.9 (92.3)	5.7 (52.5)	7.9 (75.6)
OF (6500 m)	21	No data	8.9 (84.0)	9.3 (81)	2.6 (20.7)	6.1 (57.5)

*Two sets of data were taken at Snake Pit (300 m) during the first flush event on 24 Jan 2013. The first set was taken at 13:30, followed by a surge in flow and resampling at 14:45. Both data points are presented respectively. % saturation data was only taken at 14:45.

6.3.2.3 pH

pH levels throughout the creek and lagoon remained fairly consistent and did not fluctuate significantly. Most aquatic species prefer a pH range between 6.5-9 in freshwater systems. Although average pH (7.6-8.2) was slightly on the alkaline side, even maximum recorded levels (7.9-8.5) remained within the tolerance limit range for most aquatic species (Table 6-8). Snake Pit (300 m) again stands out with the lowest average pH.

Table 6-8 Summary of pH in Topanga Lagoon and Creek, Dec 2012- Aug 2014.
(Water Quality Objective 6.5-9.0)

		First Flush (FF) Events		Non-FF Events		
Site	**Total # Dates Sampled**	**01/24/13 (pH)**	**02/27/14 (pH)**	**Max pH**	**Min pH**	**Mean pH**
TL (0 m)	30	8.00	8.53	8.5	7.6	8.2
SP (300 m)	21	7.37/7.94*	DRY	7.9	7.4	7.6
BR (1700 m)	26	No data	8.31	8.4	7.7	8.2
TB 3600 m)	30	8.43	8.3	8.4	7.8	8.2
ST (4800 m)	23	No data	8.4	8.5	7.5	8.2
OF (6500 m)	21	No data	8.14	8.2	7.1	7.9

*Two sets of data were taken at Snake Pit (300 m) during the first flush event on 24 January 2013. The first set was taken at 13:30, followed by a surge in flow and resampling at 14:45. Both data points are presented respectively.

6.3.2.4 Water Temperature, pH, and Dissolved Oxygen

Figure 6-8 shows water temperature, pH and dissolved oxygen for each site for the duration of study. See Appendix A for graphs with more detail. Snake Pit was dry from November through February 2014 (first flush) and started to dry up in early August again. Brookside Drive was dry for the months of September and October 2013, and August 2014.

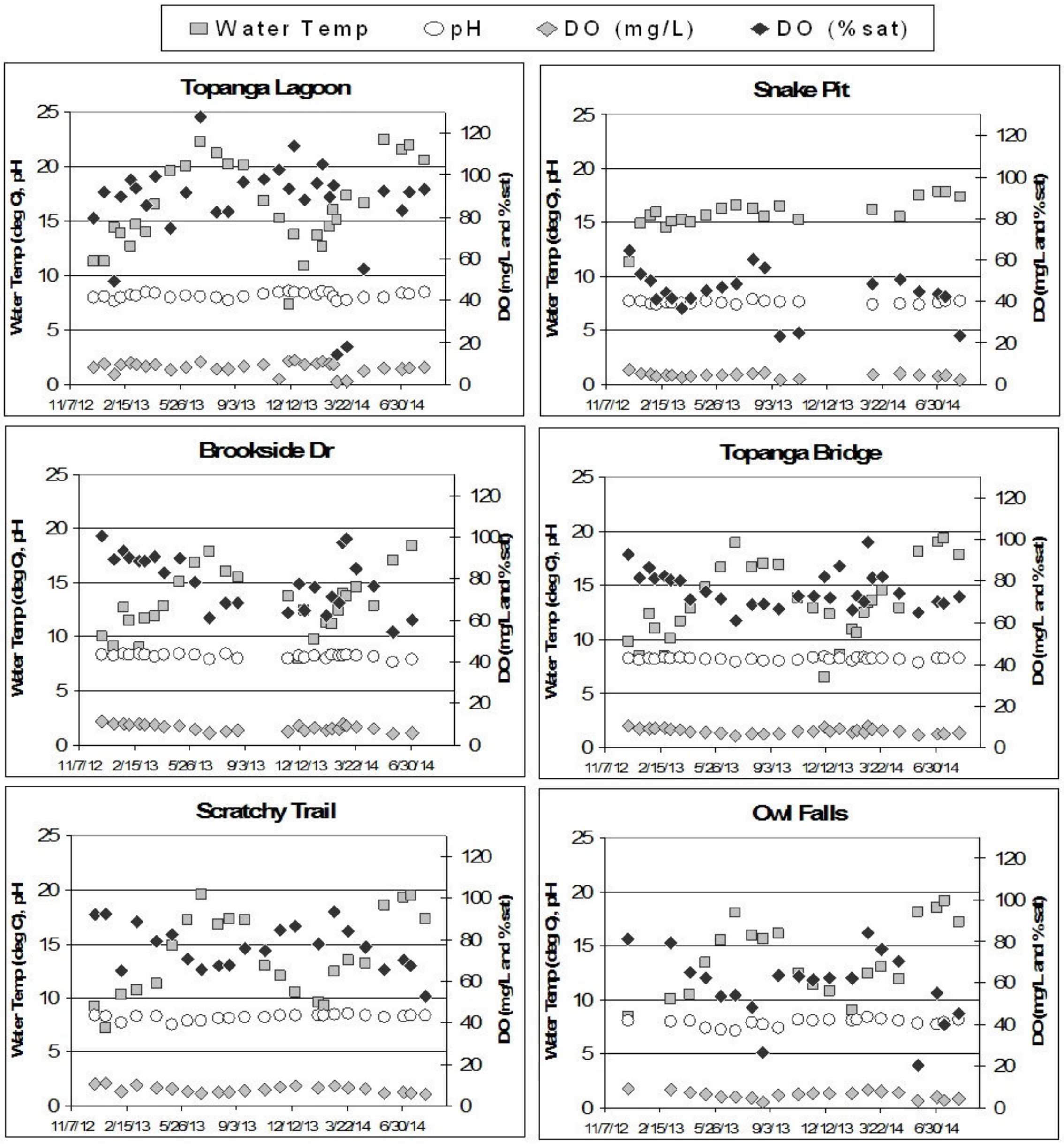

Figure 6-8 Water temperature (ºC), pH, and dissolved oxygen (mg/L, %sat) for all sites, Dec 2012-Aug 2014. (Dissolved Oxygen (DO) is on the right axis).

6.3.2.5 Salinity

Surface salinity levels in Topanga Lagoon were mostly low, with a few higher saline events observed when overwash or tidal exchange occurred (Table 6-9). Salinity levels in Topanga Creek never exceeded 3 parts per thousand (ppt), and, on average, were generally less than 1.

Table 6-9 Summary of salinity (ppt) in Topanga Lagoon and Creek, Dec 2012- Aug 2013

		First Flush (FF) Events		Non-FF Events		
Site	**Total # Dates Sampled**	**01/24/13 (ppt)**	**02/27/14 (ppt)**	**Max Salinity (ppt)**	**Min Salinity (ppt)**	**Mean Salinity (ppt)**
TL (0 m)	30	2	2	5	0	1.5
SP (300 m)	21	0.5/0.5*	DRY	3	0	0.8
BR (1700 m)	26	No data	0	2	0	0.6
TB 3600 m)	30	1	0	2	0	0.4
ST (4800 m)	23	No data	1	3	0	0.9
OF (6500 m)	21	No data	1	3	0	0.9

*Two sets of data were taken at Snake Pit (300 m) during the first flush event on 24 Jan 2013. The first set was taken at 13:30, followed by a surge in flow and resampling at 14:45. Both data points are presented respectively.

6.3.2.6 Conductivity

Perhaps related to the slightly higher salinity levels of the lagoon, conductivity was consistently higher there than throughout the rest of the creek, which remained fairly constant (Table 6-10). At standard temperatures, conductivity is a measure of the number of dissolved ions in the water, and is recorded as µS/cm (microsiemens per centimeter). Ranges are usually from 0.5-3.0 µS/cm for distilled water, with potable water ranging from 30-1500 µS/cm and seawater up to 53,000 µS/cm. No specific water quality range is included in the Water Quality Control Plan Los Angeles Region. This measurement is an indirect way to evaluate the amount of dissolved salts in the water that are conductors. In conjunction with pH and salinity, conductivity is used to evaluate inputs from groundwater sources or sewage.

Again, Snake Pit (300 m) stood out among the other creek sites, having a generally higher conductivity level than the sites further upstream. Snake Pit is located in what historically would have been part of the upper estuary, which could be contributing to the higher conductivity.

Conductivity was also measured for the ocean sites. These levels did not vary from site to site along the beach front, remaining between 46,600-53,600 µS/cm, which is typical for marine waters.

Table 6-10 Summary of Conductivity Topanga Lagoon and Creek Dec 2012- July 2013

		First Flush (FF) Events		Non-FF Events		
Site	**Total # Dates Sampled**	**01/24/13 (µS/cm)**	**02/27/14 (µS/cm)**	**Max (µS/cm)**	**Min (µS/cm)**	**Mean (µS/cm)**
TL (0 m)	30	1805	2000	10250	2000	3576
SP (300 m)	21	1789/1305*	DRY	2200	1673	1890
BR (1700 m)	26	No data	1400	1920	1290	1590
TB 3600 m)	30	1317	1210	1690	1140	1421
ST (4800 m)	23	No data	1200	2380	1200	1521
OF (6500 m)	21	No data	1210	1780	1210	1410

*Two sets of data were taken at Snake Pit (300 m) during the first flush event on 24 Jan 2013. The first was taken at 13:30, followed by a surge in flow and resampling at 14:45 (both points are presented respectively).

6.3.2.7 Nitrate–N

The nitrate levels in Topanga Lagoon and creek were consistently well below the 1 ppm threshold for concern for aquatic species (EPA 2012; Table 6-11). Only one time did nitrate-N levels exceed 1ppm, and that was at Owl Falls, the closest site to town, during a first flush event. The standard for drinking water is <10 ppm. Levels of nitrate greater than 3.5 ppm are thought to contribute to increased algal production and eutrophication in Southern California streams (Luce and Abramson 2005). Natural background readings vary depending on underlying geologic conditions, but can range from 0.0- 0.08 ppm (EPA 2012). The pending TMDL limit for Malibu Creek is <1 ppm (EPA 2012). Compared to both maximum and average levels documented at Topanga Lagoon (max=0.87, mean=0.14) and Topanga Bridge (max=0.84, mean=0.15) in 2003-2004, current levels are even lower and consistent throughout the creek and lagoon.

Table 6-11 Summary of nitrate-N (ppm) in Topanga Lagoon and Creek sites, Dec 2012- Aug 2014. Water Quality target <1 ppm.

		First Flush (FF) Events		Non-FF Events		
Site	**Total # Dates Sampled**	**01/24/13 (ppm)**	**02/27/14 (ppm)**	**Max (ppm)**	**Min (ppm)**	**Mean (ppm)**
TL (0 m)	30	0.01	0.26	0.18 (12/09/13)	0	0.02
SP (300 m)	21	0.01	DRY	0.08 (01/09/13)	0	0.01
BR (1700 m)	26	0	0.02	0.11 (01/09/13)	0	0.02
TB (3600 m)	30	0	0.19	0.25 (03/06/13)	0	0.01
ST (4800 m)	23	No data	0.14	0.07 (03/06/13)	0	0.01
OF (6500 m)	21	No data	1.14	0.21 (03/06/13)	0	0.06
Dix Creek	1	No data	0.97	-	-	-

6.3.2.8 Nitrite–N

Nitrite-N can have serious health effects for infants, and is the cause of the blue baby syndrome (EPA 2014). The tolerance levels for aquatic species are not well documented. The target for nitrite–N is 1 ppm (LARWQCB 1994 with 2011 updates). All sites within Topanga Lagoon and creek are consistently well below that threshold.

Table 6-12 Summary of nitrite-N (ppm) in Topanga Lagoon and Creek sites, Dec 2012- Aug 2014.
(Water Quality target is < 1 ppm)

		First Flush (FF) Events		Non-FF Events		
Site	**Total # Dates Sampled**	**01/24/13**	**02/27/14**	**Max (ppm)**	**Min (ppm)**	**Mean (ppm)**
TL (0 m)	30	0	0	0.05 (04/10/13)	0	0.01
SP (300 m)	21	0.03	DRY	0.17 (04/10/13)	0	0.02
BR (1700 m)	26	0.03	0	0.04 (02/06/13, 03/24/13)	0	0.01
TB (3600 m)	30	0.01	0	0.05 (02/06/13)	0	0.01
ST (4800 m)	23	No data	0	0.09 (04/10/13)	0	0.01
OF (6500 m)	21	No data	0	0.05 (04/01/13, 06/05/13)	0	0.01
Dix Creek	1	No data	0.1	-	-	-

6.3.2.9 Ammonia -N

Although the maximum levels of ammonia–N observed at Snake Pit (300 m), Brookside Drive (1700 m) and Topanga Bridge (3600 m) were somewhat high, these levels were observed in conjunction with transient and recreational activity at those locations (Table 6-13). The high average observed at Brookside Drive is difficult to explain, as transient activity there has been episodic rather than chronic, although there was an observed wet spot and associated urine smell on Topanga Canyon Boulevard near Brookside Drive where an RV was apparently emptying its waste. The most curious result was the levels of ammonia observed at Scratchy Trail (4800 m), which should have the least amount of anthropogenic input. There have been a few encampments observed upstream, but none in that vicinity. Average levels were well below the 0.4 ppm target for freshwater systems but it is curious that this is the only variable that increases as water moves downstream from town. The most common sources of ammonia –N in freshwater systems are human effluent and animal wastes. Most aquatic species are quite sensitive to increased levels of ammonia, with toxicity occurring between 1-25 ppm. The Water Quality Control Plan Los Angeles Region utilizes the EPA pH adjusted range of 2.5 – 10.5 ppm.

Table 6-13 Summary of ammonia-N (ppm) in Topanga Lagoon and Creek, Dec 2012- Aug 2014.
(Water Quality target < 0.4 ppm)

		First Flush (FF) Events		Non-FF Events		
Site	**Total # Dates Sampled**	**01/24/13**	**02/27/14**	**Max (ppm)**	**Min (ppm)**	**Mean (ppm)**
TL (0 m)	30	0.12	0.42	0.70 (02/07/14)	0	0.06
SP (300 m)	21	0.20	DRY	1.95 (12/19/12)	0	0.19
BR (1700 m)	26	0.02	0.21	3.91 (06/05/13)	0	0.27
TB (3600 m)	30	0.03	0.28	1.42 (05/08/13)	0	0.11
ST (4800 m)	23	No data	0.25	0.69 (02/07/14)	0	0.12
OF (6500 m)	21	No data	0.53	0.32 (07/15/14)	0	0.07
Dix Creek	1	No data	0.60	-	-	-

6.3.2.10 Orthophosphate

Maximum orthophosphate levels exceeded the target of 0.10 ppm for all locations throughout Topanga Lagoon and Creek at some point (Table 6-14. Average levels also exceeded the target limit at Brookside Drive (1700 m), Scratchy Trail (4800 m) and Owl Falls (6500 m). However, these levels are still under those documented at Topanga Lagoon (max=0.37, mean=0.11) and Topanga Bridge (max=0.47, mean=0.10) observed in 2003-2004 (Dagit et al. 2004). Common sources of levels exceeding 0.65 ppm in freshwater include organic elements from septic systems, graywater systems and inorganic sources like fertilizers and soaps from detergents. Natural readings range from 0.0-0.65 ppm. The higher levels at Owl Falls make sense, as this site is closest to human inputs such as graywater. The levels at Brookside Drive and Topanga Bridge appear related to transient activity, but the level at the more remote Scratchy Trail is unclear. It is possible that the orthophosphate is dissipating and being diluted as it moves downstream from Owl Falls, but incompletely.

Table 6-14 Summary of orthophosphate (ppm) in Topanga Lagoon and Creek, Dec 2012- Aug 2014.
(Water Quality target is < 0.10 ppm)

		First Flush (FF) Events		Non-FF Events		
Site	**Total # Dates Sampled**	**01/24/13**	**02/27/14**	**Max (ppm)**	**Min (ppm)**	**Mean (ppm)**
TL (0 m)	30	0.16	0.37	0.93 (3/6/14)	0.00	0.07
SP (300 m)	21	0.10	DRY	0.22 (9/18/13)	0.02	0.08
BR (1700 m)	26	0.04	0.27	0.51 (05/08/13)	0.02	0.09
TB (3600 m)	30	0.06	0.19	0.20 (7/2/14)	0.01	0.07
ST (4800 m)	23	No data	0.32	0.30 (7/31/13)	0.02	0.13
OF (6500 m)	21	No data	0.87	0.49 (1/29/14)	0.00	0.19
Dix Creek	1	No data	0.83	-	-	-

6.3.2.11 Turbidity

The amount of suspended particles, phytoplankton, pollutants, and other materials is measured as turbidity. Not only does turbidity affect water clarity, it can also increase heat absorption and impair breathing and foraging of aquatic animal species (Yamamoto 2010). Other than a few incidents of high turbidity observed at Topanga Lagoon and Owl Falls (6500 m), most of the sites in Topanga creek are below the drinking water standard of 5 NTU (Table 6-15). However, as the summer progressed in 2013 and 2014, visibility in the mid-upper reaches of the creek between Topanga Bridge (3600 m) and Owl Falls (6500 m) decreased markedly. These locations are also where there has been an explosive population increase of introduced red swamp crayfish. Turbidity levels at Topanga Lagoon (max = 44.7 NTU, mean = 2.53 NTU) and Topanga Bridge (max = 35.6 NTU, mean = 1.53 NTU) were significantly higher in 2003-2004 than they are today. The higher NTU levels at Scratchy Trail (4800 m) could well be a result of crayfish disturbance, as this site is small, confined and full of crayfish.

The Los Angeles Region Basin Plan objective for turbidity is a mix of numeric and narrative: "The secondary drinking water standard for turbidity is 5 NTU. Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Increases in natural turbidity attributable to controllable water quality factors shall not exceed the following: where natural turbidity is between 0 and 50 NTU, increases shall not exceed 20%; where natural turbidity is greater than 50 NTU, increases shall not exceed 10%."

Table 6-15 Summary of Turbidity (NTU) in Topanga Lagoon and Creek, Dec 2012- Aug 2014. Drinking water standard is less than 5 NTU.

		First Flush (FF) Events		Non-FF Events		
Site	**Total # Dates Sampled**	**01/24/13**	**02/27/14**	**Max (ppm)**	**Min (ppm)**	**Mean (ppm)**
TL (0 m)	30	0.36	35.1	10.31 (03/24/14)	0.13	2.86
SP (300 m)	21	0	DRY	9.69 (08/11/14)	0	1.41
BR (1700 m)	26	0	29.3	2.02 (05/29/14)	0	0.37
TB (3600 m)	30	0.06	18.1	2.31 (03/06/13)	0	0.57
ST (4800 m)	23	No data	38.2	4.63 (07/31/13)	0.13	1.15
OF (6500 m)	21	No data	12	5.14 (03/06/13)	0.17	0.92
Dix Creek	1	No data	18.6	-	-	-

6.3.3 Biological Conditions

6.3.3.1 Nutrients and algae among sites

Figure 6-9 shows all nutrient and algae levels at all sites throughout the study period (see Appendix A for more details). Levels of all nutrients and algae were generally low with only a few spikes at during first flush events. Some nutrients, especially orthophosphates were above the water quality objective for several of the sites.

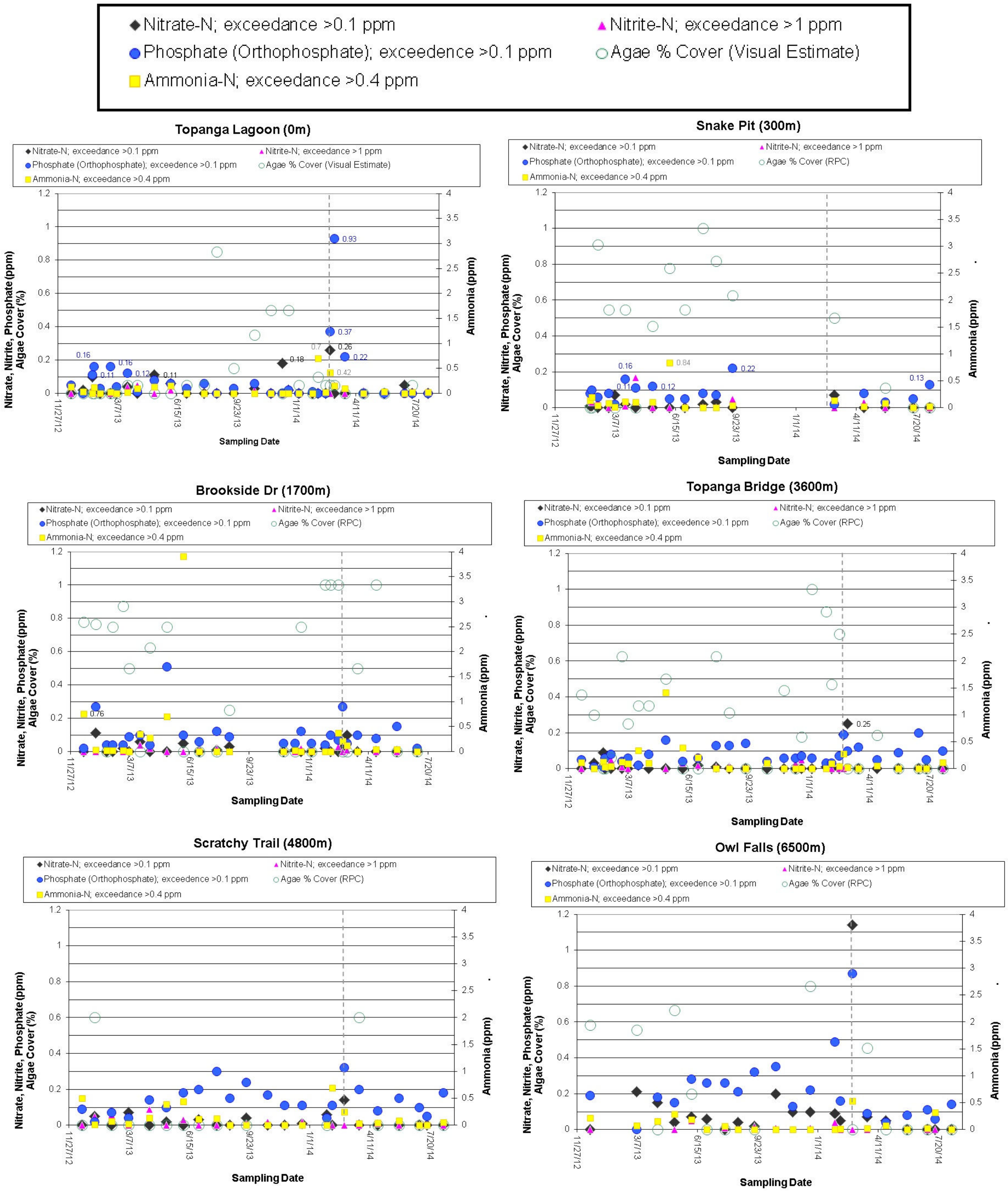

Figure 6-9 Nutrients and algae at all sites, Dec 2012-Aug 2014.

6.3.3.2 Algae

In order to track the presence and abundance of algae in the lagoon and creek over time, two types of algae data were taken during each sampling event – a visual estimate of percent cover and random point contact method data concurrently with flow and depth. Algal types and percent cover were surveyed at creek sites (Snake Pit (300 m), Brookside Drive (1700 m), Topanga Bridge (3600 m), Scratchy Trail (4800 m), Owl Falls (6500 m)) during each sampling date using the RPC method. Using the same transect where flow was measured, random points were generated, and presence/absence and type of algae was recorded at each point. If algae were present, the type of algae was recorded. *Cladophora* sp. and *Enteromorpha* sp. were the only species of algae observed in Topanga Creek during this sampling period. If an alga was observed, but the type was not known, it was recorded as "other" or "unknown." Voucher specimens of unknown algae were collected for future identification. If algae were absent from the point, the substrate was recorded as bare substrate (sand, pebble, cobble, rock, boulder was noted), biological debris (leaves, sticks), aquatic or terrestrial plants (if type was known, it was recorded), or diatoms.

For Topanga Lagoon, percent cover of algae was visually estimated for the lagoon as a whole, with the observations generally made from the bank above or from the east bank, which provided a good view of the whole lagoon area south of the PCH bridge.

Table 6-16 outlines the types of algae observed in Topanga Lagoon and creek from December 2012 to August 2014. *Macrocystis* was observed floating (unattached) in Topanga Lagoon, especially following high tide/overwash or breach events. *Cladophora* sp. was observed in Topanga Lagoon occasionally as well. *Cladophora sp*. was also observed at Snake Pit, Topanga Bridge and Owl Falls. *Enteromorpha sp*. was observed at Owl Falls and Snake Pit.

Table 6-16 Algal species observed in Topanga Lagoon and Creek during sampling events December 2012 to August 2014.

	ALGAE TYPE		
Location	*Cladophora* sp.	*Enteromorpha* sp.	*Macrocystis pyrifera*
Topanga Lagoon	X		X
Topanga Creek	X	X	

In general, the percent cover of algae was low (<20%) for all sampling dates and all sites (see Figure 6-10). Snake Pit (300 m) had the highest percent cover of algae recorded, 78% cover of *Enteromorpha* sp. on June 5, 2013. This could be contributing to the low dissolved oxygen levels at this location. Brookside Drive (1700 m) had the lowest percent cover of algae, with no algae recorded during any sampling event. The substrate at

Brookside Drive (1700 m), however, was covered with a layer of diatoms almost 40% of the time.

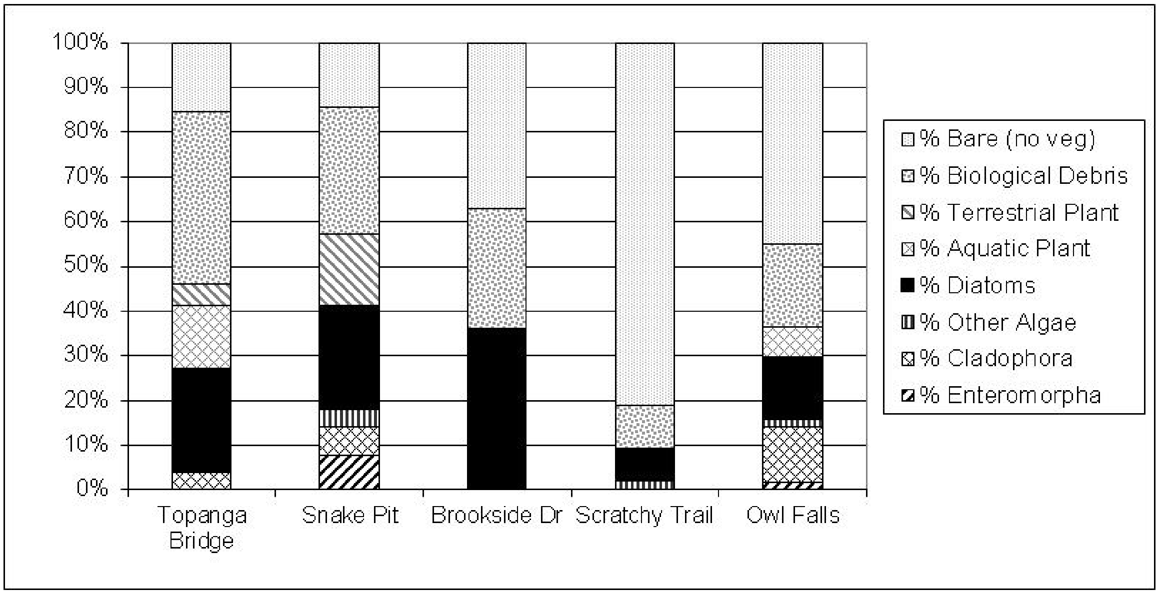

Figure 6-10 Summary of the percent cover of algae and other substrate types at each site Dec 2012-Aug 2014.

On average, Snake Pit (300 m) had about 18% cover algae, Brookside Drive (1700 m) had 0%, Topanga Bridge (3600 m) had less than 5%, Scratchy Trail (4800 m) had 3.2%, and Owl Falls (6500 m) had slightly less than 18%. Owl Falls (6500 m) is the site closest to the town of Topanga, and Snake Pit (300 m) and Topanga Bridge (3600 m) are also sites that are frequented by humans, and potentially dogs or other animals.

6.3.4 Stream continuum and spatial correlations between nutrients and FIB

It was hypothesized that natural processes are removing anthropogenic inputs from the water in the creek as it flows from town to the lagoon; therefore we looked at nutrient levels from Owl Falls (OF), the site closest to town, to the lagoon (Figure 6-11). Nitrate and orthophosphate were the highest at Owl Falls. Nitrate levels dropped dramatically from Owl Falls to Scratchy Trail (4800 m), and stayed at about the same level to the Lagoon (TL), where it increased. Orthophosphate levels dropped as well between Owl Falls and Scratchy Trail, and continue to drop further downstream at Topanga Bridge (TB, 3600 m), go back up again at Brookside Drive (BR, 1700 m), and drop again to TL. Nitrite levels were generally low throughout the creek, with the highest average of 0.017 ppm at Snake Pit (300 m). Ammonia was highest at BR, and dropped downstream of there. At sites above BR, ammonia levels were lower than at BR and SP, and OF and TL had the lowest overall ammonia levels.

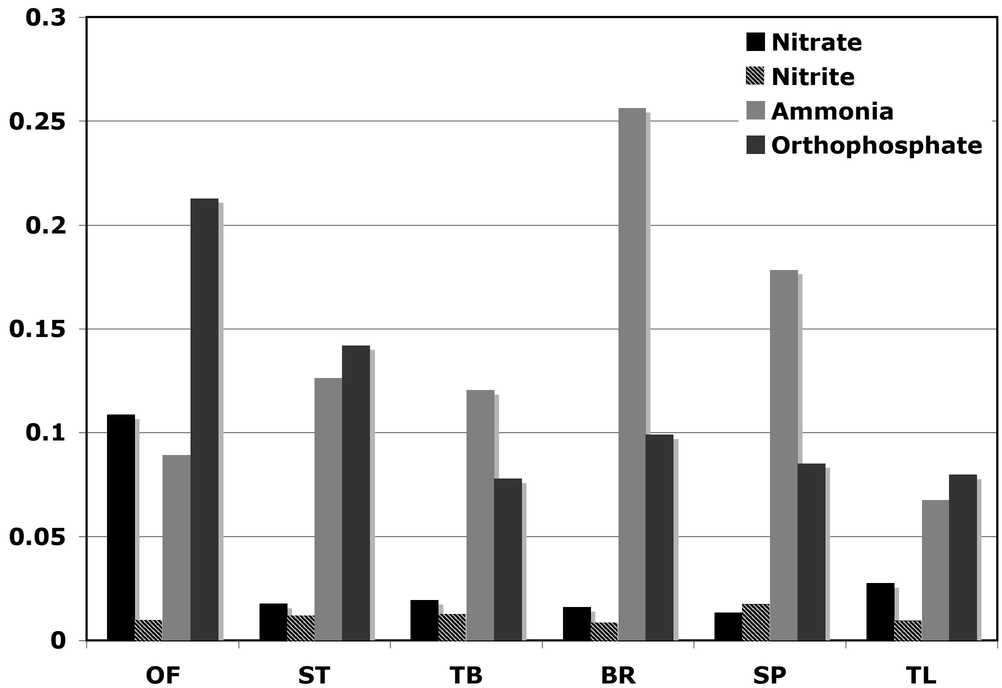

Figure 6-11 Average nutrient levels at each site, from the site closest to town (Owl Falls, 6500 m) to the lagoon, Dec 2012-Aug 2014.

A total of 17 variables were analyzed including FIB, physical and chemical parameters across all sites. This analysis showed a fairly high correlation between nitrate and enterococcus (Pearson's r correlation coefficient = 0.83), and a slight correlation between orthophosphate and enterococcus (0.58) and nitrate (0.60). When analyzed by site (Appendix A), FIB was frequently correlated with orthophosphate, turbidity, flow, nitrate and orthophosphate depending on the site. Many of the FIB values correlated highly (>0.95) with flow and turbidity, especially at the upstream sites. Furthermore, the number of correlated variables decreased from upstream to downstream, especially Owl Falls, where flow, turbidity, orthophosphate, nitrate, ammonia, and all three FIB values are highly correlated (Table 6-17).

Summary of variables with correlation coefficients greater than ±0.70 of the 17 variables analyzed for each site. Coefficient values r>0.9 are highlighted.

Table 6-17 Summary of variables with correlation coefficients greater than ±0.70 of the 17 variables analyzed for each site. Coefficient values r>0.9 are highlighted.

Site	Variable 1	Variable 2	Pearson's r
TL (0 m)	turbidity	phosphate	0.74
SP (300 m)	EC	TC	0.79
	DO mg/L	turbidity	0.87
	DO %	turbidity	0.82
	conductivity	turbidity	0.75
	conductivity	temp	0.71
	Depth	DO mg/L	0.78
BR (1700 m)	ENT	EC	
	turbidity	EC	0.96
	"	ENT	0.76
	flow	EC	0.96
	"	turbidity	0.99
TB (3600 m)	EC	TC	0.74
	ENT	TC	0.79
	turbidity	TC	0.61
	depth	nitrate	0.76
	depth	turbidity	0.79
	DO	flow	0.71
ST (4800 m)	phosphate	TC	0.77
	turbidity	TC	0.81
	"	EC	0.99
	"	EN	0.99
	"	nitrate	0.74
	flow	EC	0.96
	"	ENT	0.94
	"	nitrate	0.73
	"	turbidity	0.97
OF (6500 m)	ENT	EC	0.99
	nitrate	EC	0.96
	"	ENT	0.96
	ammonia	EC	0.72
	phosphate	TC	0.71
	"	EC	0.79
	"	ENT	0.79
	"	nitrate	0.78
	turbidity	TC	0.75
	"	EC	0.91
	"	ENT	0.90
	"	nitrate	0.95
	flow	TC	0.74
	"	EC	0.98
	"	ENT	0.98
	"	nitrate	0.97
	"	phosphate	0.76
	"	turbidity	0.93

In order to determine whether there were relationships among sites, we tested for correlations between nutrients, FIB, water temperature and dissolved oxygen. Raw data was averaged over time for each site, and mean site data were compared using regression analyses. Only three pairs of variables were significantly spatially correlated. *E. coli* and ammonia were positively correlated (R^2=0.65, P=0.002, df=11), such that, on average, sites with high levels of *E. coli* also had high levels of ammonia. Enterococcus and ammonia were also positively correlated (R^2=0.50, P=0.01, df=11), and nitrite and dissolved oxygen were marginally significantly correlated in a negative direction (R^2=0.60, P=0.07, df=5), such that sites with high levels of nitrite, on average, had low levels of dissolved oxygen.

6.4 QA/QC Protocols

This section is an overview of the quality assurance/quality control measures taken to assure quality data is being collected as well as disseminated. See Appendix G. for the complete Topanga Source ID Study Quality Assurance/Quality Control Plan (April 2013) which provides all details and was reviewed and approved by the TAC. QA/QC includes measures to ensure the accuracy, precision and completeness of all data collected. These standards of practice were implemented throughout the study.

6.4.1 Accuracy and Precision

a. Equipment Calibration

In-situ water quality testing equipment (YSI 55 DO meters, Oakton pH meters, Oakton conductivity meters, and refractometers) were calibrated before each sampling event. The membranes and solution in the DO meters were checked as well and replaced as needed.

b. Training

A training was held at the beginning of the study in December 2012, as well as June and October 2013 to teach all scientists and volunteers how to use, calibrate and maintain the water quality testing equipment, as well as how to properly collect nutrient, bacteria samples, flow and algae data. New scientists and volunteers that did not attend the training were always partnered with experienced people to avoid collecting inaccurate data. Refer to Appendix G for more information on training requirements.

c. Chain of custody and Data sheets

Data sheets and Chain of custody (COC) forms were used to document sample collection, processing, and storage. Lab notebooks were used to document PCR/qPCR analyses.

Although this data is not being used in a regulatory setting, documenting who has physical control of each sample at ALL TIMES was a standard operating procedure. The name and times need to be correct for each step of the process.

Time and Name of person who collected the sample
Time and Name of the person who transports the sample to the lab/RCDSMM
Time and Name of the person who fixes or manipulates the sample for testing
Time and Name of the person who reads the results
Time and Name of the person who enters the data
Time and temperature of ice chest where samples being stored prior to fixing.

All COC forms were compiled in both an electronic and hard copy file at the RCDSMM. All field data forms are also archived at the RCDSMM in chronological order. See Appendix G for samples of data sheets and forms, and for more information on documentation and record keeping.

d. Data Management

Data was entered into an excel spreadsheet as soon as possible following each collection event, and as of July 2013, linked to an access database. Having the data in an access database made it easy to export tables and summary results, which were then used to make graphs or figures. The data transfer from excel to access was checked by one person to verify accurate data was transferred. In the field, data sheets were checked by the lead scientists immediately following data collection, and data entry was checked again when making graphs or tables (can check for outliers).

Furthermore, the Project Manager/Principal Investigator reviewed and validated data against the Project's defined objectives and standard operating procedures in summer 2013, and prior to preparing the final report. If any problems with sampling and analysis were identified, these issues were addressed immediately and methods modified to ensure that data quality objectives are being met. Modifications to monitoring require edits to the approved QA/QC Plan. Only data that have been validated and qualified, as necessary, were entered into the applicable database.

e. Completeness

Since different sites had different sampling events and effort (Tables 6-18 to 6-20) summarizes what type of data was collected for each sampling site (for Beach Upcoast (BU), there were a total of 12 dates where FIB and marker data was collected, some water quality information (temperature, salinity/conductivity) but not nutrients).

Table 6-18 Summary of Sampling Site Completeness for FIB and markers.

Site Name	Total Possible Dates	Total TC/EC/ENT	Total HF gene marker	Total BH gene marker	Total Gull marker	Total Dog marker	Missing Data Points/ Total	% Complete
Beach Upcoast (BU)	38	37/37/ 38	4	5	28	27	90/266	66.2%
Beach Outlet (BO)	48	46/46/ 48	8	8	39	34	107/336	68.2%
Lifeguard Station Beach (LG)	28	27/27/ 28	3	0	22	15	74/196	62.2%
Lagoon Outlet (LO)	18	18/18/ 18	5	6	18	15	28/126	77.8%
Topanga Lagoon (TL)	44	43/43/ 44	8	13	41	28	88/308	71.4%
PCH Bridge (0 m) (HB)	40	38/38/ 39	3	6	33	23	100/ 280	64.3%
Lifeguard Station Septic (LS)	9	9/9/9	8	8	0	1	19/63	69.8%
Snake Pit 300 m (SP)	*32	32/32/ 32	0	3	5	6	114/224	49.1%
Brookside Drive 1700 m (BR)	**28	28/28/ 28	2	2	2	3	103/196	47.4%
Topanga Bridge 3600 m (TB)	38	37/37/ 37	4	6	6	6	127/266	52.3%
SIPP SITES								
Scratchy Trail 4800 m (ST)	24	24/24/ 24	3	1	1	1	90/168	46.4%
Owl Falls 6500 m (OF)	26	26/26/ 26	13	8	1	7	75/182	58.8%
Falls Drive (FD)	2	2/2/2	1	1	0	0	6/14	57.1%
Behind Abuelita's (BA)	9	7/7/9	2	3	0	1	34/63	46.0%

*SP dry during 9 sampling events: 11/20,13, 12/9/13, 12/19/13, 1/6/14, 1/29/14, 2/7/14, 2/20/14, 2/27/14, 3/24/14. (2/7/24 was first flush).

**BR dry during 4 sampling events: 9/18/13, 10/23/13, 7/15/14, 8/11/14.

Table 6-19 Summary of Sampling Site Completeness for In-situ data, 12/19/12-08/11/14

Site Name	Total Possible Dates	Total Water Temp	Total Salinity	Total DO (mg/L)	Total pH	Total conductivity	Missing Data Points/ Total	% Completeness
Topanga Lagoon (TL)	30	30	30	30	30	29 (07/31/13)	1/150	99.3%
Snake Pit 300 m (SP)	*21	21	21	21	21	21	0/105	100%
Brookside Drive 1700 m (BR)	**26	26	26	26	26	26	0/130	100%
Topanga Bridge 3600 m (TB)	30	30	30	30	30	30	0/150	100%
SIPP SITES								
Scratchy Trail 4800 m (ST)	23	23	22 (05/08/13)	22 (02/07/14)	23	23	2/115	98.3%
Owl Falls 6500 m (OF)	21	20 (02/07/14)	20 (05/08/13)	20 (02/07/14)	21	21	3/105	97.1%
Falls Drive (FD)	1	1	1	1	1	1	0/5	100%
Behind Abuelita's (BA)	3	3	3	3	3	2 (02/06/13)	1/15	93.3%

*SP dry during 9 sampling events: 11/20,13, 12/9/13, 12/19/13, 1/6/14, 1/29/14, 2/7/14, 2/20/14, 2/27/14, 3/24/14. (2/7/24 was first flush).
**BR dry during 4 sampling events: 9/18/13, 10/23/13, 7/15/14, 8/11/14.

Table 6-20 Summary of Sampling Site Completeness for Nutrient and Turbidity data, 12/19/12-08/11/14.

Site Name	Total Possible Sampling Dates	Total nitrate-N	Total nitrite-N	Total ammonia-N	Total orthophosphate	Total turbidity	Missing Data Points/ Total	% Complete
Topanga Lagoon (TL)	30	30	30	30	30	28 (12/19/12, 03/24/13)	2/150	98.7%
Snake Pit 300 m (SP)	*21	21	21	21	21	19 (12/19/12, 03/24/13)	2/105	98.1%
Brookside Drive 1700 m (BR)	**26	26	26	26	26	25 (12/19/12)	1/130	99.2%
Topanga Bridge 3600 m (TB)	30	30	30	30	30	29 (12/19/12	1/150	99.3%
SIPP SITES								
Scratchy Trail 4800 m (ST)	23	23	23	23	23	22 (12/19/12	1/115	99.1%
Owl Falls 6500 m (OF)	21	21	21	21	21	20 (12/19/12)	1/105	99.0%
Falls Drive (FD)	1	1	1	1	1	1	0/5	100%
Behind Abuelita's (BA)	3	3	3	3	3	3	0/15	100%

*SP dry during 9 sampling events: 11/20,13, 12/9/13, 12/19/13, 1/6/14, 1/29/14, 2/7/14, 2/20/14, 2/27/14, 3/24/14. (2/7/24 was first flush).
**BR dry during 4 sampling events: 9/18/13, 10/23/13, 7/15/14, 8/11/14

6.5 Discussion

Nitrate-N, nitrite-N, ammonia-N, and orthophosphate are all generally associated with anthropogenic inputs into aquatic systems and are directly related to amount of algal growth and potential eutrophication cycles. Observations during this study indicate that while levels of ammonia and orthophosphate are a concern associated with septic, graywater, transient and recreational impacts, overall nutrient loading continues to be low overall. This is consistent with previous study results for the lower reaches of the creek below town (Dagit et al. 2004).

The impact of recreational visitors and transient encampments, as well as potential inputs from illegal marijuana farms seems correlated to the spikes we see of ammonia and orthophosphate. The potential for a marijuana farm in this area is high. Transient activity and RV dumping appears to contribute greatly to the water quality issues in Topanga Creek. For several months during snorkel surveys and water quality monitoring events, a wet spot was observed in the pullout along Topanga Canyon Boulevard near Brookside Drive (1700 m). The wet spot was associated with a strong urine smell. Brookside Drive had the highest levels of ammonia followed by Snake Pit. Snake Pit is an area close to the PCH, which also gets a lot of transient activity, and so the high levels at this site could be due to that.

Overall, our initial hypothesis that nutrient levels decreased downstream from the town and upper watershed appears to be true for some nutrients but not all. Nitrate and orthophosphate are highest at the site closest to town (OF) and then drop, fairly dramatically at the next site, approximately 1700 m downstream (ST). Nitrite and ammonia are higher at ST than OF, although only slightly and levels of those two nutrients jumps around through the rest of the creek. The high levels of ammonia at Brookside Drive (BR) could be attributed to the RV dumping of urine waste along a nearby Topanga Canyon Blvd. pullout. Further monitoring and patrolling of this site along Topanga Canyon Blvd. could potentially solve the high ammonia levels at this site.

Algae cover, in general, was very low throughout the study period with two common species primarily found. This is another indication that eutrophication did not appear to be an issue during this study period. Rainfall was extremely low throughout the study period as well. It's possible that with more rainfall, and more runoff from town, eutrophication and algae blooms could be a problem in Topanga Creek, and therefore, runoff from town and overall watershed management should not be ignored as a potential issue.

Standards for pollutants of concern have been established in the Basin Plan (LARWQCB 1994 with 2011 updates) and through the California Toxics Rule (CTR) (EPA 2000), with the goal of ultimately setting Total Maximum Daily Loads (TMDL's) for each of these parameters in order to achieve compliance to all standards. The Basin Plan generally establishes a numeric and/or narrative objective for conventional pollutants and minerals, while the CTR has objectives for metals and organics. The 303(d) list identifies the parameters for which each watershed is impaired. Topanga Creek has been listed for lead in the upper watershed and bacteria at Topanga Beach. No other pollutants of concern have been listed for the watershed.

However, levels of nutrients, pathogens, sediments, trash and heavy metals are all potential problems in every watershed. The studies in Topanga Lagoon and creek have directed sampling to identify if any of these parameters are currently a concern and if so, to identify potential sources and trends of exceedance.

The Basin Plan also identifies the beneficial use of water quality objectives, which are summarized below for Topanga Lagoon and creek (Table 6-21). Although there have been some exceedances for FIB, the nutrient, water temperature and dissolved oxygen levels are all within the water quality objective ranges.

Table 6-21 Beneficial uses and pollutants of concern for Topanga Lagoon and creek, Los Angeles Regional Water Quality Control 1994.

Parameter	**Beneficial Use Water Quality Objective or Definition**	**Topanga Lagoon Results**	**Topanga Creek Results**
Navigation		NA	NA
REC 1 (Water contact recreation)	Fecal coliform shall not exceed a single sample limit of 400 MPN/ 100 mL	Exceedances	Exceedances
REC 2 (Non-water contact recreation)	Fecal coliform shall not exceed a single sample limit of 400 MPN/ 100 mL	Exceedances	Exceedances
Warm Water	Remain < 80^0F, raise no more than 5^0F above normal	No exceedances	No exceedances
Cold Water	Not be altered more than 5^0F above normal	No exceedances	No exceedances
Estuary	Uses of water that support, preserve or enhance estuarine habitats	Limited function	NA
Rare	Uses that support habitats necessary for state or federally listed species	Supports endangered Tidewater gobies	Supports several state and federally listed aquatic species
Migratory	Uses supporting anadromous fish	Limited function	Limited function, Passage opportunities limited
Spawning	Uses supporting high quality habitat for reproduction and early development of fish	Passage opportunities limited	Functional areas limited in lower reach of creek
Wetlands	Uses that support preservation, enhancement of wetland habitats	Limited function	NA

When we compare the levels of nitrates, nitrites, orthophosphates and ammonia observed in Topanga Creek with those found in other creeks within the Santa Monica Mountains, including both Malibu Creek, and reference sites such as Arroyo Sequit, Solstice and Cold Creeks, it appears that Topanga remains in fairly good shape. The levels of nutrients measured in Topanga Creek are significantly lower than those found at the mouth of Malibu Creek (Table 6-22).

Table 6-22 Comparison of Water Quality Parameters from Creeks in the North Santa Monica Bay December 2012- July 2013.

Site	Average Water Temp	Average Dissolved Oxygen	Average pH	Average nitrate-N	Average nitrite -N	Average ammonia-N	Average ortho-phosphates
WQ Target Guideline	**<26^{o}C**	**>5 mg/l**	**6.5-9**	**<1 ppm**	**<1 ppm**	**0.4 ppm (pH adjusted)**	**<0.10 ppm**
Topanga Lagoon (n=13)	16	8.7 (90%)	7.7	0.03	0.02	0.06	0.07
Topanga Bridge (n=13)	12	8.5 (79%)	7.9	0.01	0.02	0.22	0.06
Arroyo Sequit * (HTB-19) (n= 9)	14	8.05	7.7	0.01		0.16	0.15
Solstice Creek* (HTB-14) (n= 9)	15	8.55	7.7	0.07		0.06	0.12
Cold Creek* (HTB-3) (n= 9)	13	8.79	7.8	0.05		0.25	0.12
Malibu Creek* (HTB-1) (n=9)	16	9.38	7.9	1.03		0.09	1.83

Numbers highlighted in yellow indicate exceedance of water quality target. First flush rain events excluded.
*Data courtesy of Heal the Bay Stream Team

6.6 Summary

- Nutrient and algae levels were, in general, low throughout the study period, with only occasional exceedances. Orthophosphates were frequently in exceedance at Owl Falls and Scratchy Trail.
- In-situ parameters (water temperature, dissolved oxygen, pH, conductivity, salinity) were, in general, within the standard ranges for wildlife.
- Rainfall was below normal for both years the study took place, and significant rain events were few and far between. Therefore, flow was consistently low throughout the study period as well.
- On average, nitrate and orthophosphate levels decrease from Owl Falls (OF, 6500 m; the site closest to town) downstream, especially between OF and ST (4800 m)
- On average, Brookside Drive (BR, 1700 m) had the highest levels of ammonia

- Further patrolling of the state park for transient and RV dumping activity could help with any exceedances in the creek, similar to the fact that further enforcement of the no-dogs-allowed-on-beach rule could probably help with the FIB issues at the beach/lagoon.

6.7 References Cited

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7 Physical Habitat Assessment Results

7.1 Introduction

Physical habitat data was collected as part of the Surface Water Ambient Monitoring Program (SWAMP) Bioassessment Procedures (Ode 2007) to quantify physical and chemical characteristics of stream habitat associated with concurrent benthic macroinvertebrate, diatom and soft-body algae collection (Herbst and Silldorff 2006, Ode et al. 2005). The protocol allows for repeatable data collection measures in order to obtain quantitative data on a stream's physical/habitat condition and benthic invertebrate assemblages. It also allows for comparison of stream conditions throughout the state of California.

For the purpose of this report, we have presented the physical habitat data as a separate section, although the information is relevant to the analysis and discussion of the benthic macroinvertebrates (Chapter 9), diatoms and soft-body algae (Chapter 11), and most importantly, to the examination of the trophic level interactions associated with the trophic level analysis of Topanga (Chapter 12).

7.2 Methods

Data Collection

Physical habitat data was collected in Topanga Creek on 30 April 2013 (Upper Topanga: 4500-4650m; 34º04.314 118º35.213) and 2 May 2013 (Lower Topanga: 3200-3350m; 34º03.685 118º35.123) as part of the SWAMP Bioassessment protocol. Data was also collected in Upper Topanga on 6 May 2014 and in Lower Topanga on 5 May 2014. This data was collected for each of the 150 meter reaches where sampling for benthic macro-invertebrates, diatoms, soft-body algae, and chlorophyll a were also collected. The presence, life-stage and abundance of all amphibians, reptiles, and fish were noted throughout a 500 meter reach (3200-3700m and 4500-5000m) which has been surveyed since 2000.

For each location, 21 main transects were placed systematically along a 150 meter reach of the creek. Eleven transects were placed 15 meters apart perpendicular to the direction of flow. Ten additional inter-transects were placed equidistant between each of the main transects. Prior to collecting transect data, ambient water chemistry measurements (pH, dissolved oxygen (mg/L and % sat), specific conductivity (µS/cm), water temperature (ºC), air temperature (ºC), and salinity (ppt) were taken. Alkalinity and hardness were measured using test strips in 2013. In addition, water samples were collected for later analysis of turbidity (NTU) with the LaMotte Turbidimeter 2020, nutrients were tested using the LaMotte Smart3 Colorimeter, and fecal indicator bacteria were processed according to standard protocol. Flow (cfs) was measured using a Marsh-McBirney Flowmate 3000.

After benthic macroinvertebrates, diatoms and soft-body algae were collected at each of the 11 main transects using the reachwide benthos (RWB) procedure, the following habitat data was collected for each transect: wetted width (m), depth (cm), bankfull width (m), bankfull height (cm), canopy cover (measured using a convex spherical densiometer), and transect substrate measurements (below). Visual estimates were used to collect data on riparian vegetation, human influence, instream habitat complexity, and bank stability.

The transect substrate measurements quantify particle size frequency distribution, which provides valuable data on stream habitat conditions that can affect benthic macroinvertebrate distribution. As part of this, the Wolman pebble count technique (Wolman 1954) was employed. If the particle was cobble-sized, the percent embeddedness was recorded. Additional cobble particles were used to estimate the percent embeddedness if too few cobbles were found along transects. The presence of course particulate organic matter (CPOM), algae and macrophytes was also recorded as part of the transect substrate data.

For each of the ten inter-transects, wetted width, depth, transect substrate measurements, and visual estimates of in-stream channel type were also collected. Inter-transect gradient was not directly measured, but inferred for the whole reach based on previously collected gradient data.

Data Analysis

Data was entered into Microsoft Excel for further analysis. Summary tables were generated to show the results for physical habitat characteristics, water quality, canopy cover and substrate composition.

For instream habitat complexity, the cover values (from 1 to 5) for nine different channel features along each transect were tabulated for each reach. To get an indication of how much each feature contributed to overall instream complexity for each reach, the frequency of occurrence was calculated as the number of transects with at least sparse cover (>1)/total possible (n = 11 transects). The resulting frequencies for both reaches were represented graphically.

To characterize the riparian vegetation along the length of each reach, the proportion of each of four cover values (0=absent, 1=sparse, 2=moderate, 3=heavy, 4=very heavy) were graphed for the lower and upper reach for 2013 and 2014. The cover values for each riparian vegetation type at the left and right bank for each of the 11 transects were used to calculate the proportion values.

7.3 Results

7.3.1 Physical Habitat Characteristics and Water Chemistry

As shown in Table 7-1 in 2013 the average wetted width and average depth for the upper reach (4.4 m and 12.6 cm) were slightly greater than that of the lower reach (4.2 m and 12.0 cm). In 2014 the average wetted width remained about the same as the previous year for the upper reach (4.5 m), although the average depth was slightly less (10.9 cm) than in 2013. The lower reach had a lower average wetted width (4.0 m) and average depth (9.9 cm) than the previous year.

Stream discharge was generally low, although the value in the lower reach in 2013 (0.006 m^3/s) was double that of the same reach in 2014 (0.003 m^3/s). The upper reach discharge was 0.004 m^3/s in 2013, and a discharge value was not recorded in 2014 because flows were so low. In 2013 bank stability was greatest in the upper reach (91%) but the lower reach was also high (82%). Bank stability was slightly higher in 2014 for the upper reach (100%) but remained the same in the lower reach (82%).

In 2013 the majority of the lower reach consisted of riffles and runs (25 and 75%, respectively) while the upper reach was more complex with 5 flow habitats (cascade/fall, riffle, run, glide and pool). In 2014 a majority of the lower reach consisted of riffles (30%) and glides (70%) while the upper reach continued to have a mix of flow habitats. None of the flow habitats were dry during either year.

In 2013, water temperature, pH, and specific conductivity were all greater for the upper watershed than the lower, but consistent with previous data collected in the spring (2000-2012 *RCDSMM unpublished data*).

Table 7-1 Summary of Physical Habitat Conditions Topanga Creek Spring 2013 and 2014.

Location	TC3200-3350m 2013	TC4500-4650m 2013	TC3200-3350m 2014	TC4500-4650m 2014
Water Quality Measures				
Water Temperature (^oC)	14.7	16	14.9	14.7
Air Temperature (^oC)	15.9	17	18	14.2
Dissolved Oxygen (mg/l)	9.26	7.65	7.65	7.34
pH	6.36	6.7	8.27	8.29
Specific conductance (µS/cm)	1375	1441	1423	NR
Salinity (ppt)	0	1.5	1	0
Alkalinity (mg/l) (Test strip)	300	300	NR	NR
Turbidity (NTU)	NR	0.4	0.38	4.26
Nitrate – N (ppm)	0	0	NR	NR
Nitrite – N (ppm)	0	0.01	NR	NR
Ammonia N (ppm)	0	0.18	NR	NR
Orthophosphate (ppm)	0.16	0.17	NR	NR
Time Sampled	0910	0930	0900	0930
Physical Habitat Characteristics				
Reach Length (m)	150	150	150	150
Average wetted width (m)	4.2	4.4	4.0	4.5
Average depth (cm)	12	12.6	9.9	10.9
Average velocity (ft/s)	NR	NR	NR	NR
Discharge (m^3/s)	0.006	0.004	0.003	NR
Slope (%)	<3	>3	<3	>3
Elevation (m)	200	400	200	400
Vegetative Canopy Cover (%)	82	65	95	83
*Microalgae Thickness (mm)	0	0	0	0
**Macroalgae Presence (%)	24	10	5	4
Macrophyte Presence (%)	18	26	28	18
Bank Stability (%): Stable	82	91	82	100
Vulnerable	9	0	18	0
Eroded	0	0	0	0
NR	9	9	0	0
Flow Habitats (%): Cascade/Fall	0	6.5	0	0
Rapid	0	0	0	0
Riffle	25	19	30	31.5
Run	75	4.5	0	0
Glide	0	10	70	28.5
Pool	0	60	0	40
Dry	0	0	0	0
Average Embeddedness (%)	49	26	49	44
Substrate Size (%): Bedrock	0	9	0	6
Boulder	24	33	26	33
Cobble	14	26	7	14
Gravel	29	13	26	23
Sand	28	18	42	26
Fines	10	6	4	3
Hardpan	0	0	0	0
Concrete/Asphalt	0	0	0	0
Wood	0	0	0	0
Other	0	0	0	0

NR= Not recorded; *Microalgae thickness code was 0 for all reaches and years, which corresponds to (absent=<1mm) ; **% Presence includes unattached and attached macroalgae.

In 2014 water temperature was greater in the lower watershed, while pH was about the same in the lower and upper watershed. However, dissolved oxygen (mg/L) was slightly higher in the lower watershed than the upper in both 2013 and 2014.

7.3.2 Streambed Substrates, Embededness and Canopy Cover

The average embeddedness was greater (49%) in the lower reach than the upper (26%) in 2013. By contrast the embeddedness in the lower reach (49%) was similar to the upper (44%) in 2014. In 2013 and 2014 both reaches were composed of a fairly even distribution of fines, gravel, cobble, and boulders. The lower reach, which has a lower gradient (<3%), did not have any bedrock. Smaller substrates (< 2”) such as fines and gravel were more frequent in the lower reach, whereas larger substrate (> 2”) such as cobbles, boulder, and bedrock were more frequent in the upper reach, which has a higher gradient (> 3%).

The data summarized in Table 7-1 indicates that although the channel width, depth and flow were relatively consistent between the two reaches, gradient plays a role in the flow habitats present. The upper gradient reach (4500-4650m) was pool dominated, and the lower gradient reach (3200-3350m),was dominated by run-riffle complexes. This pattern is also consistent with the higher percent of fines and gravel in the lower gradient reach and more cobble-boulder substrate in the upper gradient reach.

Vegetative canopy cover was generally high, with 82% cover observed in the lower reach in 2013 and 95% in 2014. Similarly, an increase in percent canopy cover was observed in the upper reach from 2013 (65%) to 2014 (83%).

In 2013, the macroalgae presence was higher in the lower reach (24%) than the upper reach (10%). However, in 2014 the macroalgae presence in the lower (5%) and the upper (4%) were almost equal.

7.3.3 Instream Habitat Complexity and Riparian Vegetation

Instream habitat complexity includes abundance levels of filamentous algae, aquatic macrophytes, boulders, woody debris, undercut banks, overhanging vegetation, living tree roots and artificial structures. Scores for physical/habitat conditions were not generated. However, instream habitat complexity for each reach was evaluated, and the frequency of channel features recorded along each reach that had a cover value greater than (1) is shown (Figure 7-1)

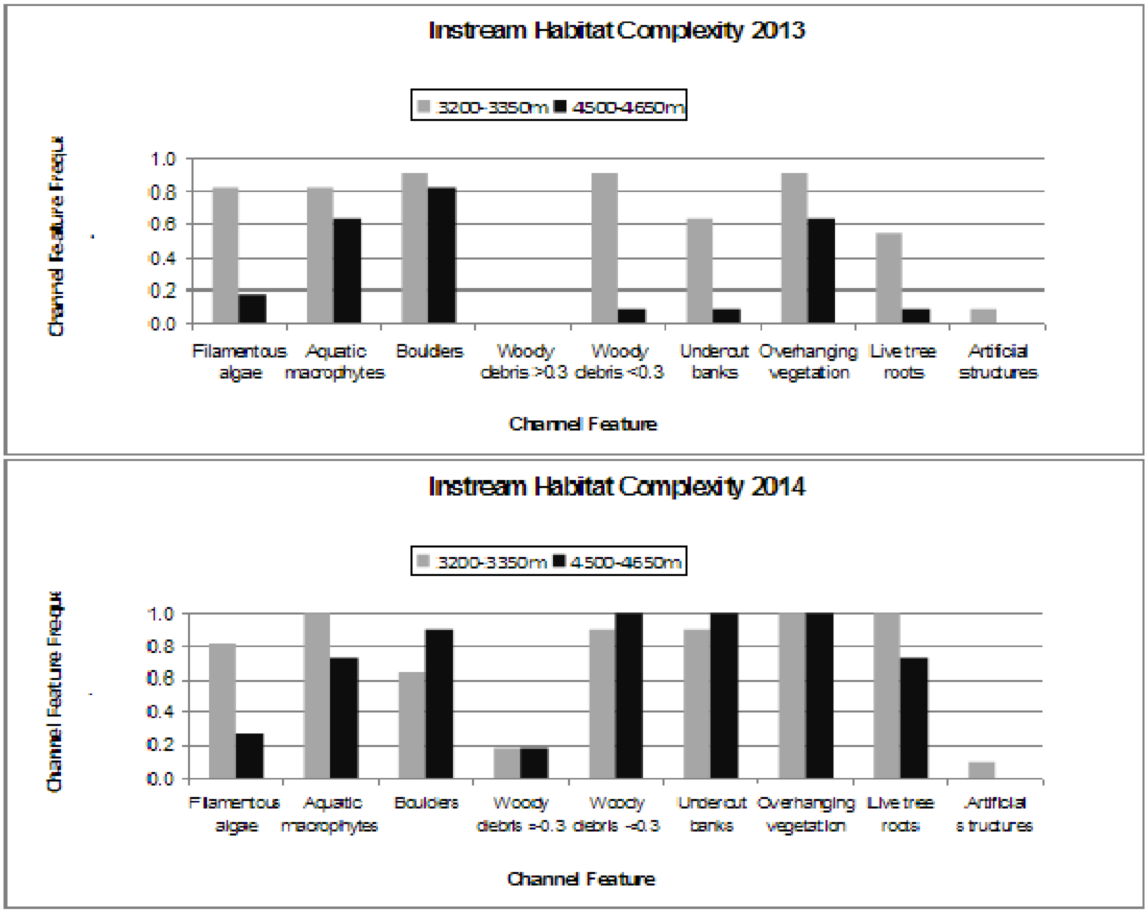


Figure 7-1 Instream habitat complexity of two reaches in the Topanga Creek watershed (3200-3350m and 4500-4650m) for 2013 and 2014. The frequency of each feature represents the number of times each feature was present (cover value ≥ 1) over the 11 transects of each reach.

In 2013, the lower reach (3200-3350 m) had greater instream habitat complexity, with each channel feature occurring more frequently than the upper reach. Neither of the reaches had large woody debris (> 0.3 m), and only the lower reach had artificial structures, due to proximity of Topanga Canyon Boulevard. Aquatic macrophytes, boulders, and overhanging vegetation were frequent for both reaches.

In 2014, both the lower reach (3200 -3350 m) and upper reach (4500-4650 m) had greater habitat complexities than in 2013. Each reach exhibited an increase in the frequency of almost every channel feature present in 2013. In addition, large woody debris (> 0.3 m) was observed in 2014, compared to none observed the previous year. Aquatic macrophytes, boulders, woody debris (<0.3 m), undercut banks, overhanging vegetation and live tree roots were frequent for both reaches.

Finally, the different classes of riparian vegetation contributing to each reach are shown in Figures 7-2 and 7-3. Figure 7-2 shows the proportion of riparian vegetation cover values for the lower reach (3200-3350m) and upper reach (4500-4650 m) in 2013. Figure 7-3 shows the same values for each reach in 2014.

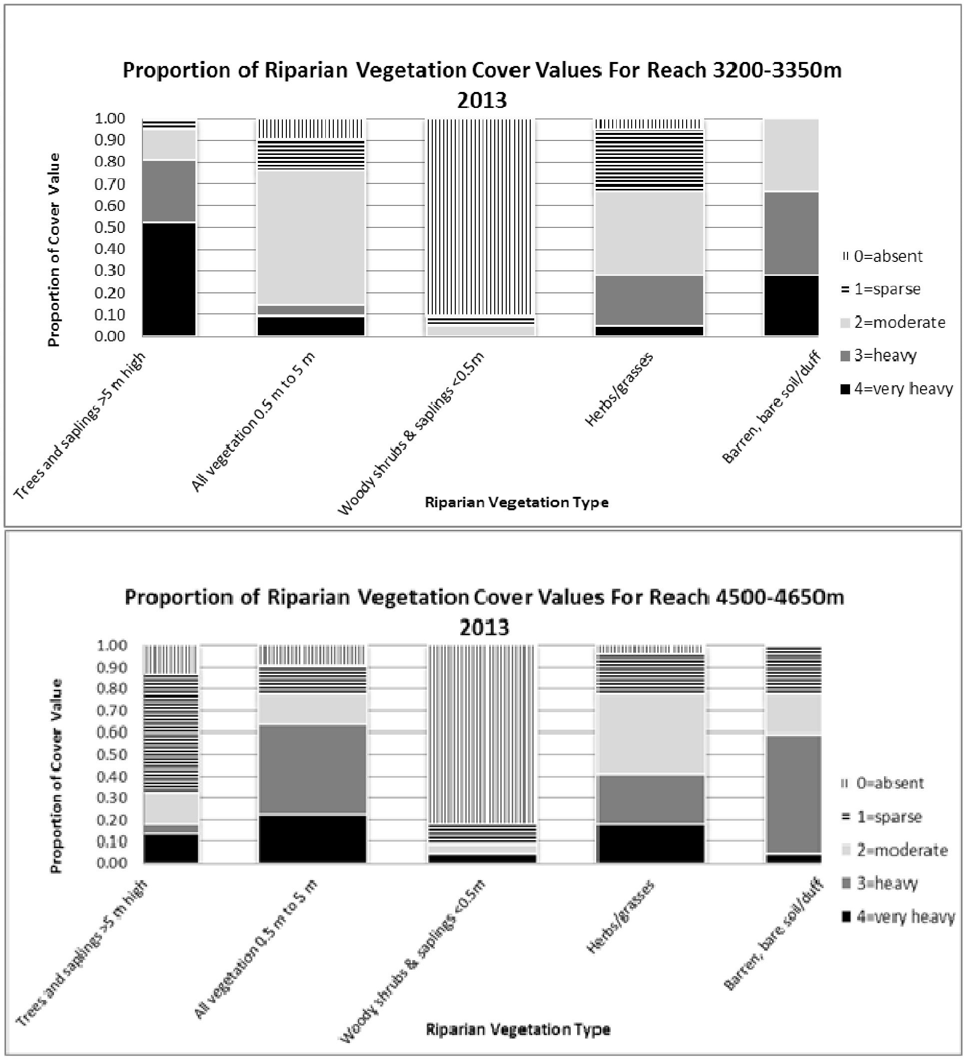
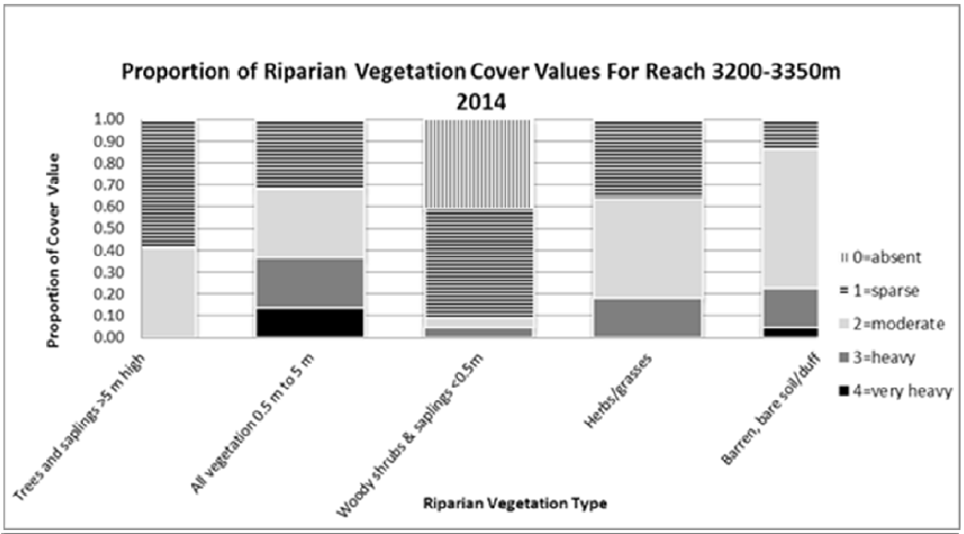


Figure 7-2 Proportions of riparian vegetation cover values of two reaches in the Topanga Creek watershed (3200-3350m and 4500-4650m) for 2013 where areal cover (shading) for each of the vegetation types is represented as 0) absent, 1) sparse (<10%), 2) moderate (10-40%), 3) heavy (40-75%), or 4) very heavy (>75%).



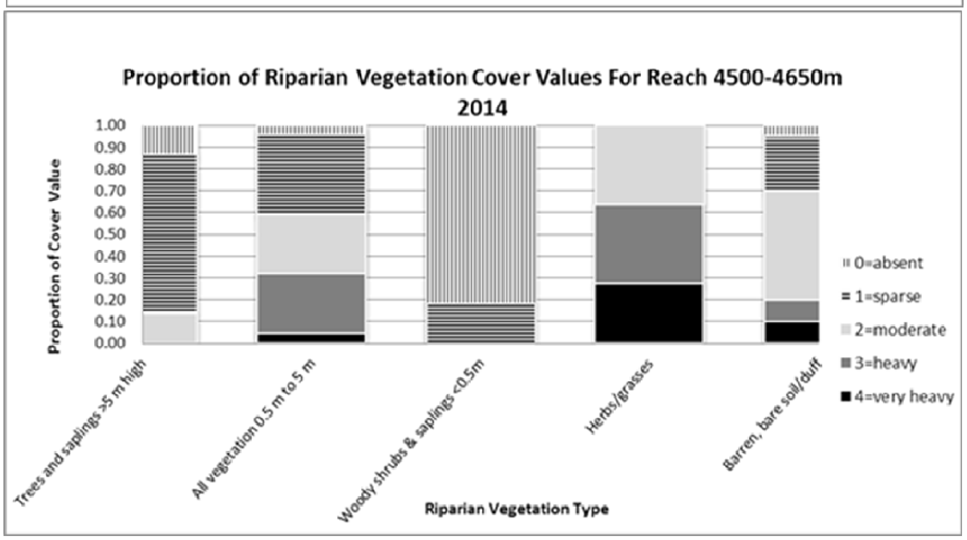


Figure 7-3 Proportions of riparian vegetation cover values of two reaches in the Topanga Creek watershed (3200-3350m and 4500-4650m) for 2014 where areal cover (shading) for each of the vegetation types is represented as 0) absent, 1) sparse (<10%), 2) moderate (10-40%), 3) heavy (40-75%), or 4) very heavy (>75%).

For both reaches, herbs and grasses had a fairly even distribution of sparse (1), moderate (2) and heavy (3) cover values in 2013 and 2014. In 2013 trees and saplings > 5m had the highest proportion of very heavy cover in the lower reach. However, the upper reach had a sparse cover of this vegetation type. Barren/bare soil/duff was a combination of moderate, heavy and very heavy cover for the lower reach, and mostly heavy in the upper reach. All vegetation from 0.5m to 5m was mostly moderate in the lower reach but heavy to very heavy in the upper reach.

In 2014 trees and saplings > 5m had the highest proportion of sparse cover in the lower and upper reaches, in contrast to 2013. Barren/bare soil/duff was mostly moderate for both the lower and upper reaches. All vegetation from 0.5 to 5m had a fairly even distribution of sparse, moderate and heavy cover for both the lower and upper reaches.

Riparian vegetation is an important element of stream habitat. In Topanga Creek, the extent of riparian vegetation is limited both by proximity of steep canyon walls in the narrow section of the upper gradient reach (4500-4650 m), as well as the frequency of flood events. There has been substantial growth of riparian vegetation throughout the creek since the last flood events that occurred in 2005, 2010 and 2011.

7.4 Discussion

The past three years have been very dry, and the physical habitat conditions reflect that. We have not had a flushing pulse of flow since March 2011. The one major storm in February – March 2014 was short lived and insufficient to scour the channel. Systematic sampling of physical habitat data is essential to collecting representative and quantifiable data, especially for the highly variable elements that comprise stream habitat structure. Prior to 2013, the physical habitat characteristics were documented using the methods of the CA Rapid Bioassessment Protocol (CDFG 1999) and that data remains to be examined in comparison to the information gathered using the new SWAMP protocols (Ode 2007, Fetscher et al. 2009).

Physical habitat includes documenting the flow and sediment regimes, channel and flood-plain structure, hydrologic alterations, riparian vegetation quality and extent, and responses to anthropogenic stressors. All of these variables affect the abundance, diversity, and seasonal community structure of primary producers such as diatoms, soft-bodied algae, macroalgae, and benthic macroinvertebrates. They can ultimately dictate changes in a variety of trophic levels when the physical elements of habitat respond to changes in the environment. As such, physical habitat documentation is critical to understanding the relative importance of various environmental indicators.

Overall, both reaches of Topanga Creek have relatively stable banks and a variety of in-stream habitat types (runs, riffles, pools) that can support a complex assemblage of aquatic organisms. The higher level of fines and gravel in the lower reach are highly mobile. Snorkel survey and habitat typing focused on habitat for endangered steelhead trout documented the pulses of sediment moving downstream with storm events over time (Dagit and Krug 2011). While the specific location of the sediment slugs varies over time and results in decreased pool habitat in certain reaches, the overall amount of pool habitat and refugia for fish remained fairly constant, despite a very wet year in 2005.

Overall, channel morphology has also remained fairly constant over time (Dagit and Krug 2011).

7.5 Summary

- Rainfall was below normal for both years the study took place, and significant rain events were few and far between. Therefore, flow was consistently low throughout the study period as well.
- The average wetted width of the creek remained fairly constant throughout the study but average depths decreased in some locations in 2014.
- Water temperature, pH, and specific conductivity were relatively stable and consistent with previous data collected (Dagit et al 2004, 2000-2012 RCDSMM *unpublished data*).
- Habitat types remained consistent during the course of the study with riffles, runs and glides dominate in the lower reach of the creek (below 3600 m) and a more complex mix of flow habitats (cascade/fall, riffle, run, glide and pool) found upstream. None of the flow habitats were dry during either year.
- Geomorphology and gradient affect the types of flow habitats present, with the lower gradient reach below 3600 m (<3%) being dominated by run-riffle complexes and the upper gradient (3-6%) being pool dominated.
- Smaller substrates such as fines and gravel were more frequent in the lower reach, whereas larger substrate such as cobbles, boulder, and bedrock were more frequent in the upper reach, which has a higher gradient (> 3%).
- Instream habitat complexity includes abundance levels of filamentous algae, aquatic macrophytes, boulders, woody debris, undercut banks, overhanging vegetation, living tree roots and artificial structures. In 2014, both the lower and upper reaches had greater habitat complexities than in 2013 despite the low flows.
- The proportion of cover values for several riparian vegetation types were estimated for the lower and upper reaches. Trees and saplings > 5m had the highest proportion of sparse cover in both the lower and upper reaches.

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8 Spatial, Temporal, and Regional Analyses of Benthic Macroinvertebrate Communities in Topanga Creek: 2002-2014

8.1 Abstract

Benthic macroinvertebrate bioassessment was conducted in Topanga Creek as part of a larger bacterial source-identification study. The Southern California Coastal Index of Biotic Integrity (SCC-IBI) was applied to samples collected 2003-2014 to analyze spatial and temporal correlations between biotic integrity and water quality conditions. A few distinct trends regarding the benthic macroinvertebrate (BMI) community of Topanga Creek emerged during the course of this study. 1. SCC-IBI scores for Topanga Creek range from 'Very Poor' to 'Fair' 2. SCC-IBI scores indicate a significant negative correlation between % non-insect taxa and levels of dissolved oxygen. 3. Taxa composition is more similar across samples collected on the same date, versus samples collected at any one site. 4. Functional feeding group composition is more stable than taxa composition per site and over time. 5. Worsening drought conditions through winter 2012/2013 may have caused a significant shift in species composition in Topanga Creek. 6. Regional comparison of Topanga Creek indicates relatively degraded conditions. 7. Such conditions may be a result of human and natural influences, particularly land development and drought.

8.2 Introduction

The benthic macroinvertebrate (BMI) community, such as snails, dragonfly nymphs, true fly larvae, worms, and other bottom-dwelling aquatic organisms of a freshwater stream, are vital indicators of riparian ecosystem health (Ode et al. 2005). Benthic macroinvertebrate sampling adds a biotic element to standard water quality testing procedures and is an invaluable tool for ecologists, resource management professionals, and anyone interested in investigating and maintaining healthy streams. As primary consumers of allochthonous (terrestrial leaf litter) and autochthonous (aquatic plant) detritus, benthic macroinvertebrates are the most basic link between both aquatic and riparian vegetation and the rest of the stream community (Voshell 2002). Filling distinct feeding niches, some species shred whole leaves and stalks, others scrape up the film left behind, ultimately releasing a large pool of nutrients that can be absorbed by higher trophic levels (Covich et al. 1999). Analysis of functional feeding group (FFG) diversity can shed light on how nutrients begin to flow at these primary trophic levels.

In addition to FFG designations, many families, genera, or species have assigned tolerance values 0-10 (CAMLnet. 2003) that describe the organism's ability to live in polluted waters. Another key feature of benthic macroinvertebrates is their tendency to reveal current and past ecological disturbance (Boulton 1992). Some taxa, such as mosquitoes, may appear and disappear within a week, while others, like some common dragonflies, develop underwater over the course of a year or more (Voshell 2002). Therefore, shifts in species composition may be the result of a current disturbance event or one that occurred within the year. Habitat preferences, limitations, and additional life-history traits have been described for 3,857 North American lotic macroinvertebrate species (Vieira et al. 2006). Indexes of Biotic Integrity (IBI) have been developed using this information to evaluate BMI community composition and distribution and to assign numeric and descriptive scores of ecological health (Fetscher et al. 2009, Ode 2007).

The Southern California Coastal Index of Biotic Integrity (SCC-IBI, Ode et al. 2005) allows for a regionally-focused quantification of the ecological condition of a sampling site as characterized by its benthic macroinvertebrate community. SCC-IBI scores are calculated as a sum of the following seven metrics: EPT taxa (Ephemeroptera, Plecoptera, Trichoptera), Coleoptera taxa, predator taxa, percent non-insect taxa, tolerant taxa, intolerant individuals, and percent collector-gatherer individuals. In this paper, the SCC-IBI is applied to three distinct BMI collections in order to gain spatial (water quality samples at five Topanga Creek sites 2013-2014), temporal (annual stream survey samples from two sites 2002-2014), and regional (Heal the Bay data from Arroyo Sequit, Cold Creek, Malibu Creek, Solstice Creek 2000-2013) perspectives on the biotic integrity of Topanga Creek (Figure 8-1).

Topanga Creek, a small southern California coastal drainage, lies within an approximately 47-km^2 watershed that drains into the Santa Monica Bay, in Los Angeles County. The watershed provides vital habitat for endangered steelhead trout, 22 species of amphibians and amphibians, nine species of bats, and numerous other plants and animals. Approximately 70% is protected parkland owned by California Department of Parks and Recreation. The remaining 30% is developed within the village of Topanga, (population 12,000 as of 2010, Los Angeles County Census 2010). Development along Topanga Creek begins at about 6500 m (upstream from the ocean) and continues upwards. The mouth of the creek lies within Topanga Beach which received poor grades for bacterial levels on Heal the Bay's Beach Report Card between 2006 and 2014.

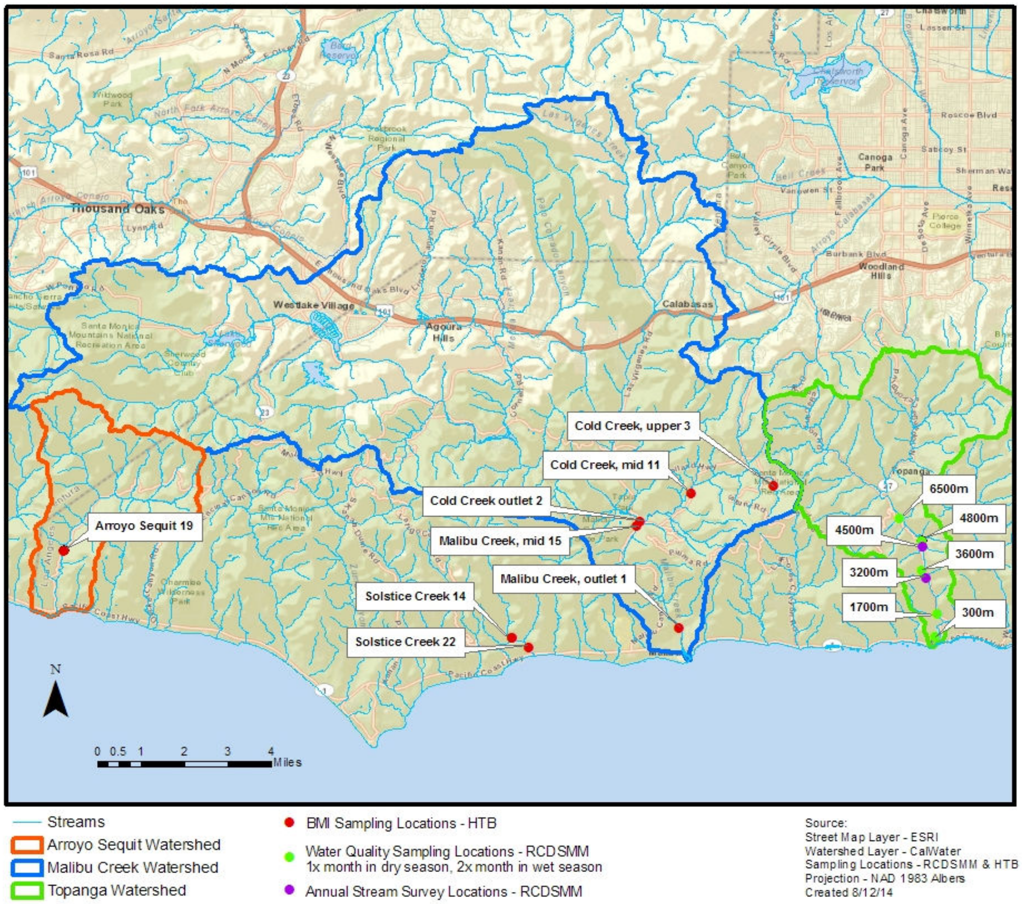

Figure 8-1 Topanga Creek and Santa Monica Mountain sampling sites 2000-2014.

In 2012, a source identification study was launched in collaboration with Los Angeles County, the Resource Conservation District of the Santa Monica Mountains (RCDSMM), and the Jay Lab University of California at Los Angeles (UCLA) to investigate potential sources of bacteria observed at Topanga Beach. Water quality testing occurred at eight sites between the ocean outlet and 6500 m upstream from to December 2012 to August 2014, documenting habitat condition observations and water sample sampling for nutrients and fecal indicator bacteria (FIB) analysis. Benthic macroinvertebrates were collected from six of these sites on four occasions in 2013-2014.

Comparing water quality conditions to the community composition and distribution of BMI provides an opportunity to identify correlations between the biotic integrity of Topanga Creek with instances of nutrient pollution, low flows, low dissolved oxygen, and more. Additional BMI and water quality sampling during annual stream surveys in spring (Apr/May) 2003-2014 at two reaches were also incorporated into this study to provide a longer-term context of how creek conditions or climate may affect BMI community diversity over time. These results were compared to other sampling locations within the Santa Monica Bay allowing comparison of regional SCC-IBI scores and to place Topanga Creek within that regional context. The application of SCC-IBI, alongside additional analyses such as Simpson's Diversity Index and Bray-Curtis Dissimilarity measure, provide a comprehensive evaluation of the health of the Topanga Creek watershed and the relationship between various stressors and its biological condition.

8.3 Methods

Sample Collection

BMI collections occurred in conjunction with water quality testing in May and September 2013, as well as April and July 2014 along a continuum (6500 m to 300 m) of five sites (Owl Falls- OF, Scratchy Trail - ST, Topanga Bridge -TB, Brookside - BR, and Snake Pit- SP) according to California Rapid Bioassessment Procedure (Ode 2007) (Table 8-1). Starting at the downstream end of the site, a riffle within the reach was randomly selected and a total of nine 1-ft. wide kick net samples were collected at each left, center, and right of three consecutive riffles, and combined for a composite sample of nine kicks. SP was only sampled in 2014, and BR was not sampled in September 2013, as the site was dry.

For the annual stream surveys in Topanga Creek, the California Rapid Bioassessment Procedure (Ode 2007) was used from 2003-2014, but in 2013 and 2014 the SWAMP Bioassessment Procedure (Fetscher et al. 2009) was used. A 1ft^2 kick net sample was collected every 15 m along a 150 m transect, alternating along the way between 25%, 50% and 75% from right bank, for a composite sample of 11 kicks.

Annual stream survey collections took place in spring (April or May) of 2003, 2004, 2005, 2006, 2009, 2010, 2011, 2012, 2013, and 2014 at two locations: Upper Topanga (UT) and Lower Topanga (LT)(Table 8-1). Upper Topanga is above the Topanga Canyon Bridge (MM2.02) in the main stem of the higher gradient (3-6%) reach (4500 m). Lower Topanga Creek is in the main stem of the creek in the low gradient (<3%) reach (3200 m). Samples collected from UT 2004 and 2007, and LT and UT in 2008 and 2009 were not viable for processing and are not included in analysis.

Table 8-1 Topanga Creek Benthic Macroinvertebrate Sampling Sites 2003-2014.
Samples highlighted in gray had at least 500 individuals for SCC-IBI analysis.

ANNUAL STREAM SURVEY COLLECTIONS 2003-2014			WATER QUALITY COLLECTIONS 2013-2014		
SITE	DATE	*n*	SITE	DATE	*n*
Lower Topanga (3200m)	5/13/2003	104	Snake Pit (300m)	4/24/2014	492
	5/3/2004	464		6/19/2014	354
	5/27/2005	3516	Brookside (1700m)	5/8/2013	322
	5/8/2006	398		7/1/2013	6
	5/1/2007	2654		4/24/2014	689
	4/26/2010	296		6/19/2014	136
	4/28/2011	255	Topanga Bridge (3600m)	5/8/2013	61
	4/23/2012	208		7/1/2013	10
	5/2/2013	371		9/18/2013	227
	5/5/2014	1156		4/24/2014	341
Upper Topanga (4500m)	5/14/2003	744		6/19/2014	1311
	5/4/2004	DRY	Scratchy Trail (4800m)	5/8/2013	178
	5/17/2005	1101		7/1/2013	13
	5/9/2006	601		9/18/2013	71
	5/2/2007	DRY		4/24/2014	788
	4/22/2010	560		6/19/2014	589
	4/29/2011	178	Owl Falls (6500m)	5/8/2013	47
	4/24/2012	117		7/1/2013	6
	4/30/2013	308		9/18/2013	837
	5/6/2014	502		4/24/2014	1933
				6/19/2014	4757

Annual stream survey samples were also collected from nearby creeks, such as Arroyo Sequit, Cold Creek, Solstice, and Malibu from 2000-2013 by the Heal the Bay (HTB) Stream Team and processed by Sustainable Land Stewards International (SLSI) (Table 8-5). From 2000-2012 annual stream surveys were done according to the California Rapid Bioassessment Method (2005, 2009). Standard 1-ft. wide kick nets were deployed and collected at each left, center, and right of three consecutive riffles, and combined for a composite sample of 9 kicks. Thereafter (2013-2014), SWAMP protocol was followed. All samples were preserved either in 90% ethanol or by freezing and were archived at the RCDSMM until processing began.

Sample Processing and Analysis

Processing of archived BMI samples began in June 2013. Each sample was strained and, in most cases, samples were processed entirely. Using a dissecting microscope, organisms were sorted and identified to the lowest practical taxon- family, sub-family or species level when possible. Identifications were confirmed using the California Aquatic Bioassessment Laboratory (ABL) and Merritt et al. (2008). Processors also referred to Heal the Bay's benthic macroinvertebrate data from other nearby creeks within the Santa

Monica Bay 2000-2013. A second processor and/or supervisor checked a subsample of each sample to ensure completeness, and accuracy of identification. When identification was not possible, photographs were sent to Dan Pickard at CDFW ABL or identified to the lowest taxonomic level possible and recorded as non-distinct within that taxon. Data was recorded on a standardized processing sheet and transferred into an Excel database. Processing was evaluated for overall error by randomly selecting a subset of 10% of all samples having more than 500 individuals by assigning a random number to each sample. Ten percent of those samples' vials were then re-identified by another processor, and identification outcomes were compared. This resulted in an overall error of <10% to be applied to BMI data reporting.

Processed samples were assessed according to the Southern California Coastal Index of Biotic Integrity (Ode et al. 2005). For this index, seven metrics are used to assess ecosystem health: EPT taxa, Coleoptera, and predator taxa richness, % non-insect taxa, % tolerant taxa (TV>7), % intolerant individuals (TV<3), and % collector-gatherer + collector-filterer (CG+CF) individuals. Information regarding tolerance values and functional feeding groups was obtained on CAMLnet (2003). These seven metrics were scored according to Ode et al. (2005) in order to provide a single measure of overall ecosystem health (Table 8-2). As this metric was designed for samples of 500 individuals, samples with less than 500 organisms were not used for IBI calculations. For samples with more than 500 organisms, each individual was assigned a number and 500 random numbers were generated in order to create a subsample of 500 random individuals for IBI calculations.

Table 8-2 SCC-IBI metric scoring as adapted from Ode et al. 2005.

Total IBI score	Score of biotic integrity
0-13	Very Poor
14-26	Poor
27-40	Fair
41-55	Good
56-70	Very Good

Simpson's Index of Diversity was applied to measure species richness and evenness, which defines high diversity as having several different species of similar abundance, or 'evenness' (Simpson 1949). Simpson's Index (D) was calculated according to the following equation, where "n" is equal to the number of individuals of a particular species and "N" is equal to the total number of organisms found:

$$D = 1 - \left(\frac{\sum n(n-1)}{N(N-1)} \right)$$

Subtracting from one provides a reciprocal index ranging from 0 to 1, where 1 represents high diversity and vice versa. The sum can be interpreted as the probability that two individuals randomly selected from a sample will belong to different taxon.

Bray-Curtis analysis (Bray and Curtis 1957) is a measure of dissimilarity between two samples. It accounts for both 'size' and 'shape', so dissimilarity is a measure of both total number and species composition. When the coefficient is subtracted from 1, a measure of similarity is acquired. The Bray-Curtis coefficient was calculated as follows:

$$B - C = \frac{\sum_{i=1}^{n} |y_{i1} - y_{i2}|}{\sum_{i=1}^{n} (y_{i1} + y_{i2})}$$

Simpson's Diversity Index and Bray-Curtis calculations were applied to whole samples, not sub-samples of 500, as they account for both sample size and shape. For water quality samples, this analysis was based on the species distribution between six primary taxa groups: *Baetis sp*., *Simulium sp., Chironomid sp.,* Ostracod, Amphipod, and other. For annual stream surveys, analysis was also based on species distribution to six different primary taxa groups: Chironomid, Crustacea, other-insecta, Gastropoda, EPT, and other. These groups were delineated to take into account dominant taxa in the different samples and the need for whole-sample inclusivity. At no point were water quality samples 2013-2014 compared to annual stream surveys 2003-2014.

Statistical analyses, including regression and t-tests were applied to compare results spatially and temporally within sampling types, and test for correlations between biotic indices and water quality conditions including average fecal indicator bacteria levels, nutrient levels (nitrite-N, nitrate-N, ammonia-N, orthophosphates), rainfall (inches), temperature (ºC), and dissolved oxygen (% sat.) to examine any possible relationships between those conditions and the BMI community assemblage.

8.4 Results

The results are organized by analyses type (1. SCC-Index of Biotic Integrity, 2. Taxa Composition and Diversity Measurements), as well as by sampling type (1. water quality samples 2013-2014, 2. annual stream surveys 2003-2014, 3. regional stream surveys 2000-2013).

8.4.1 Southern California Coastal - Index of Biotic Integrity Results

8.4.1.1 Water Quality Sampling 2013-2014

Out of 17 total samples collected during water quality events, seven had over 500 individuals (Table 8-3). These were subsampled to 500 individuals, and were included in statistical analyses. The April 14 SP (300 m) sample was also included (n=492). All were in the Fair to Very Poor ranges. OF (6500 m), the site closest to the town of Topanga and residential development, consistently scored the lowest at 10-18 (Very Poor-Poor). Scratchy Trail (4800 m), which is almost 2,000 m downstream, scored the highest of all samples with a score of 33 (Fair). Further downstream, TB (3600 m) scored a 22 (Poor), and BR (1700 m) scored a 25 (Poor). Both TB and BR are roadside adjacent.

The lowest metrics, consistently across all sites are percent intolerant individuals, and percent tolerant taxa. No significant correlations were found between SCC-IBI total scores and site conditions such as flow, depth, water temperature or dissolved oxygen (regression analysis, significance F >0.05). There was a significant correlation between dissolved oxygen and SCC-IBI metric % non-insect scores in Topanga Creek ($F<0.05$, $r^2=0.52$). In some instances, fecal indicator bacteria correlated with SCC-IBI scores. Average total coliform per site in 2014 (excluding first flush) was significantly and negatively correlated to EPT taxa, and also to total SCC-IBI scores ($F<0.05$, r2=0.88, $r^2=0.64$). Average nutrient levels did not seem to correlate with SCC-IBI scores.

Table 8-3 Topanga Creek WQ sample SCC-IBI metrics and creek conditions 2013-2014.

Sample ID	(n)	%CF+CG	% Non Insect taxa	% Tol. taxa	Coleoptera Taxa	Predator Taxa	% Intolerant ind.	EPT Taxa	SUM (0-70)	Flow (cfs)	Avg Depth (in)	Water Temp (°C)	Avg Algae Cover	DO %	Simpson's DI*
OF0913	500	6	0	0	2	1	0	1	10	0.19	16.2	16.1	0%	64	0.7
OF0414	500	1	5	3	2	4	0	3	18	0.11	14.2	11.9	0%	71	0.5
OF0614	500	4	1	0	2	7	0	3	17	0.23	12.7	15	0.3%	35	0.8
ST0414	500	1	7	2	5	2	1	2	20	0.03	10.1	13.2	0%	76	0.5
ST0614	500	6	7	3	7	6	1	3	33	0.17	13.4	16.5	0%	68	0.9
TB0614	500	10	3	1	2	3	1	2	22	0.04	2	15.8	0.3%	62	0.9
BR0414	500	2	5	2	4	7	2	3	25	0.19	4.1	12.9	100%	76	0.6
SP0414	492	0	0	0	0	1	0	0	1	0.12	3.9	15.5	0%	50	0.1
OF0513	47	6	3	1	4	0	0	0	14	0.30	4.7	13.4	67%	62	0.8
ST0513	178	1	4	2	2	0	0	1	10	0.21	17.2	14.8	0%	83	1
ST0913	71	10	0	0	0	0	0	0	10	0.06	12.5	17.2	0%	76	0.8
TB0513	61	10	4	2	2	0	0	1	19	0.34	3.0	14.8	50%	75	0.8
TB0913	227	10	2	0	2	3	0	1	18	0.05	2.3	16.9	0%	67	0.8
TB0414	341	3	6	1	4	6	3	3	26	0.08	3.9	12.9	19%	74	0.7
BR0513	322	1	7	9	4	2	4	3	30	0.26	5.2	15.1	75%	90	0.4
BR0614	136	4	0	0	4	0	0	0	8	0.10	4.6	15.6	0%	50	0.6
SP0614	354	8	3	0	2	7	0	0	20	0.00	4.0	16.1	0%	47	0.8

Gray cells had n>500 are subsampled for SCC-IBI. SP0414, n=492, was included in statistical analysis.

8.4.1.2 Annual Stream Surveys 2003-2014

Three out of ten of the annual spring stream samples from Lower Topanga (LT; 3200 m) and five out of eight samples from Upper Topanga (UT; 4500 m) had >500 individuals and these eight samples were subsampled to 500 individuals for SCC-IBI scoring.

Overall, there did not seem to be a significant difference between sites, or a trend among sites or years for total IBI scores (Table 8-4). LT scored the highest overall in 2007 (40; Fair). The lowest scores were from LT in 2005 and UT in 2014 (16,15; Poor). There were two years, 2005 and 2014, when enough individuals were collected from both sites so that a comparison could be made. In 2005, UT scored higher (23 vs. 15), whereas in 2014, LT scored higher (19 vs. 15). The lowest metric across all 500 (n) samples was % intolerant individuals, which never surpassed score of 1. Conversely, the highest metric on average was % tolerant taxa. This stands in contrast to water quality samples from 2013-2014, when % tolerant taxa was the lowest. This may be the result of a shift in species composition discussed in Section 9.4.3. No significant correlations between SCC-IBI metrics and recorded creek conditions were found.

Table 8-4 Topanga Creek Annual Stream Surveys SCC-IBI metrics and creek conditions 2003-2014.

Sample ID	(n)	%CF+CG	% Non Insect taxa	% Tol. taxa	Coleoptera Taxa	Predator Taxa	% Intolerant	EPT Taxa	SUM (0-70)	Flow (cfs)	Avg depth (in)	Water Temp (^{o}C)	DO %	WY Rainfall (in.)	Drought Intensity
UT03	500	1	8	10	4	1	0	2	26	0.43	3.9	14.7	90%	17.92	N
UT05	500	0	5	8	4	0	1	5	23	0.34	ND	15.1	69%	61.22	N
LT05	500	3	3	8	0	1	0	1	16	0.16	9.8	17	65%	61.22	N
UT06	500	1	5	5	4	2	0	8	25	0.15	11.3	15.6	100%	20.04	N
LT07	500	5	7	7	7	4	0	10	40	0.05	8.7	ND	ND	4.61	D3
UT10	500	2	8	6	2	5	1	5	29	1.13	9.3	10	ND	24	N
UT14	500	1	4	3	5	0	0	2	15	ND	9.6	6.85	72%	6.85	D3
LT14	500	4	2	2	2	6	1	2	19	0.06	2.2	14.9	76%	6.85	D3
LT03	104	2	7	8	2	1	1	1	22	0.27	8.3	14.6	97%	18	N
LT04	464	5	8	4	4	8	1	1	31	ND	ND	ND	ND	13.16	D0/D1
LT06	398	4	8	6	4	2	1	3	28	0.22	7.6	14.6	96%	20.04	N
LT10	296	2	6	8	0	3	1	4	24	0.1	5.2	10	ND	24	N
UT11	178	0	8	10	0	0	0	2	20	ND	20.9	14.8	95%	31	N
LT11	255	2	6	8	2	0	2	1	21	0.42	11.8	15	100%	31	N
UT12	117	2	6	4	0	3	0	2	17	0.04	7.1	14.1	100%	15	D0
LT12	208	2	6	4	2	2	0	1	17	0.21	6.9	15.3	100%	15	D0
UT13	308	3	1	0	2	1	0	2	9	ND	5.5	9.44	78%	9.44	D1
LT13	371	1	5	5	4	1	0	3	19	0.03	3.5	14.7	91%	9.44	D1

Gray cells had n>500 are subsampled for SCC-IBI. SP0414, n=492, was included in statistical analysis. ND = no data

8.4.2 Taxa Composition and Diversity Measurements

8.4.2.1 Water Quality Sampling 2013-2014

In addition to SCC-IBI, taxa composition was analyzed and diversity measurements applied. Between Owl Falls (6500 m) and Snake Pit (300 m), taxa composition varied over time and reach (Figure 8-2), however Functional Feeding Group (FFG) composition was more consistent. Potential links between BMI community and water quality conditions are included in the following results, organized by site.

Starting with Owl Falls, the BMI community was dominated (Relative Abundance (RA) >50%) by planktonic crustaceans, Amphipoda (freshwater shrimp) and Ostracoda (seed shrimp), except in April 2014 where a Chironomid (non-biting midge) larvae bloom dominated all six sites. Oligochaeta and Planarian (flat and segmented worms) were present in high numbers in September 2013 and June 2014, 21-24% RA respectively. Other insect taxa (EPT, Coleoptera) at Owl Falls occurred in much smaller numbers (average RA <5% for all four dates). Insect taxa present all four months at OF include the nymphs or larvae of Leptohyphidae (Tolerance value (TV) =4), Haliplidae (TV=7), and Hydroptilidae (TV=6).

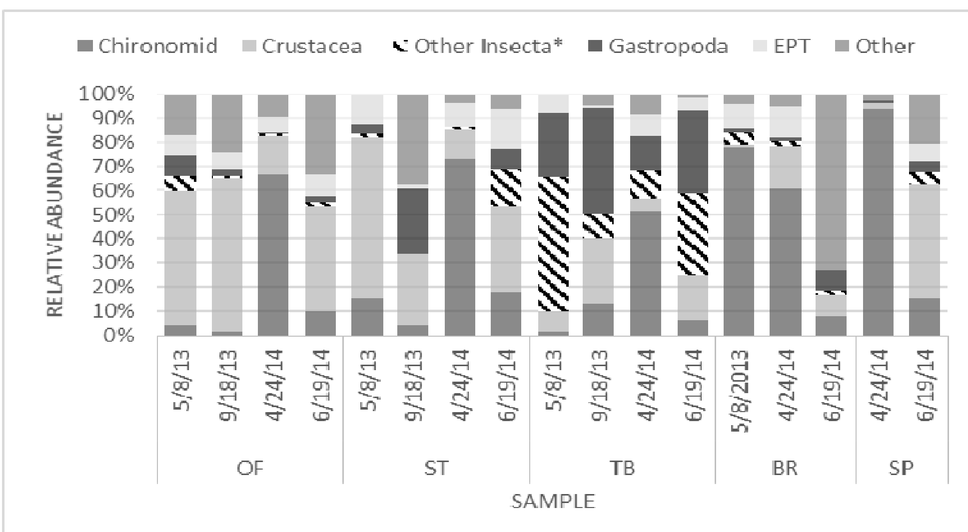

Figure 8-2 Relative Abundance of six major categories at OF, ST, TB, BR, SP.
*Other Insecta includes Coleoptera and Plecoptera. Crustacea includes Amphipoda and Ostracoda.

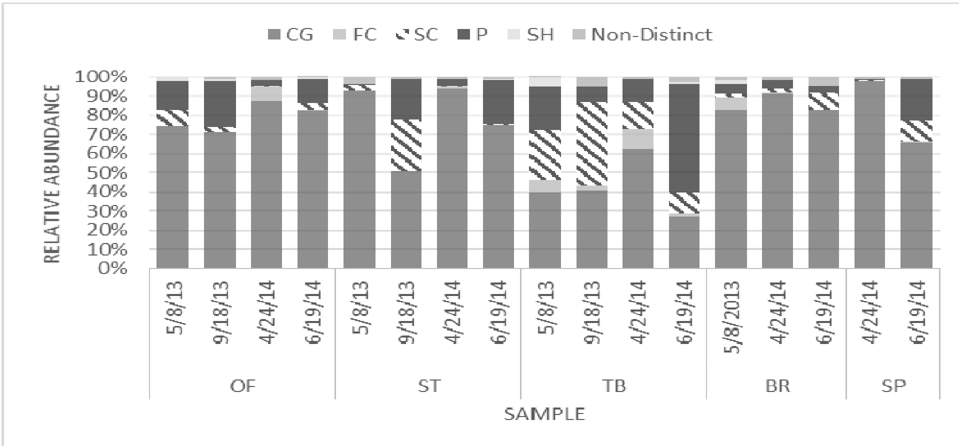

Figure 8-3 Relative abundance of functional feeding groups at OF, ST, TB, BR, SP.

Leptohyphidae, or little stout crawler mayflies, have gills that are specialized for waters that are warm, silted, and/or have low-dissolved oxygen (Voshnell 2002). Dissolved oxygen levels at OF was relatively low, measuring 35-71%. While mayflies are usually an indicator of good water quality, Letohyphidae is an exception (Voshnell 2002). Other exceptions include Caenidae and Baetidae, which comprise the majority of Ephemeroptera in Topanga Creek. While average depths from 9/13 to 6/14 were relatively high (12.7-16.2 in) levels in 5/13 were as low as 4.7 in, flow varied from 0.11-0.18 f^3s. Haliplidae, crawling water beetles, are often associated with macroalgae like *Chara*, and Hydroptilidae (microcaddisflies) with filamentous algae, both potentially indicative of nutrient pollution. An algae bloom was observed in August 2014. OF did have the highest average ppm nitrate (0.06) and orthophosphates (0.19) across all sampling dates (Table 6-11 and Table 6-14, respectively).

Both Owl Falls (6500 m) and Scratchy Trail (4800 m) simultaneously experienced Ostracoda (May ’13) and Amphipoda dominance (Sept ’13), when neither taxon prevail downstream, suggesting some level of connectivity between sites. Three out of four months ST had the highest Simpson’s Diversity Index (Figure 8-4), primarily due to greater species evenness. Plankton remain highly abundant overall. Insect taxa that were present in at least 75% of ST samples include Leptohyphidae, Baetidae, Elmidae, Hydroptilidae, and Ceratopogonidae. While these additional taxa are also present in Owl Falls, their increased abundance at Scratchy Trail may illustrate improved habitat conditions. Dissolved Oxygen at ST was measured between 76-83%, and average depth 10.11-17.2 in on sampling days. The highest SCC-IBI scores in April and July 2014 (20, 33) support this observation.

Topanga Bridge (TB) had the most stable Simpson’s Diversity Index (Figure 8-4) and SCC-IBI scores (18-26). Although water levels at TB were low (2-3 in.), DO remained

62-75%. TB has the first or second highest SCC-IBI scores in April and July 2014. One of three Gastropoda families are the first or second most abundant taxa each month, *Physa sp*. (5/13), Hydrobiidae (9/13,4/14), and Viviparidae (6/14). Odonata diversity is also higher at TB, with nymphs of the three genera: *Argia sp*., *Enalgamma sp*., and *Libellulidae sp*. In May 2013, Elmidae 'riffle beetle' larvae, comprised 30% relative abundance. Elmidae require high levels of dissolved oxygen and are found in waters with near saturation. Plecoptera, a family synonymous with good water quality, makes its first appearance at TB in the form of *Ispoerla sp*. nymphs (common stoneflies) collected 6/19/14.

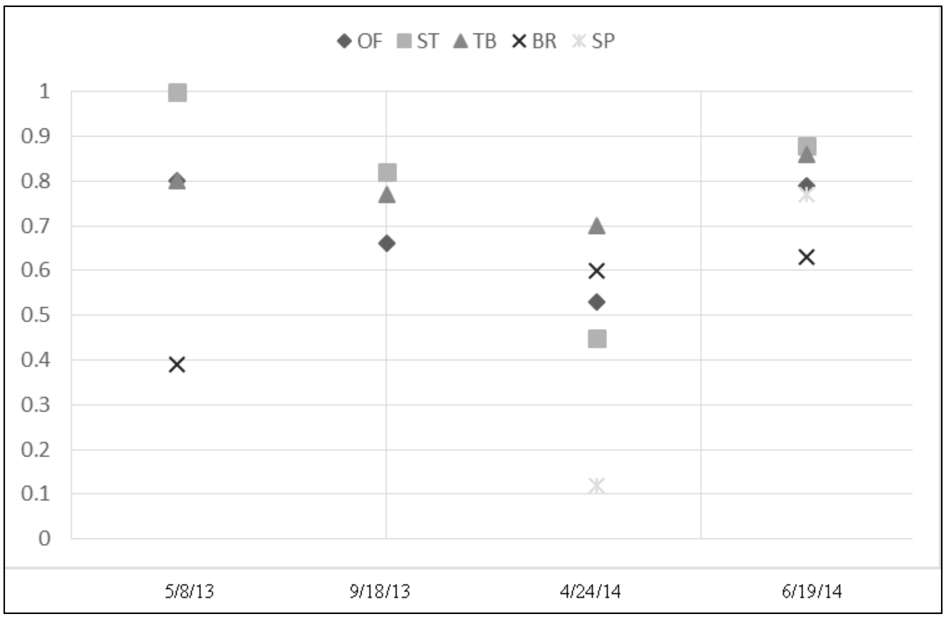

Figure 8-4 Simpson's Diversity Index scores for Source ID sites May 2013-July 2014.

At Brookside (BR 1700 m), which went dry in September 2013, mosquitoes or non-biting midges dominated in each sample. After water returned, *Culex sp*. larvae comprised 60% RA in July 2014. At that time, DO hit a low of 50%. Many species of Culicidae prefer temporary habitats. BR had the highest levels of Ammonia (average 0.27 ppm), potentially due to the consistent dumping of urine waste by an RV along Topanga Canyon Blvd above the site (Figure 6-2). Culicidae reproduction and Chironomid abundance have been observed to increase in Southern California wetlands enriched with ammonia (Sanford et al. 2005). While both of these Dipteran taxa are tolerant of nutrient enriched waters, other less-tolerant taxa also are found at BR. Nemourid stone fly nymphs, and Carabidae 'ground beetle' larvae with a tolerance value 4, each made up 2% RA in May 2014.

Snake Pit, sampled only in April and July 2014 also displayed variability. In April, SP had the lowest SCC-IBI and Simpson's Diversity score of 1 (Very Poor). All 16 taxa found at this time were from Diptera, Hemiptera, or non-insect; Chironomidae composed 94% RA. In July 2014, scores improved, although no significant site condition changes occurred. Chironomidae RA was reduced to 15%, while Ostracoda made up 24%, and Simpson's Diversity Index increased (from 0.1 to 0.8). In addition to the previously sampled families/phylums, Trichoptera, Odonata, and Coleoptera appeared in July. According to Bray-Curtis analysis that was applied to eight primary taxa groups, samples taken from all sites on the same date had a higher similarity (37%) than those taken from the same site across four dates (27%). This trend holds true for FFG composition as well. This suggests homogeny throughout the system. Additionally, the similarity coefficient between FFG composition (Figure 8-3) across both time and place, was significantly higher than taxa composition (t-test, $p<0.05$). This upholds the findings of Vannucchi et al. (2013) that feeding niches filled by benthic macroinvertebrates may remain filled, even though the specific species change. Therefore, systematic stability of nutrient flow and energy flux may remain, even without stability of distinct species populations.

8.4.3 Annual Stream Surveys 20013-2014

The number of individuals collected from the annual spring stream surveys from Upper and Lower Topanga Creek ranged from 104 to 3,516, representing six phyla, 21 orders, and a total of 76 taxa. The majority of individuals fell within the phylum Arthropoda and class Insecta, followed by the subphylum Crustacean, including class Ostracoda and order Amphipoda. To date, the invasive New Zealand mud snails (*Potamopyrgus antipodarum*) have not been observed in Topanga Creek.

Between 2003-2012, *Baetis sp.* (blue-winged olives), a prolific genera of small minnow mayfly, was the first or second most abundant taxon every year in both Upper and Lower reaches (Figure 8-5). *Baetis sp.* made up between 33-79% relative abundance (RA) in Upper Topanga, and 13-67% in Lower. The family Baetidae are characterized as strong swimmers, most prevalent in flowing, shallow waters with ample cobbles and/or pebbles (Voshell 2002). *Baetis sp.* are collector-gatherers with a tolerance value of 6. In 2013 and 2014, *Baetis sp.* no longer dominated and in fact comprised less than 10% RA of all four samples. Chironomidae, which had previously made up between 5-36% shifted to occupy the top spot, comprising 63-72% of all samples in 2013-2014. Chironomids are also primarily collector-gatherers, and are ascribed a family-wide tolerance value of six. However, the Chironomidae family is extremely diverse, including over 1,000 species, and thrive in equally diverse habitats. Chironomids were identified to sub-family or tribe for a few select samples, and similar taxa were found before and after 2013.

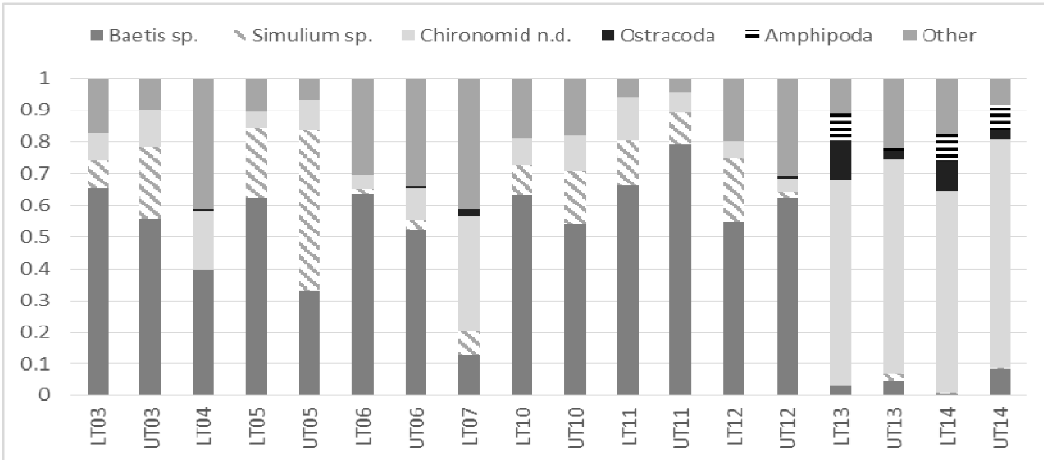

Figure 8-5 Relative Abundance of 6 Major Taxon Categories: Upper and Lower Reaches Topanga Creek 2003-2014.

Two concurrent phenomena occurred between the 2003-12 period as compared to 2013-14. Between 2003-12 *Simulium sp*. (a member of the black fly family) was present in all six Upper Topanga samples with an average relative abundance 18%, and 12% in seven out of eight Lower Topanga samples. However, in 2013 and 2014 *Simulium sp.* made up only 2% average relative abundance in Upper Topanga, and were not present at all in Lower samples. Simulidae, which occur only in flowing waters (Voshnell 2002), are collector-gatherers, with a tolerance value of six.

Another stark difference between 2003-12 and 2013-14 was the presence of Amphipoda or 'scuds.' A subsample of scuds were identified to be of the family Hyallelidae. Of all 14 samples from 2003-12, Amphipods were only found in Upper 2003 at 0.13% RA. Beginning in 2013, scuds appeared again at 1-8% RA (Upper-Lower), and jumped to 3-29% in 2014. Scuds are bottom-dwellers and are rarely found in waters deeper than 1 m (Voshnell 2002). Scuds are predominantly collector-gatherers, and have a tolerance value of eight. Scuds are most often found in large numbers where fish are not present, as they are a preferred food source. However, snorkel survey observations document that fish are present at all sampling sites (RCDSMM, *unpublished data*), and thus they are either not selectively preying upon scuds, or the reproductive rate of scuds exceeds the predation rate. Despite these changes, functional feeding group composition remained dominated by collector-gatherers. (Figure 8-6) There may be a decline in evenness of FFG in 2013-2014.

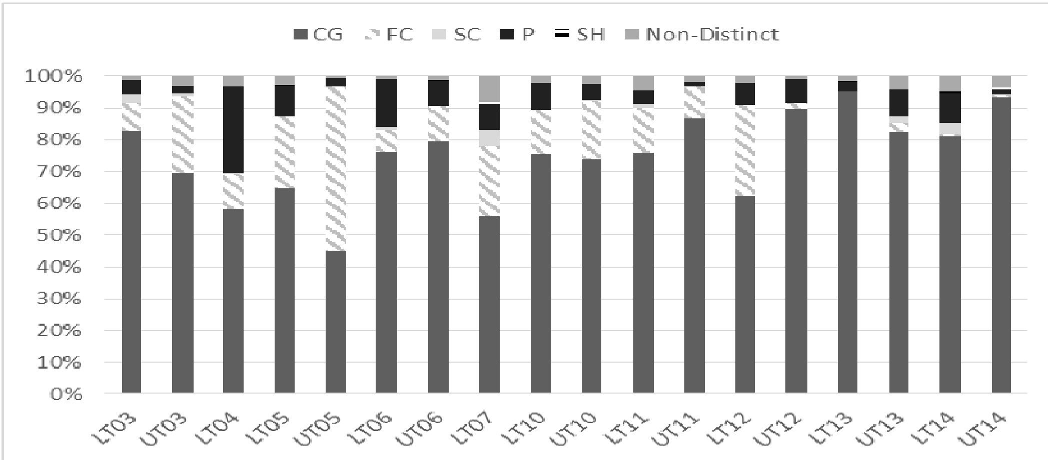

Figure 8-6 Relative Abundance of 6 Major Feeding Group Categories: Upper and Lower Reaches Topanga Creek 2003-2014

Bray-Curtis analysis of dissimilarity points to a trend between rain patterns and BMI species composition in Topanga Creek (Figure 8-7). Excluding the two wettest years (rainfall >30 inches), analysis of the annual stream survey samples showed that the dissimilarity coefficient (how different from all other years) was negatively correlated to rainfall (regression test, significance F<0.05). This suggests a threshold equal or less to 30 inches, over which high rainfall also disturbs BMI communities.

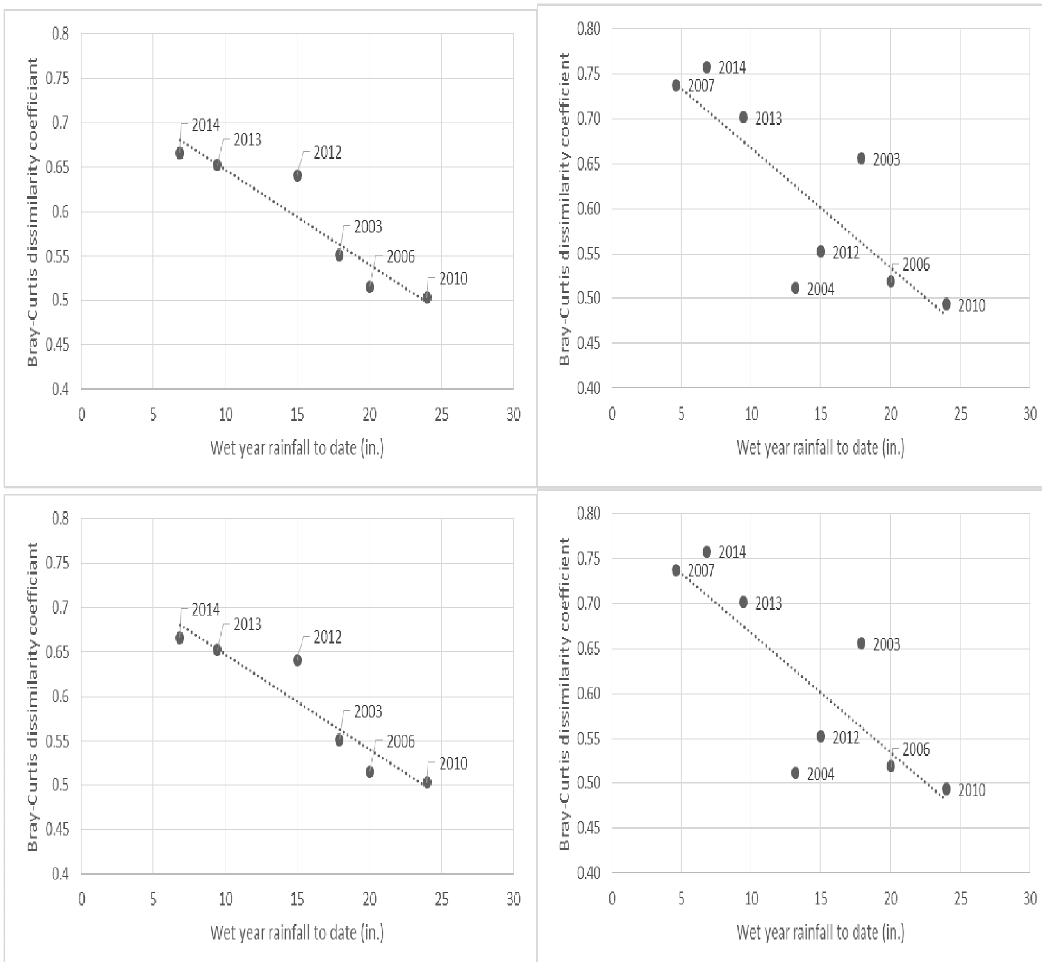

Figure 8-7 Rainfall vs. Curtis-Bray dissimilarity coefficient Upper (left) and Lower (right) Topanga. (R^2 = 0.88, 0.67 respectively)

8.4.4 Comparison of Topanga Creek IBI with other Santa Monica Bay sites

Although this study focused on Topanga Creek specifically, Heal the Bay has monitored BMI at a variety of locations within the Santa Monica Bay since 2000 (Figure 8-1). Table 8-5 summarizes the SCC-IBI information for sites considered to be reference (Arroyo Sequit AS19, and Cold Creek CC2, CC3, CC11) as well as for Malibu Creek (MC1, MC 15), which represents the more impacted reaches of lower Malibu Creek downstream of the Tapia Wastewater Treatment Plant that also support a population of steelhead trout.

SCC-IBI scores in Malibu Creek remained low since 2000, but reference sites such as those in Cold Creek, Solstice and Arroyo Sequit showed declines beginning in 2012. This regional pattern may be a reflection of the drought conditions affecting all local streams. Topanga Creek faced a sharp decline in SCC-IBI scores after 2001. The current drought period began in January 2002 entering a period of D0 intensity: 'abnormally dry;' and by mid 2002 the drought reached a level of D2: 'severe drought' until the winter rains in November 2002 (US Drought Monitor). It is not clear why scores in Topanga Creek began to fall in 2002, but this did not become apparent in other creeks until 2012. Although Topanga Creek is facing severe impacts from drought, reflected both by SCC-IBI scores and BMI species composition, it remains an important reference stream as it continues to flow where others in the region have gone dry.

Table 8-5 Adjusted[1] IBI Scores for Topanga and surrounding creeks 2000-2013.

SITE	Spr. 2000	Spr. 2001	Spr. 2002	Spr. 2003	Fall 2003	Spr. 2006	Spr. 2008	Spr. 2009	Spr. 2010	Spr. 2011	Spr. 2012	Spr. 2013	
Rainfall		**27.8**	**7.24**	**17.92**	**17.92**	**21.98**	**23.08**	**16.16**	**24.4**	**31.44**	**16.22**	**9.99**	
Malibu Creek													**Av.**
MC1	16	26	19	26	23	26	20	27	6				21
MC15	33	24	40	34	23	17		18	6	16	13	17	22
Cold Creek													
CC2	36	46	53	44		31/42		27	20	19	36		35
CC3	80	92	83	84	64	73	67	79/80	82	66	76	50	74
CC11	54	56	49	40		47		57	37/43	67	51	45	52
Solstice Creek													
SC14			76	67	70	60	56	69	49	59	72	60	64
Arroyo Sequit Creek													
AS19			72	72	70	57	50	70	70	64	56	40	62
Topanga Creek													
LT		66*		31*	44*	40*			34*	30*	24*	27*	37
UT		66*		37		36			41	29*	24*	13*	35

[1]*Scores are adjusted to to fit a scale of 0 to 100. *Denotes samples n<500*

8.4.5 Annual stream survey correlation to rainfall

During the course of the annual sampling in 2013 and 2014, water levels were consistently low, with little to no flow observed. While flow was not correlated to SCC-IBI scores, low dissolved oxygen levels did correspond to higher percentage of non-insect taxa, which did in turn lower overall SCC-IBI scores. Comparing scores with yearly rainfall to date, SCC-IBI scores 2003-2014 do not show any correlation. However, the observed shift in species composition from *Baetis sp./Simulium sp*. to Chironomid nd.

/Amphipod nd. occurred between 2012 and 2013. That winter was the first year since at least 2000 when wintertime rains did not alleviate drought conditions in the upper Santa Monica Bay. Drought intensity remained at D0: 'Abnormally Dry' or higher through the wet season, signaling an intensification of drought conditions in Los Angeles County (US Drought Monitor 2014).

8.5 Discussion

Benthic macroinvertebrate bioassessment of Topanga Creek at five water quality sites (2013-2014) provided additional insight to the biotic implications of water quality conditions. SCC-IBI scores indicated that the biotic integrity was lowest just below the town of Topanga at OF (6500 m). The highest scores were found at ST (4800 m), which was the only location to receive a 'Fair' rating. Without the anthropogenic influences of land grading, road or building development, ST is the least human-influenced site in the study. Simpson's Diversity was also highest at ST, due to a higher abundance of multiple taxa creating a more even distribution. This marked increase in biotic integrity suggests that water quality improves as water moves through the watershed from 6500 m to 4800 m. However, the high relative abundance of non-insects and dearth of low-tolerant taxa throughout the system support more consistent 'poor' SCC-IBI ratings further downstream, and suggests overall habitat degradation or disturbance.

Observed creek conditions that may influence these low scores include the input of fecal indicator bacteria, low dissolved oxygen, nutrient enrichment, and drought. Sites with higher average total coliform levels had significantly lower SCC-IBI total and EPT taxa scores. Low dissolved oxygen was found to correlate significantly with higher % non-insect taxa. The site (OF) with the highest average levels (ppm) of nitrate and orthophosphates, received the lowest SCC-IBI scores. High levels of ammonia, in conjunction with drought-related drying events likely created ideal habitat conditions for high abundance of mosquitoes (Culicidae) and midges (Chironomidae) at BR (Sanford et al. 2005).

Based on the Bray-Curtis analysis, samples collected on a particular date at all sites throughout the creek are significantly more similar to each other than samples collected at a single site over time. This suggests that although site conditions may influence the BMI community throughout Topanga Creek, overall system homogeny creates an environment in which cumulative effects over time may be a stronger driving force than location within the creek.

SCC-IBI scores for annual stream survey samples (2003-2014) found that Topanga Creek's lowest integrity metrics is percent intolerant individuals. Throughout this period, the percent tolerant taxa was the highest metric score, as the system was not dominated by pollution-tolerant organisms. However, when looking at the 2013-2014 water quality samples collected throughout the creek, the percentage of intolerant taxa remained the lowest and the percentage of tolerant taxa fell to the second lowest score. This suggests a shift to increased abundance of pollution tolerant organisms. Also, a drastic species composition change observed in the annual stream survey samples between 2012 and 2013 from *Baetis/Simulium* to Chironomid/Amphipoda signals a system-wide disturbance or condition change. Drought conditions did intensify between 2012 and 2013, as winter rains failed to alleviate drought conditions for the first year in at least a decade.

Future sampling to determine if this condition is persistent year-round or due to springtime blooms that correspond with sampling events should be considered. *Baetis* and Chironomids are both short lived species that can produce multiple generations per year in the Southwest; some species of *Baetis* complete their life cycle in 8-14 days (Gray 1981). Some species rely on specific life cycle cues, with only 1-2 generations a year, and so phenology changes could be potential driver of this observed phenomenon. Recent work has found that increasing water temperatures can induce earlier hatches of *Baetis* in the Western United States (Harper et al. 2006). Further analysis of water temperatures in Topanga Creek is recommended. The shift from *Baetis* dominance to Chironomids could also reflect a change in physical habitat conditions. The replacement of *Simulium sp*. with Amphipoda, particularly in Lower Reach samples, supports this hypothesis.

Our data suggested a correlation between community stability and rainfall. Years with low rain were more dissimilar than those with more rain. However, this no longer holds true with rainfall over 30 inches, suggesting that both drought and heavy flows can create disturbance to the BMI community.

In comparison with nearby creeks, including Malibu Creek, Cold Creek, Solstice, and Arroyo Sequit Creek, SCC-IBI BMI scores for Topanga from 2003-2013 are relatively low (Table 8-5). Topanga Creek remains one of the few perennial streams within the Santa Monica Mountains while many of these other locations are dry for much of the year. Although the SCC-IBI scores are low, the year round water in Topanga Creek supports a more complete assemblage of native amphibians and fish. It is difficult to explain why Arroyo Sequit, another perennial system that goes dry regularly, out-performs Topanga Creek by over 25 points on average.

The main limitation of applying the SCC-IBI metrics within this sample set was low abundance, as the majority (19 of 35) of our samples had fewer than 500 organisms. Seasonal variability within Mediterranean climates can be driven by short-term climatic factors and can vary greatly creating distinct seasonally-based communities (Gait and Resh 1999). However, It is important to note that it has been suggested that bioassessments like SCC-IBI may be less applicable to perennial streams, as survival in degraded streams requires many of the same life-history traits that also support survival of benthic macroinvertebrates in non-perennial streams (Mazor et al. 2013).

8.6 Summary

- Owl Falls was consistently the lowest SCC-IBI scores, and Scratchy Fall the highest. This may be a result of proximity to development.
- Average total coliform per site in 2014 corresponded to lower total and EPT taxa SCC-IBI scores.
- The SCC-IBI metric percentage of non-insect taxa is significantly higher when levels of dissolved oxygen are lower.
- Samples from a particular site were less similar, overall, than samples from the same date, suggesting homogeny throughout the creek.
- Functional feeding group composition was more stable than taxa composition per site and over time.
- Regional comparison of Topanga Creek indicated relatively degraded conditions.
- Both high and low flow conditions resulted in disturbed BMI communities.
- Worsening drought conditions during the winter 2012/13 may be causing a significant shift in species composition in Topanga Creek.

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9 Red Swamp Crayfish (*Procambarus clarkii*) In Topanga Creek: Removal Efforts And Ecosystem Effects

9.1 Abstract

The presence of invasive red swamp crayfish (*Procambarus clarkii)* in Topanga Creek was first recorded in 2001. The population has since increased, with a population explosion in 2011, during an extended period of low flow. Within the Santa Monica Mountains, *P. clarkii* has been linked to diminishing numbers of California newt (*Taricha torosa*), a species of special concern (Katz 2013). To address these concerns, a student citizen science program was conducted from September 2013 through February 2014 to remove crayfish from a 200 meter reach of Topanga Creek. The following metrics were collected and compared between the removal reach and an upstream, adjacent 200 meter non-removal reach: water quality (temperature, salinity, pH, conductivity, dissolved oxygen, turbidity), nutrient levels (nitrate, nitrite, ammonia, orthophosphate), crayfish abundance, and macroinvertebrate communities. The following metrics were collected within the Removal Reach: catch per unit effort, average crayfish length, and sex distributions of removed crayfish. The results indicate that the effects of crayfish on nutrient levels are low or non-existent; however, the presence of crayfish seems to correlate with lower BMI biodiversity. This study was conducted to gain a better understanding of the effects of *P. clarkii* in the Topanga Creek ecosystem.

9.2 Introduction

Red swamp crayfish (*Procambarus clarkii*) have spread far across the globe, posing an invasive threat to freshwater species abundance and community diversity (Ficetola et al. 2011). Without checks to their population, red swamp crayfish easily become a threat. They can grow rapidly, maturing within three months after hatching and can reproduce twice a year in warm conditions (Barnes 1974; Vodopich and Moore 1999; Safra et al. 1999). Furthermore, large healthy females typically produce 600 viable young (Barnes 1974; Vodopich and Moore 1999; Safra et al. 1999). The generalist and predatory feeding habits of this Gulf Coast native have been linked to observed declines in macrophyte abundance (Feminella et al. 2006; Rodriguez et al. 2005), macroinvertebrate diversity (Correia et al. 2008), increased bioturbation (Mueller 2007; Yamamoto 2010), and amphibian species richness and recruitment (Gamradt and Kats 2002; Cruz et al. 2006; Ficetola et al. 2011). *P. clarkii* consume an array of plant and animal matter, aquatic vertebrate eggs and larvae, aquatic invertebrates, and can affect food webs on a polytrophic scale. In Northern Italy, Ficetola et al. (2011) found that the presence of crayfish reduces the number of newt, salamander, toad, and tree frog breeding sites. They concluded that many of these amphibians actively avoid crayfish infested waters. For individuals that remained to breed, there was a negative association between larval abundance and crayfish presence across all seven species sampled. Pease and Wayne (2013) also observed that Pacific tree frog tadpoles (*Pseudarcris regilla*) responded to predation by crayfish both behaviorally and morphologically by selecting for deeper tail muscles. Gamradt and Kats (2002) conducted amphibian surveys from 1981-1986, and identified 10 Santa Monica Mountain streams supporting populations of California newts. When the surveys were repeated in 1994, newts were missing from three of those 10 streams. Further study documented that *P. clarkia* consumed newt egg masses, as well as attacked adults (RCDSMM *unpublished data*). It was also observed that adult newts recolonized a stream if the crayfish were removed by winter storms and there was sufficient water flow (Gamradt and Kats 2002).

P. clarkii entered southern California as early as 1924 (Holmes 1924), although they were not observed in Topanga Creek until 2001 (RCDSMM *unpublished data*). The crayfish population in Topanga Creek was limited in the first five years by active removal efforts and wintertime rain events, with significant flows that have been shown to be sufficient to wash crayfish from the system (Kats et al. 2013). As the Mediterranean climate eased into drought in 2011, the population expanded rapidly (RCDSMM *unpublished data*).

Environmental conditions of Mediterranean wetlands in periods of drought are a preferred habitat for *P. clarkii* (Geiger et al. 2005). This habitat was characterized by low-flows, shallow water of depths between one and two meters (Voshell 2002), and optimal water temperatures of 25^{o} Celsius (Invasive Species Compendium 2013). The introduction of *P. clarkii* in Topanga Creek raised concerns about possible implications for two sensitive native species, the California newt (*T. torosa*, CA state species of special concern) and southern California steelhead trout (*O. mykiss*, federally endangered). In September 2013, the Resource Conservation District of the Santa Monica Mountains (RCDSMM), in conjunction with the Watershed Stewards Project, launched a citizen science program to remove crayfish from a 200 meter reach of Topanga Creek and monitor crayfish dynamics, water quality, nutrients, and benthic macroinvertebrates.

The goals of this project were to (1) intensively remove crayfish from several refugia pool and step-pool habitats within a 200 meter stretch of Topanga Creek (2) record changes in water quality (dissolved oxygen, pH, salinity, conductivity, turbidity, water temperature) and nutrient levels (nitrate, nitrite, ammonia, orthophosphate) within the study reaches, and (3) measure the benthic macroinvertebrate community composition.

Study Area

Topanga Creek (34º 6’11”N 118º 36’18” W, elev. 1 to 6%) is the mainstem of a small coastal watershed (approximately 47 km^2) located within the Santa Monica Mountains National Recreation Area in southern California. The study reach consisted of 400 continuous meters of Topanga Creek, starting at 3500 meters and ending at 3900 meters from the ocean at a 61.96 meter elevation; this is considered a low elevation (Cuellar and Underwood 2012). The study area is relatively uniform in its geomorphological features, including pools, step-pools, runs, and riffles. This 400 meter stretch was split into a downstream 200 meter crayfish Removal Reach (RR), and the upper 200-meter Non-Removal Reach (NRR). No barriers of any sort were incorporated into the study reaches however natural low flow boulder barriers separated the RR from the NRR.

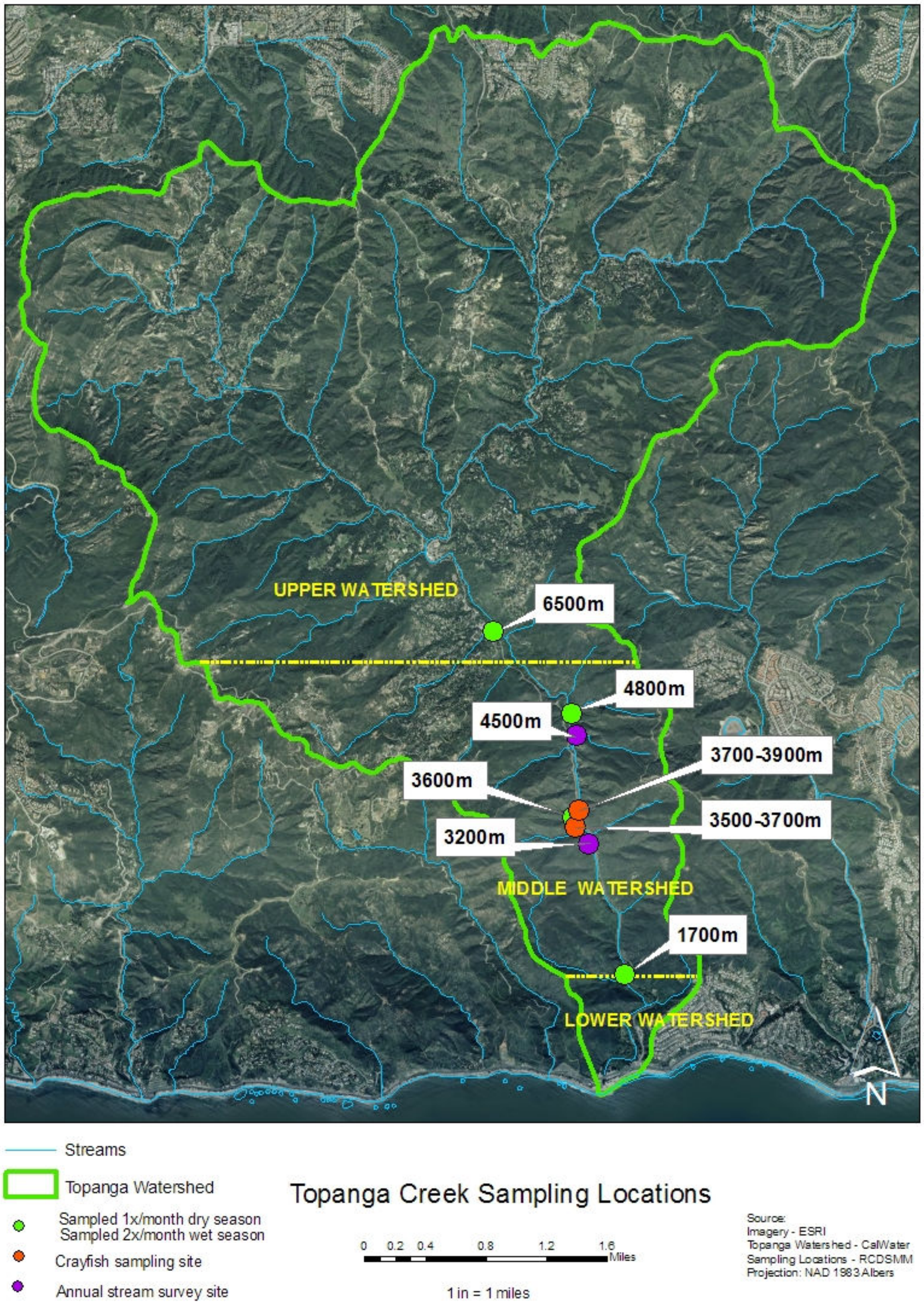

Figure 9-1 Topanga Creek Watershed and the Crayfish Study Reaches. The red points represent the study Removal Reach (3500-3700m) and Non-Removal Reach (3700-3900m).

9.3 Methods

Water quality, nutrient, and benthic macroinvertebrates (BMI) samples were collected and samples were analyzed for both 200 meter reaches in conjunction with ten volunteer events between September 2013 and February 2014. Due to the presence of federally listed southern steelhead trout, it was not permitted to set traps of any kind and removal was restricted to supervised hand capture only. Volunteers removed crayfish throughout the 200 meter RR using 3 inch pieces of hotdogs attached to hemp strings. Once crayfish held on to the bait, volunteers would slowly pull them out and net them. The crayfish were then counted, sexed, and measured in centimeters from head to tail using standard rulers. The crayfish were donated to a local wildlife rescue or used for educational purposes. Removal efforts occurred on the following dates: 09/21/2013, 10/11/2013, 11/12/2013, 11/26/2013, 12/03/2013, 12/17/2013, 01/07/2014, 01/21/2014, 01/28/2014, and 02/04/2014.

Water quality samples were collected from three similar pools within each 200 meter reach. An hour prior to each of the removal effort events, each site was tested for air temperature (mercury thermometer), salinity (ATC 300011 SPER SCIENTIFIC salt refractometer), pH (Waterproof pHTestr 30), conductivity (Waterproof ECTestr11), and dissolved oxygen (DO) and water temperature (YSI 55 dissolved oxygen meter). All probes were calibrated within a week prior to the collection date.

Nutrient sampling was conducted once a month from November 2013 through April 2014 at 3600 m, located midway between the RR and NRR sites. Samples were tested for nutrients within eight hours of collection using a LaMotte SMART3 colorimeter and LaMotte 2020we turbidity meter. Samples were tested for nitrate-N, nitrite-N, ammonia-N, orthophosphate and turbidity.

Benthic macroinvertebrate (BMI) samples were collected according to California's Rapid Bioassessment protocols (Ode et al. 2005) in November 2013, December 2013, February 2014, and April 2014 at similar pools and riffles for each 200 meter reach using D-Shape kicknets. Each sample was composed of a total of nine kicks (three transects and three kicks per transect). Samples were preserved in 95 percent ethanol or frozen within eight hours from the collection time and processed and analyzed within a month from the collection date. Most BMI were identified to the family or genus level using a 40x magnification, dissecting microscope.

Using the NRR as a control, t-tests were used to determine any correlation between crayfish presence and water quality, nutrient levels, and BMI presence in Topanga Creek. The Southern Coastal California Index of Biotic Integrity (SCC-IBI) metrics were applied to every BMI sample collected for the study (Ode et al. 2007). In addition to the

SCC-IBI, the total number of individuals, total number of taxa, dominant taxa, percent dominant taxa, percent collector-gatherer, percent filterer-collector, percent scraper, percent predator, percent shredder, average tolerance value, number of Ephemeroptera taxa, number of Plecoptera taxa, and number of Trichoptera taxa were also calculated. However, none of the NRR samples contained 500 individuals as required by the SCC-IBI metrics. As a result, the NRR samples were pooled into one data set and the RR into another. After pooling, the data sets were sub sampled, using Excel and a random number generator to select 500 individuals and perform more reliable SCCI-IBI metrics and scores.

9.4 Results

9.4.1 Removal Effort

The ten volunteer events resulted in a total of 203.25 person-hours and a total of 345 crayfish removed (Figure 9-2); 166 females and 179 males (Figure 9-3). Measurements were taken midline from the tip of the rostrum to end of the tail. The average length of crayfish removed was 7.61 centimeters, and there was no significant difference in length between males and females (p= 0.733) or statistical trend in the length of crayfish over time (R^2=0.008). There was also no significant difference found between the number of females and males caught.

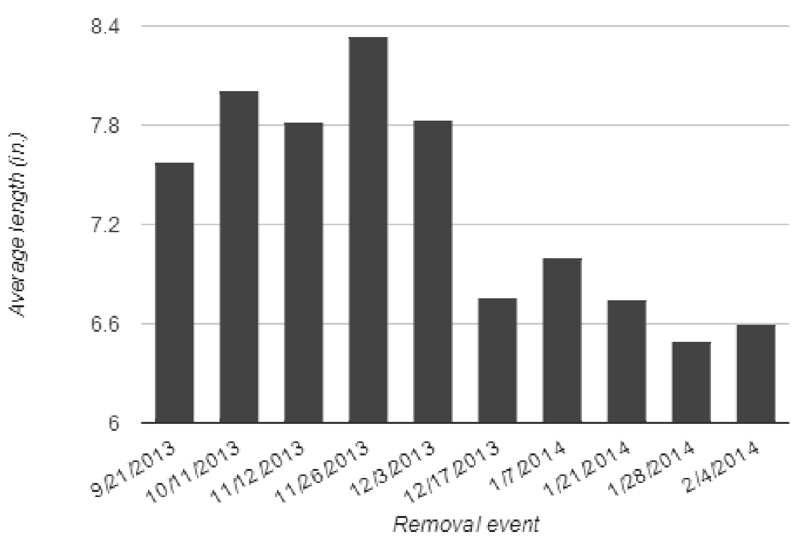

Figure 9-2 Average Length of Removed Crayfish by Event.

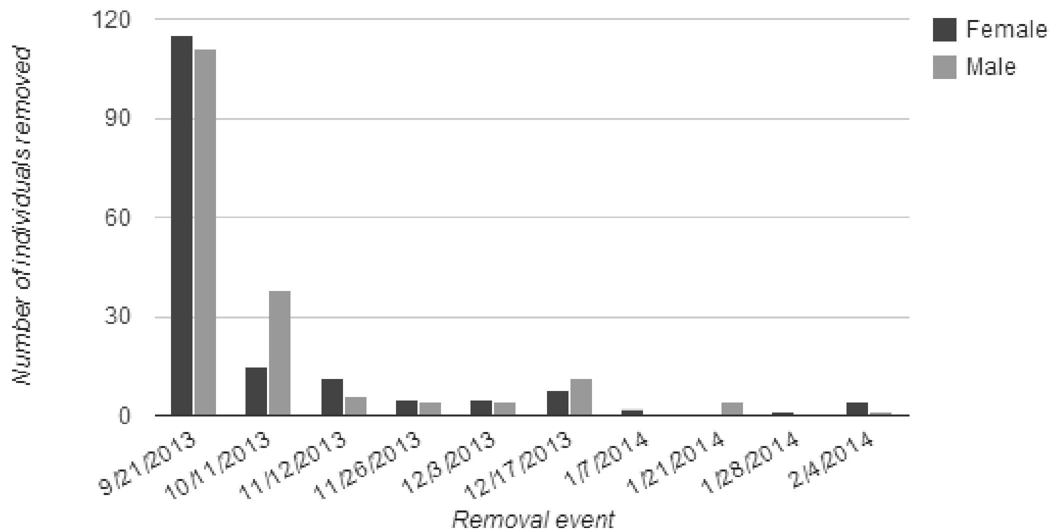

Figure 9-3 Number of Male Versus Female Crayfish by Event.

The catch per person per hour declined from 2.26 crayfish to 0.83 over the course of study. No statistical trend was found linking removal efforts to the decrease in the catch per person per hour (R^2 =0.315) (Figure 9-4). Water temperatures and catch per person per hour were found to have a correlation coefficient of 0.726, but had an R^2 value of 0.173 that suggests an unreliable best-fit line (Figure 9-5). However, as water temperature cooled fewer crayfish were observed and were more difficult to capture.

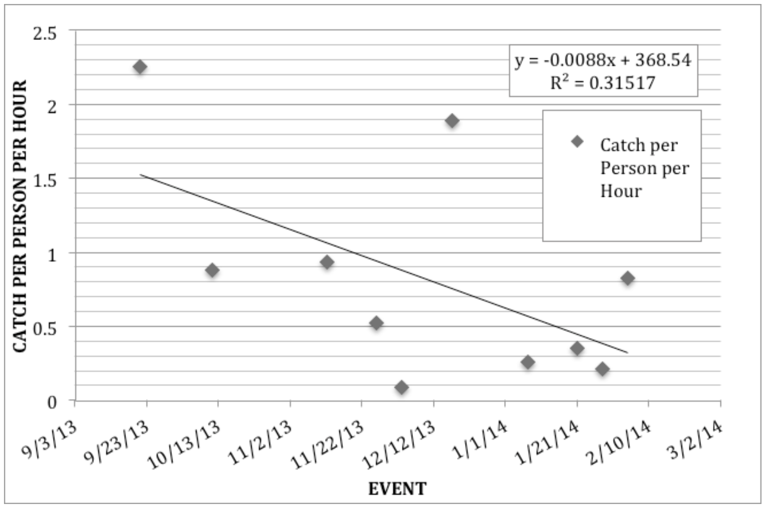

Figure 9-4 Catch Per Person Per Hour Over Time.

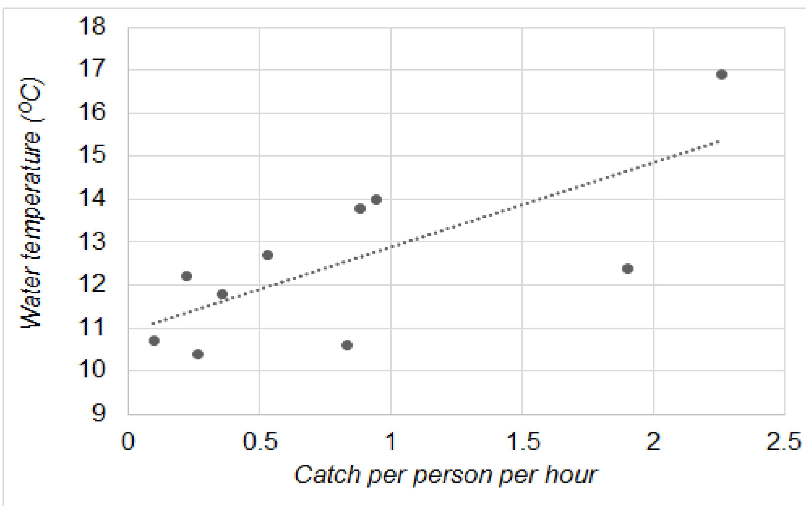

Figure 9-5 Catch Per Unit of Effort Versus Water Temperature.

9.4.2 Water Quality and Nutrients

Water quality and nutrient data were compiled into a database. The data was analyzed for any significant difference between the RR and NRR. None of the parameters showed a statistical difference or a general trend, except for salinity. A significant difference of 0.000011 ($P<0.05$) in salinity levels was found, with higher salinity in the non-removal reach (Figure 9-6). However, the salinity levels do not correlate with crayfish removal; the crayfish catch per event were plotted against salinity for the reach, giving an R^2 value of 0.001.

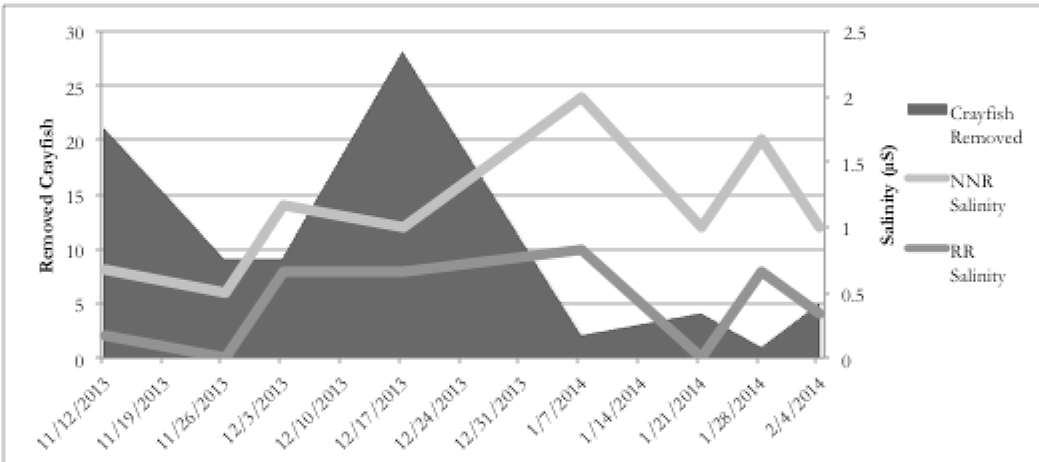

Figure 9-6 Salinity Levels and Numbers of Removed Crayfish.
(Note: This graph represents non-continuous data points.)

9.4.3 Benthic Macroinvertebrate (BMI) Sampling

The four BMI samples collected from the NRR in November 2013, December 2013, February 2014, and April 2014 contained a total of 676 individuals from four phyla, 14 orders, 35 families, and a total of 37 taxa. The samples collected from the RR contained a total of 3,195 individuals from three phyla, 14 orders, 37 families, and a total of 56 taxa (Appendix C). The three phyla represented in both samples were Arthropoda, Annelida, and Mollusca. In the NRR sample Nematoda were also present.

The most abundant taxa in the pooled NRR were Ostracoda (bean clams) with a relative abundance of 37.8%, Amphipoda (freshwater shrimp) with a relative abundance of 17.6%, and Physidae (pouch snails) with a relative abundance of 14%. In the pooled RR, the most abundant were Hydrobiidae (mud snails) with a 29.7% relative abundance, Amphipoda (freshwater shrimp) with a 26.1% relative abundance, and Chironomidae (non-biting midges) with a 15.3% relative abundance. The three most abundant orders comprise 69% of the NRR sample, and 71% or RR.

The five most abundant taxa for each event are depicted in Figure 9-7. This graph shows the transitions of the top five most abundant taxa during removal efforts from November 2013 - February 2014 and in April, two months after the efforts ended. Diversity of functional feeding groups (FFG) within the top five dominant taxa shifted from November - February. The removal reach maintained a higher diversity for most samples. Crayfish were the most abundant taxa for the NRR in November shifting to

Chironomidae in April. In contrast, the RR had a high abundance of Chironomidae in November, transitioned to Amphipoda and Hydrobiidae through February, and returned to Chironomidae in April.

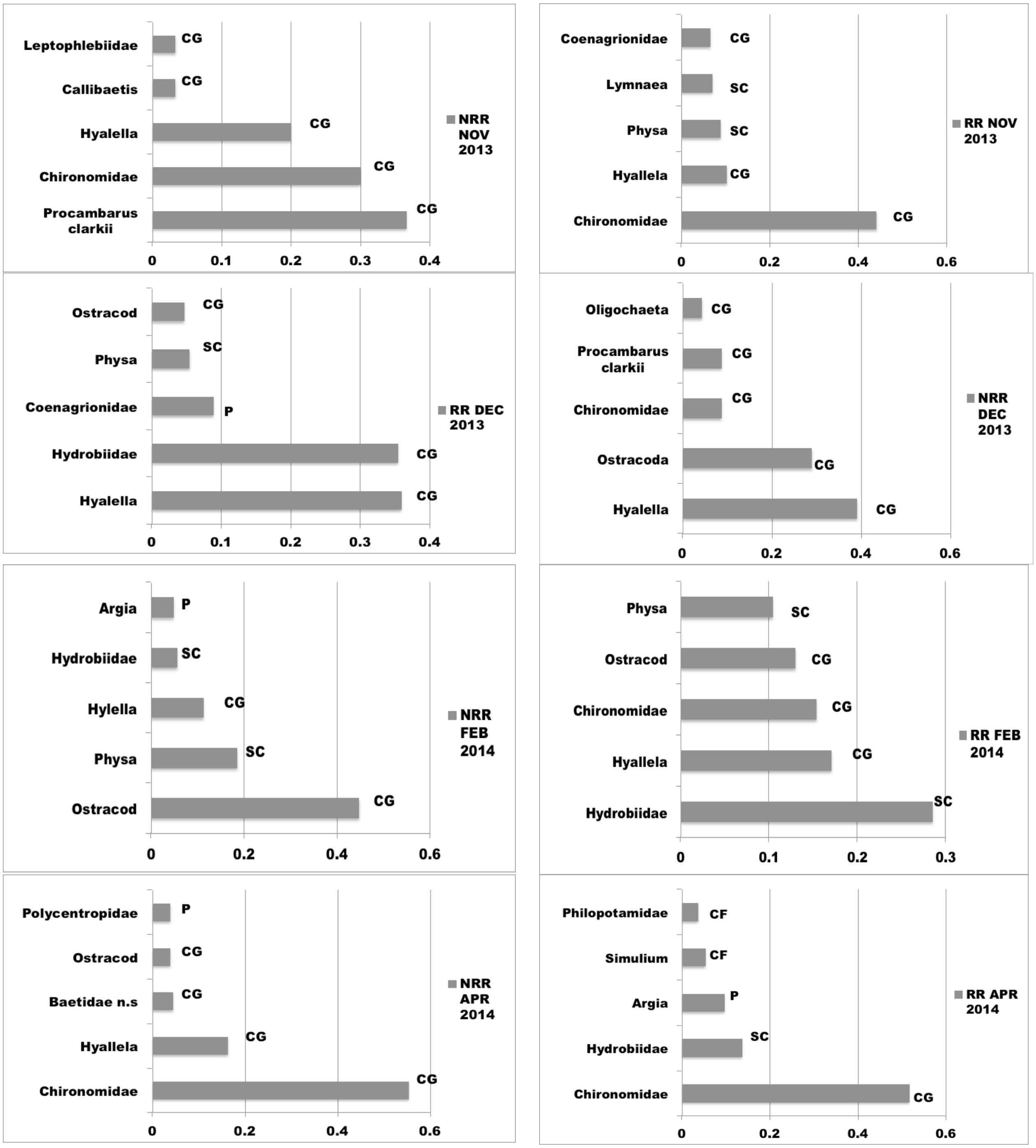

Figure 9-7 Comparison of BMI dominant taxa between the removal and non-removal reaches, Topanga Creek 2013-2014. Gastropoda were considered Scrapers; Simulium and *Philopotamidae* were considered Collector-Filterers; *Argia* were considered Predators; the rest were considered Collectors-Gatherers.

Table 9-1 shows the SCC-IBI metrics and scores of each BMI sample, with some additional metrics: the total number of individuals, total number of taxa, the dominant taxa, percent of dominant taxa, percent collector-gatherer, percent filterer-collector, percent scraper, percent predator, percent shredder, average tolerance value, number of Ephemeroptera taxa, number of Plecoptera taxa, number of Trichoptera taxa, percent of collector-gatherer plus filterer-collector, percent of non-insect, percent of tolerant taxa, number of Coleoptera taxa, number of predator taxa, percent of intolerant individuals, and the number of EPT taxa.

In both reaches, there was an increase in the BMI from November 2013 to April 2014. However, the BMI abundance in the NRR never reached 500 individuals. The BMI in the RR increased dramatically from 210 (November) to more than 1000 individuals (April). The percent dominant taxa remained high in both reaches.

The diversity of FFG also increased in both reaches over time. Collector-gatherers and predators were present throughout the samples, and scrapers, collector-filterers, and shredders started to appear respectively through February 2014 (see Table 9-1). The order of FFG dominance was as follows: collector-gatherer, scraper, predator, collector-filterer, and shredders. Shredders only appeared in the February 2014 RR sample when they had a higher dominance than collector-filterers. Once removal ceased, collector-gathers again increased to pre-removal levels.

The percent of EPT taxa tended to be higher in the RR, but evened out with the NRR after the removal efforts ended. There was no significant difference of percent tolerant, intolerant taxa, or average tolerance values between the RR and NRR reaches. Though the SCC-IBI metrics and scores were calculated for each sample, it is important to remember that none of the NRR samples and one RR sample did not meet the minimum 500 BMI abundance required by protocol. These samples are presented in Table 9-1 to provide a qualitative rather than quantitative comparison of the reaches over time.

To address the minimum abundance requirement, all BMI samples were pooled. The metrics and scores on Table 9-2 were then calculated from the pooled samples of each reach. The additional BMI metrics calculated in Table 9-1 were not calculated for this table. Using this analysis, both reaches fall within the fair range, with the removal site scoring slightly higher.

Figure 9-8 depicts the SCC-IBI metrics for each of the event samples and the pooled samples. This graph illustrates an increased percentage of intolerant and predator taxa between fall and spring. During active removal efforts, there is a large disparity between the two reaches from November through February; however by April (two months post removal), there was no significant differences observed.

Table 9-1 SCC-IBI Metrics and Scores for Removal and Non-Removal Reaches, Topanga Creek 2013-2014.

	NON-REMOVAL	REMOVAL	NON-REMOVAL	REMOVAL	NON-REMOVAL	REMOVAL	NON-REMOVAL	REMOVAL
ADDITIONAL IBI METRICS	11/20/13	11/20/13	12/6/13	12/5/13	2/20/14	2/20/14	4/24/14	4/24/14
Total # of Individuals	30	212	69	1263	227	1008	341	1171
Total # of Taxa	7	21	11	32	17	24	26	27
Dominant Taxa	P. clarkii	Chironomidae	Hyalella	Hyalella/ Hydrobiidae	Ostracod	Hydrobiidae	Chironomidae	Chironomidae
% Dominant	36.67	44.13	39.13	35 (each)	48.9	28.47	52.75	51.92
%CG	93.333	66.038	92.754	46.002	66.079	48.016	83.578	62.596
% FC	0	0.943	0	0.793	1.322	0.496	4.106	9.906
%SC	0	16.509	4.348	41.409	17.621	39.187	2.639	14.347
%P	3.333	11.321	1.449	11.164	11.894	7.044	7.331	11.699
% SH	0	0	0	0	0	1.984	0	0
Average Tolerance Value	7.700	6.690	7.731	8.228	7.760	7.406	6.471	7.940
Ephemeroptera Taxa	2	2	0	2	0	2	2	2
Plecoptera Taxa	0	0	0	0	0	1	0	0
Trichoptera Taxa	0	1	0	5	3	2	4	4
SCCIBI METRICS								
%CF+CG	93.333	66.981	92.754	46.714	67.401	48.512	87.683	72.502
% Non-Insect Taxa	42.857	38.095	54.545	28.125	47.059	33.333	23.077	29.629
% Tolerant Taxa	42.857	28.571	54.545	18.75	41.176	33.333	34.615	29.629
Coleoptera Taxa	0	2	1	4	0	1	2	2
Predator Taxa	1	6	1	10	6	9	9	8
% Intolerant Individuals	0	5.102	1.639	1.456	2.591	3.19	8.844	7.904
EPT Taxa	2	3	0	7	3	5	6	6
METRIC SCORES								
% CF+CG	1	8	1	10	8	10	3	6
% Non-Insect Taxa	1	8	0	5	0	4	6	4
% Tolerant Taxa	0	3	0	6	0	2	1	2
Coleoptera Taxa	0	4	2	7	0	2	4	4
Predator Taxa	0	3	0	7	3	6	6	5
% Intolerant Individuals	0	2	1	1	1	1	3	3
EPT Taxa	1	1	0	4	1	3	3	3
SUM (0-70)	3	24	4	40	13	28	26	27
ADJUSTED SCCIBI SCORE	4.3 (VERY POOR)	34.3 (POOR)	5.7 (POOR)	57.1 (FAIR)	8.6 (VERY POOR	40.0 (POOR)	37.1 (POOR)	38.6 (POOR)

Table 9-2 SCC-IBI Metrics and Scores for Pooled Samples, Topanga Creek 2013-2014.

	NON-REMOVAL	REMOVAL
ADDITIONAL IBI METRICS	11/13-4/14	11/13-4/14
Individuals (n)	***500***	***500***
SCCIBI METRICS		
%CF+CG	60.6	79
% Non-Insect Taxa	28.571	28.947
% Tolerant Taxa	25	34.211
Coleoptera Taxa	2	2
Predator Taxa	10	16
% Intolerant Individuals	5.797	3.692
EPT Taxa	6	8
METRIC SCORES		
% CF+CG	9	5
% Non-Insect Taxa	5	5
% Tolerant Taxa	4	1
Coleoptera Taxa	4	4
Predator Taxa	7	10
% Intolerant Individuals	2	2
EPT Taxa	3	4
SUM (0-70)	31	34
ADJUSTED SCCIBI SCORE	44.3 (FAIR)	48.6 (FAIR)

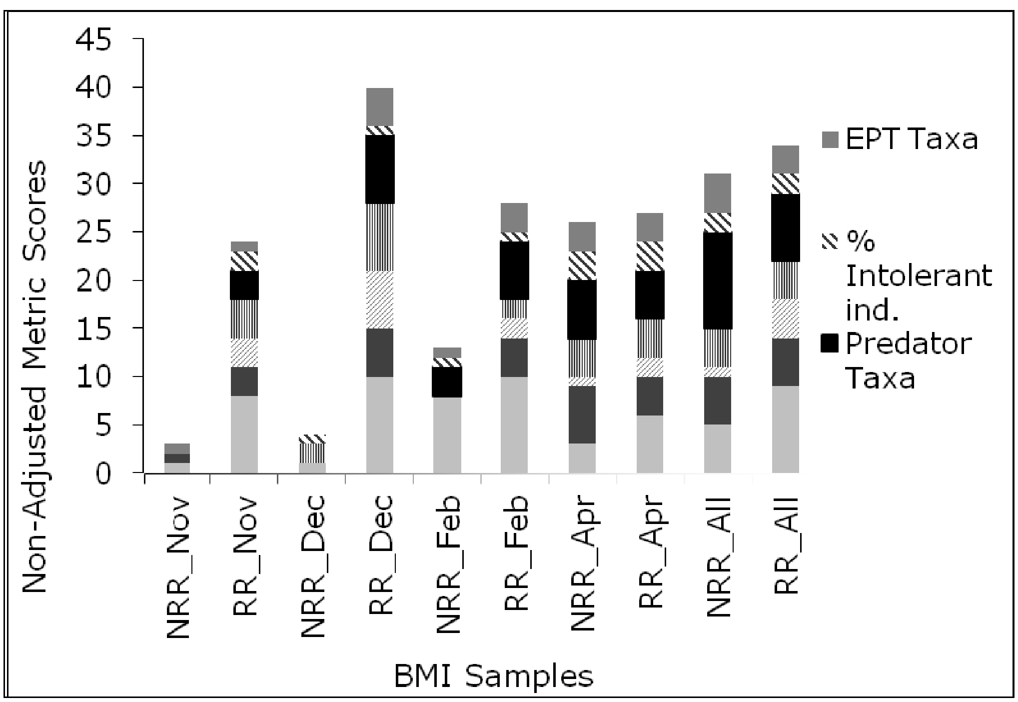

Figure 9-8 Breakdown of Non-Adjusted SCC-BMI Scores.
"All" represents the pooled samples.

Although all of the NRR samples and the November RR sample had BMI counts lower than 500, the SCC-IBI metrics were still calculated and used to describe changes over time. The individual event scores should not be ignored on the basis of low BMI numbers. It is true that the SCC-IBI metrics were not designed to deal with lower BMI counts, but the metrics do provide an idea of the relative state of the BMI community. The species richness, the percentage of each FFG, dominant taxa, and total abundance were also IBI indicators of BMI community health that were taken into account. When samples for each reach were pooled to get an overall status of the BMI community that adhered to the required statistics for the SCC-IBI metrics, the RR's BMI community appeared to be in a better condition than the NRR.

The SCC-IBI scores give a wider context to the overall condition of Topanga Creek when compared to other creeks in southern California. Topanga Creek would not be considered a reference creek based solely on the SCC-IBI score. The scores of the samples containing at least 500 BMI, consistently put the creek in the "Poor" to "Fair" range and the pooled scores have a range of "Fair." The reaches scores fall among the lowest in the Santa Monica Mountains. When compared to Heal the Bay's 2013 SCC-IBI scores for Arroyo Sequit Creek, Solstice Creek, Cold Creek, and Malibu Creek, the Topanga Creek crayfish pooled scores ranked second lowest, with Malibu Creek having the worst scores.

Using historic data from Topanga Creek collected during snorkel and other visual surveys (2001-2014), crayfish presence was compared to the presence of amphibians, and crayfish found in *O. mykiss* stomach contents (Krug et al. 2012). There was no evidence to suggest that crayfish impacted the presence of California tree frogs or the pacific tree frogs as observations of those species remained consistent over time. However, there was a distinct negative correlation between crayfish presence and California Newts (RCDSMM *unpublished data*). Local researchers have observed crayfish eating newts (Kats et al. 2013; RCDSMM *unpublished data*). Since the crayfish population explosion in 2011 in Topanga Creek, there has also been an increased incidence of crayfish found within large (10 inches and up) rainbow trout's diet (Krug et al. 2012). The increased number of crayfish appears to have changed the BMI community for the worse and they appear to have also impacted the newt population, (Figure 9-9). To make circumstances worse, the drought that has plagued southern California for the last few years has only been increasing the preferred habitat for crayfish and worsening habitat conditions for native wildlife.

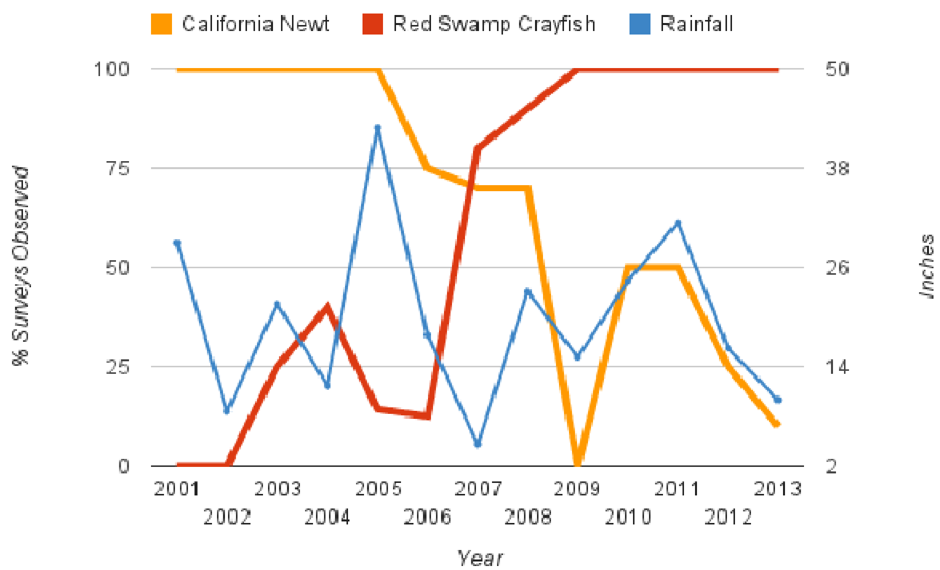

Figure 9-9 Observations of Crayfish and CA Newts compared to Water Temperature in Topanga Creek 2001-2014.

Sustained crayfish removal efforts produced positive results in the BMI community and volunteer actions, through citizen science efforts, can promote a wide public involvement in active restoration efforts. In just a few months of removal, the BMI community improved into the “fair” SCC-IBI range. In the future, more study reaches and BMI collection sites should be established to provide more in-depth comparisons. While it is not feasible to conduct removal throughout the entire creek, the results of this study suggest that a focused removal effort following strong winter storm pulses that reduce the population throughout the creek could be beneficial.

9.5 Summary

- Crayfish removal had no effect on water quality or nutrient levels.
- Crayfish removal improved BMI community compositions while on-going but the effect was not observed two months after removal ceased.
- Crayfish removal could be beneficial in improving ecosystem health and nutrient cycling within the creek.

9.6 Acknowledgements

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10 Benthic Algae in Topanga and Malibu Creeks

10.1 Abstract

Water quality monitoring has historically relied on chemical parameters but recent work has recognized that integrating biological responses to water quality changes can provide a more complete understanding of ecosystem sensitivity, resiliency and status. Periphyton are found in all aquatic environments and can tolerate a wide range of nutrient levels and overall water quality (Hoffman 1994). Monitoring benthic algae is becoming more common as tools are developed to allow for a better understanding of the relationship and response of these sensitive organisms to the aquatic environment. Topanga and Malibu Creeks represent the second and third largest watersheds within the Santa Monica Mountains and support a variety of special status aquatic species. Comparison of the benthic algae community conditions in 2013 utilizing both standard metrics (Rhithron Associates, Inc. 2014) and relatively new southern California Index of Biotic Integrity (Fetscher et al. 2014) indices suggests that although Malibu Creek is listed as impaired for nutrients, sediment and trash, the more consistent flow regime provided by summer flow augmentation supports a spring benthic algal community that is not substantively different from that found in Topanga Creek, which is not listed for any impairments and has no summer flow augmentation. This suggests that a complex, synergistic pattern of abiotic and biotic variables are shaping the biological integrity of these creeks. It is hoped that the use of both diatoms and soft-body algae as diagnostic tools to provide secondary indicators and multiple lines of evidence will better characterize the responses of southern California creeks to both natural events (floods, wildfire) and anthropogenic inputs providing a more complete picture of stream health in these systems. That being the case, some of the common diatom indicator species with fairly well described Total Nitrogen (TN) preferences, both high and low, were found in both Topanga and Malibu, which provides a somewhat confusing result. This could possibly be a result of inability to differentiate between species in the same genus that appear taxonomically similar, but in fact represent different species with different tolerance preferences. It could also mean that further refinement of the tolerance limits and preferences is needed. This study provides a snapshot of baseline conditions for future comparison.

10.2 Introduction

Periphyton abundance and diversity, specifically diatom and soft-bodied algae species, are a potentially useful indicator of water quality and are often used in California and elsewhere in conjunction with water quality and benthic macroinvertebrate monitoring (Fetscher et al. 2009, Fetscher et al. 2014). Benthic algae (both diatoms and non-diatoms) are a primary energy source in stream food webs (Stevenson 1996) and an important component of periphyton. This variable of water quality testing is relatively new to the regulatory testing framework, but a well-established national database of diatoms suggests that much can be learned by identifying species presence and abundance (Potapova and Charles 2003, Potapova 2005, Potapova and Charles 2007). In order to function as a useful water quality indicator, a species needs to have a narrow range of ecological tolerances, a wide distribution range and be relatively commonly observed. Following the framework promoted by Potapova (2005), we have documented the abundance and distribution of diatom and non-diatom species found in Topanga Creek and then examined the habitat and water quality characteristics associated with their presence to begin developing an ecological profile of southern California taxon. Recent work in Malibu Creek supports this concept and data collection is in progress to further investigate diatom community structure and distribution relative to variables such as conductivity (Orton 2012).

Diatoms (phylum Bacillariophyta) are single celled algae that come in a variety of shapes, although primarily centric (round) or pennate (elongate). They are characterized by a silicon based shell called a frustule, that has two halves that fit tightly together, but have pores that allow for nutrient movement into the cell, and wastes to pass out of the cell. They are particularly sensitive to changes in dissolved oxygen, pH, nitrogen and especially conductivity. One of the benefits of using diatoms as water quality indicators is that they respond quickly (within hours to days) to changes in the environment such as variation in pH or water temperature by modifying their exoskeleton shape (Prygiel and Coste 2000).

Soft-body algae include a variety of taxa that are widely distributed, colonize almost every stream substrate, reproduce quickly and respond rapidly to changes in the environment; thus, they are useful not only as a way of detecting impairments, but also can assist in diagnosing impairment causes (Fetscher et al. 2009). Recent advances in the development of algae-based Indices of Biotic Integrity (IBI) suggest that in southern California streams, these non-diatom species provide additional insight into water quality conditions (Fetscher et al. 2014).

In addition to documenting the diversity of the diatom and soft-bodied algal communities, chlorophyll a and ash free dry mass (AFDM) are used to estimate the relative amount of algal biomass, which is a proxy for estimating stream productivity. Chlorophyll a is a specific form of chlorophyll present in algal cells that is critical for photosynthesis. The concentration of chlorophyll a varies with depth, water temperature, and season, and provides a way of quantifying the amount of active photosynthesis at the time of sampling. Ash free dry mass is the difference between the wet and post combustion weight of the sample, providing a complimentary way of quantifying algal biomass (Fetscher et al. 2009). These measurements can assist in developing an autotrophic index, which is the ratio of ash free dry mass to chlorophyll a that can reflect response to nutrient enrichment (index value increases) and biological oxygen demand fluctuation (Biggs 1989).

It is hoped that the use of both diatoms and soft-bodied algae as diagnostic tools will provide secondary indicators and multiple lines of evidence to better characterize the responses of southern California creeks to both natural (floods, wildfire) and anthropogenic inputs. This will enhance analysis of these metrics within two major creeks in the Santa Monica Bay. By including these additional metrics to the water quality assessment effort, we hope to assist in developing regional ambient and exceedance level data.

10.3 Methods

Sample Sites

Topanga Creek is the third largest drainage into the Santa Monica Bay and over 70% of the watershed is public open space wildlands within Topanga State Park.

Samples were collected in the main stem (stream order 2) 4,662 hectare Topanga Creek during stream surveys on 30 April 2013, 6 May 2014 in the upper reach approximately 4500-4650 m upstream of the ocean, and on 2 May 2013, 5 May 2014 in the lower reach located approximately 3200-3350 m from the ocean, concurrently with physical habitat condition (Fetscher et al. 2009), and in-situ water quality (temperature, dissolved oxygen, pH, conductivity) (Figure 10-1). At the same time, grab samples for fecal indicator bacteria (total coliform, *E. coli* and enterococcus), nutrients (nitrate-N, nitrite- N, ammonia – N, orthophosphate) and turbidity were collected, put on ice and analyzed within six hours. Benthic macroinvertebrate samples were collected in the same reaches, along with presence and abundance of amphibians and fish.

These 150 meter reaches were initially selected to represent portions of the main stem of Topanga Creek below town. Since 2001 steelhead trout have been present in the lower gradient portion (3200-3350 m, average gradient <3%); and since 2005 in the higher gradient reaches from 4500-4650 m (average gradient 3-6%). Additionally, the lower gradient reach (3200-3350 m) is adjacent to Topanga Canyon Boulevard, and subject to higher level of anthropogenic disturbance than the higher gradient reach (4500-4650 m), which is deeper in the canyon, away from the road and while subject to some disturbance, is much less accessible than the lower reach.

Diatom and soft-bodied algae data was also available for Malibu Creek in 2013. The Malibu Creek Watershed is the second largest system draining into the Santa Monica Bay at 28,231 hectares. Samples were collected on 24 April 2013 at two locations (R-3 and R-4, Figure 10-2) in lower Malibu Creek (stream order 4) below Rindge Dam. Physical habitat, water quality documentation, and benthic macroinvertebrate sampling as per Ode (2007) and Fetscher et al. (2009) protocols were also collected.

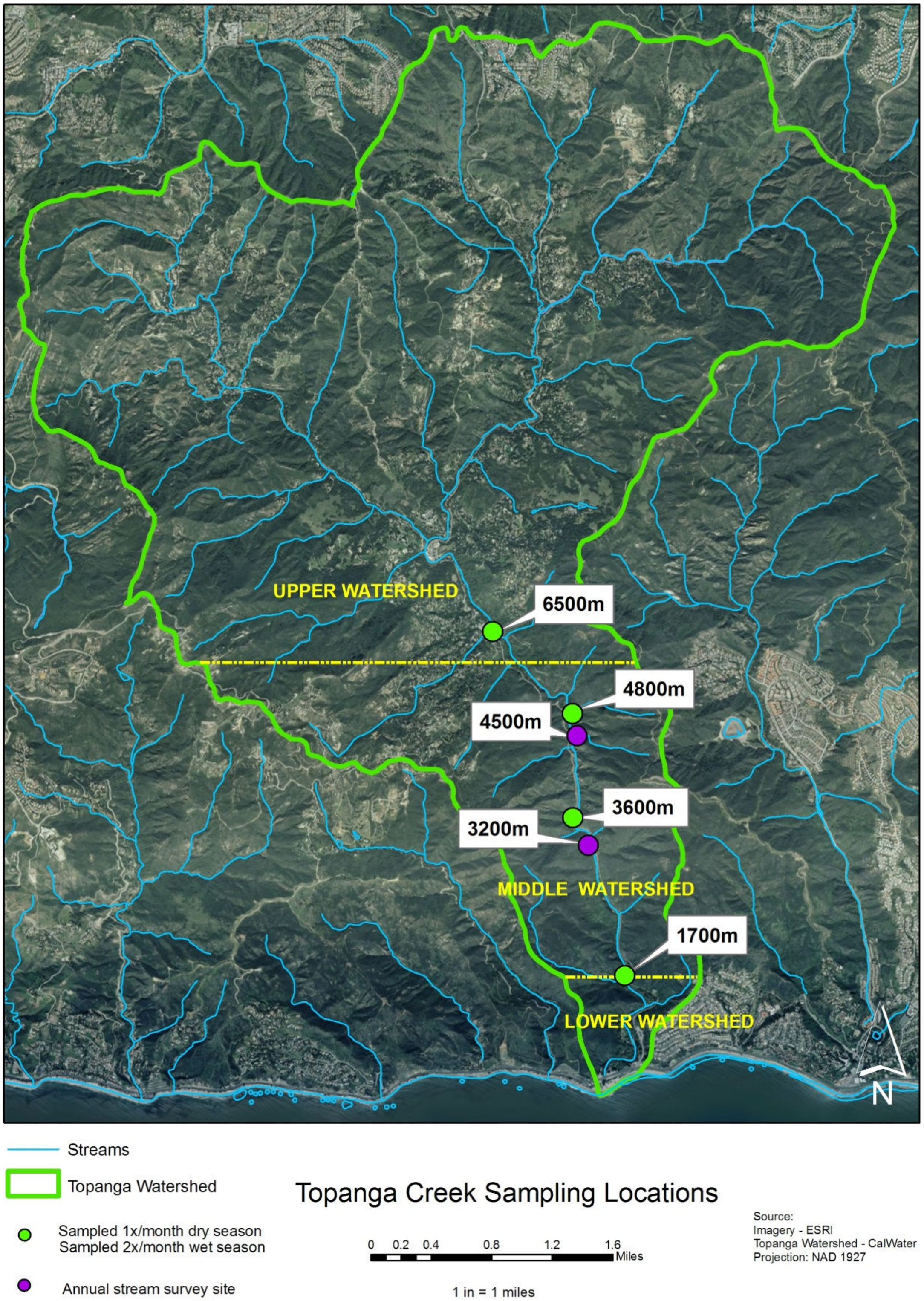

Figure 10-1 Map of Topanga Creek Sampling Locations as distance measured from the ocean 2013-2014.

Figure 10-2 Map of Malibu Creek Sampling Locations 2013. R3 and R4 are sampling locations for the Las Virgenes Municipal Water District. Start Pool is the location of a data sonde.

Sample Collection

Stream algae and diatom samples were collected with assistance from biologists at Aquatic Bioassay and Consulting Laboratories, Ventura, CA. Methods followed the sampling protocols identified by Surface Water Ambient Monitoring Protocol (Fetscher and McLaughlan 2008, Fetscher et al. 2009). This method established 11 transects in a 150 meter stream reach. Samples were collected from substrate present at each transect (alternating right side, center and left side of wetted width) located 1 meter downstream from the transect and combined into a single composite sample. Collection methods varied according to substrate and habitat type according to the protocol. An ABS delimiter (plastic coring device) was used to collect loose substrate up to 1 cm deep in a depositional habitat with fine gravel, sand or silt substrate. A metal spatula was placed underneath the delimiter to ensure collection of any loose material. A rubber delimiter was used to isolate a 12.6 cm^2 area of algae when wrapped around cobble or other erosional and removable object. A toothbrush was used to scrub the algae from the surface. For immovable substrate (i.e. boulders, bedrock or concrete), a syringe scrubber was used to collect algae from underwater. The plunger was retracted and the scrubber was removed and rinsed into a wash bucket.

Upon collection of all 11 subsamples, field processing was done according to three protocols. A 25 ml composite sample was filtered through glass fiber pre-filters using a hand pump. The filter was placed into a petri dish, covered in aluminum foil and placed on dry ice until analyzed in order to determine ash free dry mass and chlorophyll a. Diatom samples were prepared by combining 10 ml formalin preservative with a 40 ml of composite sample water in a 50 ml centrifuge tube, covered in foil and placed on wet ice. Soft-bodied algae was mixed with 5ml of glutaraldehyde solution with 45 ml of the composite sample water in a 50 ml centrifuge tube covered in foil and stored on wet ice.

Sierra Environmental (Reno, NV) did the analysis of Ash Free Dry Mass (SM 2540) and Chlorophyll a (SM 10200). Diatom and soft-bodied algae samples were identified and enumerated by Academy of Sciences, Philadelphia, PA in 2013 and by Rhithron Associates, Inc (Missoula, MT) in 2014.

Index of Biotic Integrity Analysis

Recent work has evaluated a variety of possible stream indices using diatom and non-diatom soft-bodied algae to compare biotic integrity, providing more reliable comparisons between sites both spatially and temporally. Using an online calculator provided by SCCWRP to calculate the southern California Diatom and non-diatom species IBI described by Fetscher et al. (2014), data from two sites located in Topanga and Malibu Creeks were compared. Unfortunately data on benthic macroalgae for Malibu Creek was only available for 2013 at this time.

Diatoms Metrics

Metrics used to describe and quantify the diatom community in relation to stream water quality have been selected to examine the response of diatoms to impairments. The multi-metric analysis contains five subsets that are designed to quantify various components of diversity as compiled by Rhithron Associates, Inc (Table 10-1).

Species richness, diversity and dominant taxon of the diatom species collected reflects the community structure at each site. Species richness and Shannon diversity values decrease with increasing water quality impairments. Dominance values increase with increasing water quality impairments.

Sediment metrics characterize species found in unstable habitats (Barbour et al. 1999). Diatoms are designated as highly motile, moderately motile, not motile and having variable motility. The percentage of highly motile species that are able to hold their position on the substrate surface increases with increased sedimentation (Lange-Bertalot 1979). Some species in the genus *Navicula*, *Nitzschia* and *Surirella* are associated with increases in siltation and sedimentation. However, *Nitzschia palea* has been identified as an oligotraphentic low –nutrient indicator (Potopova and Charles 2007) and was only observed in Topanga Creek.

Organic nutrient measures include several metrics related to organic pollution tolerance. Species are rated as 1(most tolerant to organic pollution) to 3 (sensitive to organic pollution) (Van Dam et al. 1994). To obtain the pollution tolerance index, the species tolerance value is multiplied by its abundance, and then that value is divided by the total abundance for the site. A low pollution index score indicates poor water quality (Van Dam et al. 1994).

Halophytic algae have wide osmoregulation ranges/tolerances but also increase with increased nutrients and suspended sediment levels. Eutrophic water often have higher pH levels.

Other metrics for pollution include the percent relative abundance of facultative and obligate nitrogen heterotrophs based on their nitrogen (N) uptake. The percentage of heterotrophic taxa increases with decreased water quality thus the relative abundance of nitrogen hetrotrophs can be used as an indicator of organic nitrogen compounds and/or reduced light available (Van Landignam 1982, Porter 2008). For example, *Rhopalodiales* species fix nitrogen and are extremely responsive to nutrient loading because they are less competitive in a eutrophic environment.

The diatom values are:
1. Nitrogen autotroph tolerates very small concentration of organic nitrogen
2. Nitrogen autotroph tolerates elevated concentration of organic nitrogen
3. Facultative nitrogen heterotroph need periodically elevated levels of organic nitrogen
4. Obligate nitrogen heterotroph need continuously elevated levels of organic nitrogen

Polysaprobous species thrive in waters rich in decomposing organic material and having greater than 10% oxygen (Van Dam et al. 1994). Values assigned to diatom taxa are as follows:
1. Oligosaprobous (intolerant to organic pollution)
2. Beta – mesosaprobous
3. Alpha – mesosaprobous
4. Alpha-meso/polysaprobous
5. Polysaprobous (organic pollution tolerant species)

Low Dissolved Oxygen (DO) Taxa are diatom species that are tolerant of very low, to low dissolved oxygen levels (below 10% saturation, assigned a value of 5). High Dissolved Oxygen Taxa are those that require ~100% saturation continuously. As the levels of dissolved oxygen available decreases, the percentage of these tolerant taxa increases,.

Inorganic nutrients metrics compares the level of nutrient autotrophism based on the relative abundance of nitrogen autotrophs that tolerate small concentration of organic N to those that tolerate higher concentration of organic N. As water quality degrades, the percent abundance of nitrogen autotrophs decreases. The other metric included here compares the percent relative abundance of eutraphentic (preferring high nutrient levels) and hypereutraphentic diatom taxa.

Metals tolerant taxa, abnormal cells and percent disturbance taxa can be indicators of elevated concentrations of heavy metals. The presence of the cosmopolitan species *Achnanthidium minutissimum* is an indication of disturbance related to a recent scour event or some type of toxic organic pollution input. However, in southern California, *A. minutissimum* is also associated with clean water (Dr. Fetscher, *personal communication*).

Table 10-1 Definitions of Metrics.
Aquatic Bioassay and Consulting Laboratories (2014)

Metric Group	Definition	Reference
Pollution Tolerance Class	Tolerance to organic pollution according to Lange-Bertalot 1979; 1=most tolerant of pollution; 2=tolerant of pollution; 3=sensitive to pollution	Lange-Bertalot 1979
Habitat	A = aerophile; P = planktonic	
pH	1 acidobiontic, optimum pH <5.5; 2 acidophilous, pH <7; 3 circumneutral, pH ~7; 4 alkaliphilous, mainly pH >7; 5 alkalibiontic, exclusively pH >7; 6 indifferent, no apparent optimum	
Salinity	1 fresh; 2 fresh brackish; 3 brackish fresh; 4 brackish; 5 marine (see Van Dam et al. 1994 for criteria)	Van Dam et al. 1994
Nitrogen Uptake Metabolism	1 nitrogen autotroph tolerating very small concentrations of organic nitrogen; 2 nitrogen autotroph tolerating elevated concentrations of organic nitrogen; 3 facultative nitrogen heterotroph; 4 obligate nitrogen heterotroph	
Oxygen Requirements	1 continuously high (~100% saturation); 2 high (>75%); 3 moderate (>50%); 4 low (>30%); 5 very low (~10% saturation)	Van Dam et al. 1994
Saprobity	Amount of organic matter decomposing: 1 oligosaprobous (poor); 2 beta-mesosaprobous; 3 alpha-mesosaprobous; 4 alpha-meso-/polysaprobous; 5 polysaprobous (rich) (see Van Dam et al. 1994 for criteria)	Van Dam et al. 1994
Trophic State	1 oligotraphentic; 2 oligo-mesotraphentic; 3 mesotraphentic; 4 meso-eutraphentic; 5 eutraphentic; 6 hypereutraphentic; 7 oligo- to eutraphentic (variable); 8 dystrophic	Van Dam et al. 1994
Moisture	1 rarely occurs outside water bodies; 2 mainly in water but sometimes on wet places; 3 mainly in water but regularly on wet or moist places; 4 mainly on wet, moist, or temporarily dry places; 5 occurs almost exclusively outside water bodies	
Motility	H = highly motile; M = moderately motile (diatoms with raphes but not highly motile); N = not motile; V = variable motility (source: Jan Stevenson)	Jan Stevenson, This one is not really well documented, but see: Bahls 1993 and Barbour et al. 1999
Distribution	N = North American endemics; C = cosmopolitan in temperate regions, broad ecological niche, generally aggressive and opportunistic species that develop large populations in response to disturbance and may exclude native species	Lange-Bertalot 1996

10.4 <u>Results</u>

10.4.1 <u>Diatoms</u>

Table 10-2 compares the metrics from each location in Topanga Creek in 2013 and 2014. A total of 125 diatom species were observed in Topanga Creek in 2013-2014. A total of 46 species, many of them of cosmopolitan distribution, were common to both years, with 40 different species found only in 2013 and 39 species found only in 2014. As shown in Table 10-2, the majority of metrics remained similar, with the exception of a decrease in motile taxa present in 2014 at both sites, a decrease in low DO taxa present at both sites in 2014, and a decrease in percent Rhopalodiales in 2014. Percent of sediment tolerant taxa increased slightly in both locations.

The percent dominant taxa increased slightly in the lower reach, but more in the upper reach. In 2013, the 4500 m higher gradient reach had only 23 species unique to that section, as compared to 26 species unique to the 3200 m lower gradient reach. In 2014, the species unique to each site declined in both the upper reach (18 species) and lower reach (23 species).

The percentage of pollution tolerant taxa increased in the lower reach in 2014, while it decreased in the upper reach. While these differences could be due to sampling error or patchy distribution, it could also suggest that conditions in the creek are changing, even though the pollution index values are not significantly different from year to year or even between sites.

The percentage of species tolerating nutrient enriched waters is slightly higher in the lower gradient reach as compared to in the upper gradient reach.

Table 10-2 Metrics for Diatoms in Topanga Creek Spring 2013 and 2014.

Group	Metric	TC4500-4500m 2014	TC4500-4500m 2013	TC3200-3350m 2014	TC3200-3350m 2013
	COMMUNITY STRUCTURE				
Diversity	Shannon H (log2)	4.44	4.87	4.72	4.73
Diversity	Species Richness	62	61	66	64
Dominance	Dominant Taxon Percent	27.33	16.17	17.17	16.00
	SEDIMENT				
Siltation	Siltation Taxa Percent	36.17	35.00	36.83	35.67
Motility	Motile Taxa Percent	53.67	59.67	55.83	59.17
	ORGANIC NUTRIENTS				
Oxidation	Low DO Taxa Percent	7.17	8.50	8.17	9.83
Pollution	Pollution Index	2.52	2.58	2.43	2.56
Rhopalodiales	Rhopalodiales Percent	2.00	3.67	2.00	3.17
Saprobity	Polysaprobous Taxa Percent	22.33	26.33	32.00	29.33
Heterotrophism	Nitrogen Heterotroph Taxa Percent	11.67	10.17	17.00	14.67
	INORGANIC NUTRIENTS				
Autotrophism	Nitrogen Autotroph Taxa Percent	75.00	70.67	70.33	73.67
Trophic State	Eutraphentic Taxa Percent	45.83	47.33	55.50	75.50
	METALS				
Disturbance	Disturbance Taxa Percent	0.00	0.00	0.33	0.00
Metals Tolerance	Metals Tolerant Taxa Percent	3.00	1.83	4.00	2.83
Abnormality	Abnormal Cells Percent	0.00	0.00	0.00	0.00
Acid Tolerance	Acidophilous Taxa present	0.00	NR	0.17	NR

*Compiled by Rhithron Associates Inc. *NR = not recorded

10.4.2 Soft-bodied Algae in Topanga Creek

The samples collected during the annual spring stream survey were complemented by both qualitative and quantitative algae data from monthly sampling at six sites throughout Topanga Creek between December 2012 and August 2014. The dominant algal species observed throughout the creek were *Cladophora sp.* and *Ulva sp.* Percent cover at transects was low throughout (<20% at all sites) with a seasonal increase in summer (graphs are found in Appendix A).

In 2013, the dominant species of algae observed in both study reaches in Topanga Creek was *Cladophora glomerata*. The loss of all epiphytes as well as *Cladophora* in the lower reach in 2014 documents a major shift of the algal community between years. This could be a result of the drought condition in the creek during the winter of 2013-2014.

Only four algal taxa were common to both locations in 2013. *Heteroleibleinia*, a filamentous cyanobacteria, was the only species common to both sites in 2014 (Table 10-3). The upper gradient reach had a total of 10 taxa represented, while the lower gradient reach had 13 taxa (Table 10-4). In 2014, no epiphytes, macroalgae, or quantitative algae samples were collected, and the number of species in the upper reach increased to 25 species, while the diversity at the lower reach decreased to eight.

Most of these species are widespread and tolerate a wide variety of water quality conditions, but the 22 species of cyanobacteria are mostly indicative of a low nitrogen environment. *Phormidium sp* found only in 2013 are considered indicative of a medium level of pollution (Potapova 2005).

Table 10-3 Qualitative Presence/Absence of Soft-body Algae species, Topanga Creek Spring 2013 and 2014.

Phylum	Class	Species	TC4500 2014	TC4500 2013	TC3200 2014	TC3200 2013
Chlorophyta	Ulvophyceae	*Cladophora glomerata*		P		P
Cyanobacteria	Cyanophyceae	*Oscillatoria sp 1*				P
Streptophyta	Zygnematophyceae	*Mougeotia sp 1*				P
		Spirogyra sp 1				P

Table 10-4 Quantitative Soft-body Algae Abundance in Topanga Creek Spring 2013 and 2014.

Algae Type	Phylum	Class	Species	Unit	TC4500 2013	TC4500 2014	TC3200 2013	TC3200 2014
Epiphyte	Chlorophyta	Chlorophyceae	*Characium pringsheimii*	Count	27		12	
			Oedogonium sp 1	Count			1	
	Cyanobacteria	Cyanophyceae	*Xenococcus sp 1*	Count			5	
			Heteroleibleinia	Count	78		84	
Macroalgae	Chlorophyta	Ulvophyceae	*Cladophora glomerata*	um3/cm2	7,633,247,643		1,628,106,255	
Microalgae	Chlorophyta	Xanthophyceae	*Ophiocytium sp*	um3/cm2		4,829		
			Chlorophyta 1	um3/cm2		121,078		
			Chlorophyta 5	um3/cm2		765,164		
			Chlorophyta 6	um3/cm2		93,337		
			Chlorophyta 7	um3/cm2		7,730,896		
			Chlorophyta 8	um3/cm2		41,791		
			Chlorophyta 9	um3/cm2				40,656
		Chlorophyceae	*Desmodesmus communis*	um3/cm2		5,363		
			Microspora sp	um3/cm2				112,293
			Oedogonium sp 1	um3/cm2	12,189,982	6,337,349		
			Scenedesmus circumfusus	um3/cm2		797		
			Scenedesmus communis	um3/cm2			24,186	
			Scenedesmus dispar	um3/cm2			5,296	
			Scenedsmus sp	um3/cm2				500
			Scenedsmus sp 1	um3/cm2		414		
			Stigeoclonium sp	um3/cm2		427,438		
		Ulvophyceae	*Cladophora glomerata*	um3/cm2	16,814,197,379	72,894,953		
	Cyanobacteria	Cyanophyceae	*Calothrix sp 2*	um3/cm2		143,579		
			Calothrix sp 3	um3/cm2		852,874		
			Cyanophyceae 5	um3/cm2	11,352			
			Heteroleibleinia	um3/cm2	306,900	14,231		5,479

Algae Type	Phylum	Class	Species	Unit	TC4500 2013	TC4500 2014	TC3200 2013	TC3200 2014
			Homoeothrix janthina	um3/cm2			215,030	
			Komvophoron	um3/cm2	157,910			
			Leibleinia sp			2,560		
			Leptolyngbya	um3/cm2			4,502,054	52
			Leptolyngbya sp 1	um3/cm2		2,131		
			Nostocales 1	um3/cm2				12,021
			Oscillatoria limosa	um3/cm2			14,191,066	
			Oscillatoriales1	um3/cm2		196,631		
			Oscillatoriales 2	um3/cm2		51,330		
			Oscillatoriales 3	um3/cm2		347,358		
			Oscillatoriales 4	um3/cm2		66,602		
			Oscillatoriales 5	um3/cm2		9,902		
			Oscillatoriales 6	um3/cm2		735		2,565
			Oscillatoriales 7	um3/cm2		5,134		
			Oscillatoriales 8	um3/cm2				80,370
			Phormidium sp 1	um3/cm2	3,454,135		2,222,162	
			Phormidium sp 2	um3/cm2			152,622	
			Pseudanabaena sp	um3/cm2		589		
		Euglenophyceae	*Heteronema sp*	um3/cm2		89,747		
			Phacus sp	um3/cm2				360,503
	Heterokonto-phyta	Xanthophyceae	*Ophiocytium sp*	um3/cm2		24,739		
	Rhodophyta	Florideophyceae	*Chantransia sp 1*	um3/cm2		93,865	2,855,514	
	Streptophyta	Zygnematophyceae	*Mougeotia sp*	um3/cm2				560,633
	Streptophyta	Zygnematophyceae	*Mougeotia sp 1*	um3/cm2	1,806,947,786	5,528,034		
			Spirogyra sp	um3/cm2				22,241,851

10.4.3 Comparison of benthic algae in Topanga and Malibu Creeks 2013

In addition to collecting samples in Topanga, biologists from Aquatic Bioassay Consulting Inc. assisted the Las Virgenes Municipal Water District (LVMWD) in collecting samples from Malibu Creek using the same protocol and analysis as used in Topanga (Aquatic Bioassay 2014).

Topanga sites had a higher diatom species richness and diversity as compared to Malibu sites, with 26 species common to both creeks (Table 10-5). Several species, including *Encynoma silesiacum, Pseudostaurosira brevistriata, Nitzschia liebethruthii,* and *Gomphonema parvulum* are only found at R4 in Malibu. Although there is high variability in species richness and diversity information associated with the patchy nature of distribution and sampling biases/errors, 60 species is a typical mean number of species collected in southern California (Dr. E. Fetscher *pers. communication*).

The total number of diatom species observed in the two lower Malibu Creek sites (both located downstream of Rindge Dam), exhibited less overall community diversity by all metrics. The site adjacent to anthropogenic inputs (R4) had a higher species richness than the less disturbed location approximately 400 meters upstream in Malibu Creek State Park (R3) (Aquatic Bioassay Consulting Inc. 2014).

Table 10-5 Metrics Comparing Diatoms in Topanga and Malibu Creeks Spring 2013.

Group	Metric	TC4500m 2013	TC3200m 2013	Malibu R-4 2013	Malibu R-3 2013
	COMMUNITY STRUCTURE				
Diversity	Shannon H (log2)	4.8672	4.7337	3.8	2.97
Diversity	Species Richness	61	64	34	20
Dominance	Dominant Taxon Percent	0.1617	0.1600	0.23	0.28
	SEDIMENT				
Siltation	Siltation Taxa Percent	0.3500	0.3567	0.29	0.6
Motility	Motile Taxa Percent	0.5967	0.5917	0.37	0.12
	ORGANIC NUTRIENTS				
Oxidation	Low DO Taxa Percent	0.0850	0.0983	0.04	0.01
Pollution	Pollution Index	2.5817	2.5567	2.62	2.87
Rhopalodiales	Rhopalodiales Percent	0.0367	0.0317	0.00	0.00
Saprobity	Polysaprobous Taxa Percent	0.2633	0.2933	0.28	0.11
Heterotrophism	Nitrogen Heterotroph Taxa Percent	0.1017	0.1467	0.28	0.06
	INORGANIC NUTRIENTS				
Autotrophism	Nitrogen Autotroph Taxa Percent	0.7067	0.7367	0.67	0.90
Trophic State	Eutraphentic Taxa Percent	0.4733	0.7550	0.49	0.88
	METALS				
Disturbance	Disturbance Taxa Percent	0.0000	0.0000	0	0.00
Metals Tolerance	Metals Tolerant Taxa Percent	0.0183	0.0283	0.02	0.01
Abnormality	Abnormal Cells Percent	0.0000	0.0000	0.00	0.00

All of the most abundant diatom species (Table 10-6) except *Nitzschia* are considered to be sensitive to pollution, suggesting that water quality conditions overall are within their tolerance limits. Additionally, most are non-motile species and require high levels of dissolved oxygen, but can tolerate elevated concentrations of nitrogen. *Nitzschia* is a very rich genus with several hundred species and wide tolerance ranges and is usually associated with brackish and organically polluted water with high nutrients and low dissolved oxygen (Van Dam et al. 1994).

Table 10-6 Most abundant species in both Topanga and Malibu Creeks 2013-2014.

Species	TC4500m 2014 count	TC3200m 2014 count	TC 4500m 2013 count	TC3200m 2013 count	Malibu R-4 2013 count	Malibu R-3 2013 count	Pollution Tolerance Level
Amphora inariensis	4	0	26	58	20	11	3
Amphora pediculus	78	71	61	35	19	28	3
Cocconeis pediculus	5	1	22	14	11	170	3
Cocconeis placentula	12	11	19	6	7	131	3
Cocconeis placentula var lineata	32	50	96	27	177	125	3
Nitzschia inconspicua	31	58	49	41	100	29	2
Planothidium frequentissimum	20	37	12	11	0	0	NA
Rhoicosphenia abbreviata	0	17	24	10	47	19	3
Staurosira construens var venter	164	103	33	97	139	26	3

Organic Pollution tolerance: 1= most tolerant, 2= tolerant, 3= sensitive to organic pollution
NA = not available

Using a one-tailed t-test to compare the diatom communities between the two samples and sites, the Shannon H diversity measure was significantly higher ($p<0.05$) in Topanga than Malibu. Motile taxa are more significantly abundant ($p<0.05$) in Topanga than in Malibu, as are the percentage of Rhopalodiales ($p< 0.05$). However, comparison of the pollution tolerant index shows that Malibu has significantly higher ($p< 0.05$) levels of pollution tolerant taxa than Topanga. The only other significant result was that dissolved oxygen levels were lower in Topanga ($p< 0.05$) than in Malibu. The difference in flow regimes (augmentation in Malibu, none in Topanga) may be a factor in this result.

The soft-bodied algae species composition and abundance was quite different both qualitatively (Table 10-7) and quantitatively (Table 10-8) between Topanga and Malibu. A total of nine non-diatom species including epiphytes, microalgae and macroalgae were found in both creeks. Topanga also had an additional six species compared to 18 additional species found only in Malibu.

Table 10-7 Qualitative Algae comparison Topanga and Malibu sites April 2013.

Phylum	Class	Species	TC3200	TC4500	R3	R4
Chlorophyta	Ulvophyceae	*Cladophora fractus*			P	
		Cladophora glomerata	P	P	P	P
		Rhizoclonium cf crassipellitum				P
		Rhizoclonium heirogliphicum			P	
		Ulva			P	P
Cyanobacteria	Cyanophyceae	*Oscillatoria sp 1*	P			
Streptophyta	Zygnematophyceae	*Mougeotia sp 1*	P			
		Spirogyra sp 1	P			

(P = present)

Table 10-8 Comparison of Dominant Algal Species (um^3/cm^2) Topanga and Malibu 2013.

Species	TC4500m	TC3200m	Malibu R3	Malibu R4
BOTH CREEKS				
Cladophora glomerata (macroalgae)	7,633,247,643	1,628,106,255	129,169,840,060	305,656,565,660
Oedogonium sp 1 (microalgae)	12,189,982		5,253,923	4,591,843
Scenedesmus communis		24,186		46252
Scenedesmus dispar		5,296		3,771
Cladophora glomerata (microalgae)	16,814,197,379		7,147,700,819	
Heteroleibleinia	306,900		1,401,223	
Leptolyngbya sp 1 (microalgae)		4,502,054	6,181	798,553
Phormidium sp 1	3,454,135	2,222,162		54,049
Chantransia sp 1 (microalgae)		2,855,514	3,715,403	799,116
TOPANGA ONLY				
Cyanophyceae 5				
Homoeothrix janthina	11,352	215,030		
Komvophoron				
Oscillatoria limosa	157,910	14,191,066		
Phormidium sp 2		152,622		
Mougeotia sp 1	1,806,947,786			
MALIBU ONLY				
Ulva			1.615E+11	3.434E+09
Chlorophyta 1 (ephiphyte)			19	3
Chlorophyta 1 (microalgae)			5,308,6427	
Chlorphyta 2 (microalgae)				3,376
Chlorophyta 4			1,966,744	
Ankistrodesmus falcatus			11,846	
Pediastrum boryanum				12,861
Chamesiphon incrustans			470,312	35,513
Cyanophyceae 11			14,716	
Xenococcus sp 1			88,220	
Scenedesmus armatus				62,891
Scenedesmus ellipticus				30,352
Scenedesmus obliquus			1,458	
Heteroleibleinia (microalgae)			1,401,223	249,443
Leptolyngbya sp 1 (microalgae)			6,181	
Psuedanabaena sp 1				3,022
Xenococcus sp 1			88,220	
Spirogira sp 1				179,791,886

10.4.4 Index of Biotic Integrity (IBI) Analysis

Table 10-9 summarizes the results of three different possible indices, S2 (soft algae only), D18 (diatoms only) and H20 (hybrid incorporating both diatoms and soft algae). Each index was based upon different metrics, but when combined provide relative comparisons that suggest that results for Topanga and Malibu are consistent between indices.

Fetscher et al. (2104) provided a detailed explanation of how these indices were developed, vetted and scaled. Reference conditions were based on evaluation of sites with minimal anthropogenic influences and then checked against possible landscape level factors such as basin geology, gradient, elevation and land cover. Based on their analysis, the boundary between reference and non-reference sites for the H20 index was 57. The upper reach in Topanga meets the reference criteria in 2014 and is just a bit under in 2013. The lower reach in Topanga and both reaches in Malibu would fall into the stressed and disturbed category.

Table 10-9 Comparison of southern California Periphyton IBI Indices for Topanga and Malibu 2013.

Year	SampleID	S2	D18	H20	totalDiatomCount
2013	TC3200	35	46	45	513
2014	TC3200	NA	46	NA	600
2013	TC4500	42	50	55	506
2014	TC4500	53	58	61	595
2013	Malibu - R3	28	58	51	556
2013	Malibu- R4	22	46	42	556

10.4.5 Chlorophyll a and Ash Free Dry Mass

Dodds et al. (1998) developed a trophic classification system for stream based on mean chlorophyll values. Oligotrophic systems usually have less than 20 mg m-2, mesotrophic systems range between 20-70 and eutrophic systems are greater than 70.

Using that scale, both Topanga and Malibu Creeks are in the oligotrophic (non-eutrophic) category, although this data represents a snapshot collected during a drought condition and may not be representational of the creek system over time. Levels of chlorophyll a in excess of >0.66 mg m-2 can be found in either nutrient poor waters with higher than normal temperatures, or in cold water where they can be indicative of excessive nutrient inputs (CWAM 2013). As shown in Table 10-10, the Topanga samples showed mixed results, but the Malibu samples, although higher than the CWAM threshold, were still within the limits of the reference site range (Fetscher et al. 2013)

Recent South Coast ecoregional analysis of 331 sites in 2007-2009 evaluated both methods and found that Ash Free Dry mass (AFDM) results may be more representative of algal biomass and that chlorophyll a has more potential for rapid degeneration and laboratory error, which can cause lots of variation (Fetscher, et al 2013).

Table 10-10 Chlorophyll a and Ash Free Dry Mass Results, Topanga Creek (2013, 2014) collected by RCDSMM and Malibu Creek (2013) collected by Aquatic Bioassay Consulting Laboratories, Inc.

Metric	TC4500-4650m 2014	TC4500-4650m 2013	TC3200-3350m 2014	TC3200-3350m 2013	Malibu R-4 2013	Malibu R-3 2013	**Reference Site Range**
Ash Free Dry Mass SM 2540 (mg/cm^2)	2.76	7.81	6.11	10.85	11	12	**8-27 mg m^{-2}**
Chlorophyll a SM 10200 H (mg m^{-2})	0.476	0.863	0.339	1.326	8	15	**6-27 mg m^{-2}**

10.4.6 Water Quality and Physical Habitat Conditions

Comparison of the physical habitat characteristics of both sampling sites in Topanga and Malibu Creeks suggests that Topanga has more optimal conditions overall, but Malibu has greater average depth at the sampling sites (Table 10-11and 12). The percent canopy is also much higher in Malibu than Topanga. The percent cover of macroalgae (filamentous algal mats) was significantly higher in Malibu compared to the higher level of macrophytes (vascular herbaceous plants in the wetted channel) observed in Topanga. This relates to the very low flow condition resulting in shallow depths in Topanga Creek, which has fostered extensive growth of watercress, various mint and Cyperus species in the channel. The concern with high levels of either macroalgae or macrophytes is that they can limit growth of beneficial microalgae by shading the substrate, reducing the food source (e.g. primary consumers such as diatoms), benthic scraper/grazers and in extreme cases even alter hydrologic patterns (Fetscher et al 2013). Subsequent decomposition of the macroalgae can reduce available dissolved oxygen as well (Quinn and Gilliland 1989).

Table 10-11 Physical Habitat Assessment Comparison between Topanga Creek (2013, 2014) collected by RCDSMM and Malibu Creek (2013) collected by Aquatic Bioassay Consulting Laboratories, Inc.

Habitat Parameter	TC4500-4650m 2014	TC4500-4650m 2013	TC3200-3350m 2014	TC3200-3350m 2013	Malibu R-4 2013	Malibu R-3 2013
Instream Cover	16	17	15	15	11	12
Sediment Deposition	16	17	15	15	8	15
Channel Alteration	20	20	20	20	16	20
REACH TOTAL	52	54	50	50	35	47
Condition Category	Optimal	Optimal	Optimal	Optimal	Suboptimal	Optimal

Table 10-12 Summary of Water Quality and Physical Habitat Conditions in Topanga Creek (2013, 2014) collected by RCDSMM and Malibu Creek (2013) collected by Aquatic Bioassay Consulting Laboratories, Inc.

Location	TC4500-4650m 2014	TC4500-4650m 2013	TC3200-3350m 2014	TC3200-3350m 2013	Malibu R-4 2013	Malibu R-3 2013
Water Quality Measures						
Water Temperature (°C)	14.7	16	14.9	14.7	16.4	13.3
Air Temperature (°C)	14.2	17	18	15.9	NR	NR
Dissolved Oxygen (mg/l)	7.34	7.65	7.65	9.26	4.8	7.1
pH	8.29	6.7	8.27	6.36	7.5	6.6
Specific conductance (μS/cm)	NR	1441	1423	1375	1873	1867
Salinity (ppt)	0.0	1.5	1.0	0.0	0.96	0.95
Alkalinity (mg/l) (Test strip)	NR	300	NR	300	NR	NR
Turbidity (NTU)	4.26	0.4	0.38	NR	NR	NR
Nitrate – N (ppm)	NR	0.0	NR	0.0	NR	NR
Nitrite – N (ppm)	NR	0.01	NR	0.0	NR	NR
Ammonia N (ppm)	NR	0.18	NR	0.0	NR	NR
Orthophosphate (ppm)	NR	0.17	NR	0.16	NR	NR
Time Sampled	0930	0930	0900	0910	0810	1045
Physical Habitat Characteristics						
Reach Length (m)	150	150	150	150	150	150
Average wetted width (m)	4.5	4.4	4.0	4.2	13.5	4.4
Average depth (cm)	10.9	12.6	9.9	12	27.6	10.4
Average velocity (ft/s)	NR	NR	NR	NR	<0.01	0.4
Discharge (m^3/s)	NR	0.004	0.003	0.006	<0.01	0.02
Slope (%)	>3	>3	<3	<3	0.88	2.00
Elevation (m)	400	400	200	200	8	13
Vegetative Canopy Cover (%)	83	65	95	82	21	91
Microalgae Mean Thickness (mm)	0.0	0.0	0.0	0.0	0.02	0.01
*Macroalgae Presence (%)	4	10	5	24	72	76
Macrophyte Presence (%)	18	26	28	18	5	1
Bank Stability (%): Stable	100	91	82	82	0	5
Vulnerable	0	0	18	18	100	95
Eroded	0	0	0	0	0	0
Flow Habitats (%): Cascade/Fall	0	6.5	0	0	0	0
Rapid	0	0	0	0	0	0
Riffle	31.5	19	30	25	5	34
Run	0	4.5	0	75	23	0
Glide	28.5	10	70	0	39	66
Pool	40	60	0	0	33	0
Dry	0	0	0	0	0	0
Average Embeddedness (%)	44	26	49	49	NR	NR
Substrate Size (%): Bedrock	6	6	0	0	0	0
Boulder	33	31	25	23	23	29
Cobble	13	25	7	15	9	20
Gravel	22	12	25	28	13	19
Sand	28	23	44	36	47	22
Fines	0	0	0	0	4	0
Hardpan	0	0	0	0	0	0
Wood	0	0	0	0	0	1
Other	0	0	0	0	4	9

NR= Not recorded/ *=% presence includes unattached and attached macroalgae.

10.5 Discussion

Periphyton are found in all aquatic environments and tolerate a wide range of nutrient levels and overall water quality (Hoffman 1994). Benthic diatoms and soft-bodied algae are important primary producers that rapidly and predictably respond to environmental condition in terms of changes in community composition. Several research efforts in southern California and throughout the United States are examining the potential of utilizing these organisms as water quality indicator species (Porter et al. 2008, Fetscher 2008, Fetscher et al. 2009, CWAM 2013) because of their rapid response to water quality condition changes in nutrient levels (primarily nitrogen and phosphorus), pH and conductivity. For example, diatom saprobity values near sewage outlets showed high correlation to chironimid pollution index, diversity of BMI and diversity of macrophytes (Van Dam et al. 1994). Despite limitations due to increased cost, patchy distribution and sampling errors common to biological assessments, the addition of benthic algae analysis to water quality monitoring provides some important advantages and complements grab water samples and benthic macroinvertebrate data by providing insights into short and long term dynamics of the system. Soft algae are often the dominant biomass in southern California creeks, as in other places, and most likely to exhibit “nuisance blooms”, providing greater insight into nutrient loading and uptake patterns (Busse et al. 2003, Luce and Abramson 2005). Benthic algae normally exhibits seasonal patterns related to flow velocity and light availability, but it appears that nutrient loading in the winter months can result in higher benthic algal growth in summer months (Luce and Abramson 2005).

Diatoms in particular have high dispersal rates and short reproduction/growth times that respond quickly to changes in environmental conditions (Lavoie et al. 2008) and the two largest national surface water monitoring programs (Environmental Protection Agency Environmental Monitoring and Assessment Program (EMAP) and the US Geological Survey national Water Quality Assessment Program) both use periphyton indicators due to these characteristics.

Diatoms and soft-body algae can have direct influence on the substrate and flow characteristics, as well as on water quality by increasing nutrient uptake and increasing dissolved oxygen levels (Porter 2008). They are important primary producers and improve habitat for other aquatic species (Porter 2008). They are the foundation of the food web and the basis of the trophic levels found in lower watershed streams. Both diatoms and soft-body algae metrics exhibit rapid responses to levels of stressors and thus examining the changes over time and between locations can help characterize the productivity of the creek (Rimet et al. 2005).

One important caveat to note is that the assignment of a species to a particular metric can vary widely based on geographic range and their consistency as nutrient indicators can vary (Potopova and Charles 2007). This supports the need for development of data specific to southern California in order to properly associate species to water quality tolerances. That being the case, some of the common diatom indicator species with fairly well described Total Nitrogen (TN) preferences, both high and low, were found in both Topanga and Malibu, which provides a somewhat confusing result. This could possibly be a result of inability to differentiate between species in the same genus that appear taxonomically similar, but in fact represent different species with different tolerance preferences. It could also mean that further refinement of the tolerance limits and preferences is needed.

In Topanga Creek, our water quality data indicates that nutrient levels detected in monthly grab samples decreases as water flows downstream from the town, which is the last input of any anthropogenic nutrients. However, the percentage of more tolerant species was higher in the lower reach located approximately 3000 meters downstream of any inputs. A possible cause of this result could be decreasing flows, absorption by macroalgae, or may be associated with the increasing population of invasive red swamp crayfish, which can increase turbidity. These conditions could also possibly explain the increase in Disturbance Taxa observed in 2014 in the lower reach where pools are shallow and runs and riffles are the dominant habitat type.

In addition to responding to nutrient changes and inputs, other factors such as massive growth of *Cladophora sp.* can mask high inputs of nutrients by utilizing and storing nutrients, reducing their detection in the water column. *Cladophora* was the dominant macroalgal species collected in spring 2013 in both survey reaches in Topanga Creek, but it was only observed in the upper reach in 2014. It is also the dominant genus noted with the Rapid Point Count data collected monthly at each water sampling site throughout Topanga Creek and into Topanga Lagoon.

Growth of soft-bodied algae is often controlled by limited available nitrogen or phosphorus. Nuisance blooms are often associated with anthropogenic inputs of these nutrients (Carpenter et al. 1998). Excessive growth of *Cladophora* has been considered to be an indicator or eutrophication (Biggs 1996, Luce and Abramson 2005), although data derived from the NAWQA database (Potapova 2005) found *Cladophora* in a wide range of nutrient concentrations and in moderately alkaline waters having optimum pH of 8.0, and conductivity of 566 µS/cm. It is also more frequently found on rocky rather than softer sediment substrates (Potapova 2005).

Cladophora glomorata is the most common taxa found throughout southern California and appears to be a reliable indicator of high total nitrogen (optimum of 3.14 mg l^{-1}) (Stancheva et al. 2012) and was also the dominant species observed in both Topanga and Malibu. Recent advances in taxonomy suggest that it is possible to distinguish between *C. glomorata* (an indicator of high TN concentrations) and *C. fracta,* which is an indicator of low TN conditions. It is possible that due to the difficulty in making this species level distinction, the lab that analyzed our samples identified everything as *C. glomorata*. Additional investigation of taxonomic effort is needed to explain why such a high TN species is abundant in the low N environment found in Topanga Creek.

Algal abundance can also be limited by hydrological fluctuations when scoured by floods but growing extensively during low flow periods with stable bed sediments typical of southern California summers (Biggs and Close 1989). During the course of this study, there were no flood events. Another potential factor that can affect algal biomass is the abundance of benthic macroinvertebrate grazers and their response to predators (Diehl et al. 2000).

Intensity of grazer foraging can respond to predation threats and result in changes in algal density (Diehl et al 2000). It was beyond the scope of this study to address this directly, but a discussion of possible food web interactions is provided in Chapter 12.

Stancheva et al. (2012) also found that algal species number was significantly correlated with water temperature and increased canopy cover reduced algal biomass. In Topanga, water temperatures ranged between 15-16^{o}C, with canopy cover greater than 65%, which was comparable to the conditions in Malibu site R3, but site R4 had much less canopy cover. The overall IBI scores were not significantly different between the sites. Species in the green algae class Zygnemataceae are considered frequent and abundant in low nutrient streams in southern California and a single species (*Mougeotia sp 1)* was observed in Topanga, as well as *Spirogiyra sp* 1 in Malibu. Given the negligible nutrient levels in Topanga, this is somewhat confusing and contradictory, suggesting that other factors may play a roll in species distribution and/or tolerance ranges.

Some species of cyanobacteria, the next most abundant taxonomic group observed in Topanga Creek, have the ability to fix atmospheric nitrogen and thus are often indicative of streams with low nitrogen levels. These species are usually not found in streams with high nitrogen levels (Porter et al. 2008) and the 11 species found in Malibu Creek were different than the eight species found in Topanga, suggesting a different tolerance to the consistently higher nitrogen levels (>2 mg/l nitrate) found in Malibu Creek (Heal the Bay 2014).

Overall the three different indices of biologic integrity applied showed a consistent picture between sites and creeks for the soft body algae only (S2), diatoms only (D18) and combination of both (H20). These metrics are only recently available and so it is not yet possible to compare the snapshot of conditions in Topanga and Malibu Creeks in 2013 to other sites regionally. Therefore, this information provides a baseline starting point for comparisons over time and in other coastal creek systems.

However, regional and statewide Beneficial Use Risk Classification delineates nutrient unimpaired versus impaired water bodies based on levels of benthic algal biomass measured as chlorophyll a, ash free dry mass, dissolved oxygen levels and pH levels (Fetscher et al. 2013). Disturbance classes were scaled with variables such as land use, road density and number of crossings, presence of dams, pipelines, canals, instream gravel mines and producer mines. Over 500 sites statewide were evaluated, and values from the South Coast ecoregion were consistently higher than for the North Coast or Sierra Nevada ecoregions, which were the lowest. Stressed sites had consistently higher levels of AFDM, chlorophyll a and percent macroalgal cover, but even reference sites in the South Coast ecoregion exhibited consistently high values for these metrics.

Throughout the state, chlorophyll a values ranged from 0.22-1504 mg m^{-2} with a mean of 47 mg m^{-2}, however the south coast median was 25.7 mg m^{-2} (range 8-27 mg m^{-2}). The snapshot data from Topanga and Malibu 2013 were well below that average. The ash free dry mass (AFDM) range throughout the state was 0.07-489 mg $m^{-2}$with a mean of 40 mg m^{-2}, although the south coast median was 17.2 mg m^{-2} (range 6-27 mg m^{-2}). The 2013 data from both Topanga and Malibu creeks were also on the low end of this range (7 -1 2 mg m^{-2}). Scores in southern California are considered to be stressed if they are below 57, which is two standard deviations below the mean for the reference streams (Fetscher et al. 2013). The data from Topanga and Malibu Creeks falls well below the threshold of 30% cover identified by Biggs (2000) and is on the lower end of the reference range (Fetscher et al. 2013), which would suggest that they are stressed, but not yet degraded.

Due to limited data available at this time, it is not possible to develop a consistent hypothesis to explain why there is so little difference between benthic algae communities in Topanga and Malibu Creeks, despite the abiotic differences in stream habitat, flow regimes and nutrient loading patterns. However, this information does provide a snapshot baseline under drought conditions that can be built upon over time.

10.6 Summary

- Examination of diatom and soft-bodied algae communities can provide secondary indicators and multiple lines of evidence to better characterize the responses of southern California creeks to both natural (floods, wildfire) and anthropogenic inputs will allow for better understanding of the dynamics of aquatic systems.
- Diatom and soft-bodied algae data from Topanga 2013-2014 provides a baseline snapshot of low flow conditions.
- A total of 125 diatom species were observed in Topanga Creek in 2013-2014. 46 species, many of them of cosmopolitan distribution, were common to both years, with 40 different species found only in 2013 and 39 species found only in 2014.
- As shown in Table 10-5, the majority of metrics remained similar, with the exception of a decrease in motile taxa present in 2014 at both sites, a decrease in low DO taxa present at both sites in 2014, and a decrease in percent Rhopalodiales in 2014. Percent of sediment tolerant taxa increased slightly in both locations.
- *Cladophora glomorata* is the most common taxa found throughout southern California and appears to be a reliable indicator of high Total Nitrogen (Stancheva et al. 2012) and was also the dominant species observed in both Topanga and Malibu despite their different nutrient levels. This could possibly be a result of inability to differentiate between species in the same genus that appear taxonomically similar, but in fact represent different species with different tolerance preferences. It could also mean that further refinement of the tolerance limits and preferences are needed.
- Using the Southern California Index of Biotic Integrity (Fetscher et al. 2014), application of three different indices of biologic integrity showed a consistent picture between sites and creeks for the soft body algae only (S2), diatoms only (D18) and combination of both (H20). These metrics are only recently available and so it is not yet possible to compare the snapshot of conditions in Topanga and Malibu Creeks in 2013 to other sites regionally.

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11 Conceptual Framework of the Food Web in Topanga Creek

11.1 Introduction

Water quality conditions can in many ways control biological communities, affecting the species diversity, abundance and community structure at a variety of trophic levels. Organisms from diatoms to fish are sensitive to multiple interactions of the physical and chemical conditions within a freshwater system. This study provided a unique opportunity to examine the physical, chemical and biological variables at work in Topanga Creek, which has been colloquially referred to as Topanga “magic”. Examination of the fecal indicator bacteria (FIB), in-situ water quality conditions and nutrient levels confirms that although there are numerous anthropogenic inputs into the creek in the upper watershed, these inputs are not responsible for the bacterial exceedances observed at Topanga Beach.

Investigation into FIB, nutrient levels, water quality and benthic macroinvertebrate communities at five creek sites between the town of Topanga (Owl Falls 6500 m) downstream to the upper end of Topanga Lagoon known as the Snake Pit (300 m) was conducted between 2012-2014. Examination of the physical, chemical, and biological variables at each of these sites has begun to illustrate how inputs from the town of Topanga and at other sites further downstream cycle through the system as they move towards the lagoon. While FIB occurrences do occur at creek sites, most prevalently at Owl Falls (immediately downstream of town development) and Topanga Bridge (bridge crossing), they do not translate to beach outlet exceedances. Due to the interrupted subsurface flow that sometimes occurs in summer between 1700 m and 300 m there is no surface connection between the upper lagoon and the creek except during storm events.

Numerous studies have looked at each of these variables independently. Previous studies have also assessed the role that streambed sediments play on fecal indicator bacteria (FIB) survival and decay (Kinnaman et al. 2012, Garzio-Hadzick et al. 2010) as well as the effect of biological influences such as predation and indigenous microbiota on FIB persistence (Korajkic et al 2013). Few studies attempt to examine relationships across trophic levels and between physical and chemical conditions to biological responses in species abundance and diversity, from bacteria to periphyton, benthic macroinvertebrates (BMI) and fish (Feio et al 2007, Griffith et al. 2005).

Although time and resources precluded definitive stable isotope analysis of the food web or development of either a mixing model or structure equation model to more quantitatively characterize the energy flow through the food web, we took this opportunity to qualitatively examine the various trophic levels. The goal was to describe the interactions between FIB, nutrients, sediments (influence on decay rates and nutrient availability), diatom and soft-bodied algae, benthic macroinvertebrates, amphibians, fish and introduced crayfish in Topanga Creek. We incorporated long-term data from annual stream surveys (2001-2014), as well as more detailed data collected as part of the Topanga Source Identification Study in 2012-2014.

One of the more interesting patterns observed in Topanga Creek is that despite inputs of nutrients and FIB in the upper watershed above the town, levels of nutrients and FIB appear to diminish before reaching Topanga Lagoon. First documented in the 1999-2001 water quality study (Dagit 2001), observed again in the 2003-2004 study (Dagit et al. 2004), and continuing to date, this intriguing pattern of sources accumulating in the upper watershed (Owl Falls at 6500 m), a sink in the most natural reach (Scratchy Trail at 4800 m), followed by additional inputs at Topanga Bridge (3600 m), with continued decline downstream when measured at Brookside Drive (1700 m). This strongly suggests that inputs from the upper developed portion of the watershed are not involved with the bacterial exceedances observed at Topanga Beach. It also suggests that nutrient and bacteria levels within the creek are possibly controlled by a complex, synergistic effect of a dynamic carbon, nitrogen and phosphorus energy cycle and a potentially lengthy food web incorporating numerous trophic levels that are able to absorb/utilize nutrient inputs in the more undisturbed reaches of the creek. This discussion therefore focuses on the interactions in Topanga Creek rather than the lagoon and ocean interface.

Increased urbanization resulting in increased percentage of impervious surfaces can affect stream ecology by increasing nutrient concentrations, altering hydrologic patterns, increasing water temperature and light levels (Paul and Meyer 2001). Greater than 10-15% urbanization or conversion to impervious surfaces has been show to negatively affect algae, macroinvertebrates and fish communities (Paul and Meyer 2001). It has been observed that the diversity of aquatic species decreases once the threshold of 8% impervious surface is reached (Riley et al. 2005). The Topanga Creek Watershed has almost 12% impervious surface, yet it retains a diversity of native aquatic species, some of which are sensitive to water quality degradation, such as the endangered southern steelhead trout.

11.2 <u>Elements of the Topanga Creek Food Web</u>

In order to characterize the Topanga Creek food web, it was necessary to summarize the abiotic and biotic elements that contribute to the dynamics of the system. Each of these factors is discussed in detail in other Chapters of this report, as well as in other documents. To facilitate this discussion, the most salient points are summarized below.

11.2.1 <u>Abiotic Factors</u>

Water quantity is quite variable both seasonally and inter-annually. Table 11-1summarizes the wetted width, flow, water temperature and nutrient levels collected in-situ using the California Rapid Bioassessment Protocol (CDFG 1999) during annual stream surveys at two sites in Topanga Creek. The lower reach (3200m) has a lower gradient (<3%) and is located within 100 meters of Topanga Canyon Boulevard. The upper reach (4500m) is isolated from adjacent anthropogenic influences, has a gradient of 3-6% and is more difficult to access. Both of these sites remained fairly stable in wetted width, although flow and depth varied with rainfall. The water temperature was also fairly consistent seasonally, with the highest temperature recorded in 2005 at 3200m when flows persisted for more than 200 days due to the high rainfall and at 4500m during the low flow year 2000. Table 11-1 summarizes the average stream conditions during the 2001-2014 study period.

Table 11-1 Topanga Creek 2000-2014. nd = no data available

Lower Topanga 3200m									
date	avg flow ft/sec2	avg depth cm	wetted width m	water °C	DO mg/l	PH	conductivity mS	Rain to date in.	rain total in.
5/1/01	nd	nd	nd	nd	nd	nd	nd	27.8	27.8
4/23/02	nd	30	5	13	14.86	8	1384	6.88	7.24
5/14/03	0.27	21	5	14.6	9.84	8.9	1632	17.92	17.92
5/3/04	nd	nd	nd	nd	nd	nd	nd	13.16	13.16
5/27/05	0.16	25	5.5	17	6.29	7.5	1130	61.22	61.58
5/8/06	0.22	19.4	5	14.6	9.87	7.8	1520	20.04	21.98
5/1/07	0.05	22	4.5	nd	nd	nd	nd	4.61	4.62
6/30/05	nd	nd	nd	nd	nd	nd	nd	23.08	23.08
4/27/09	0.03	28.6	5.75	13	9.85	7.8	nd	14.97	16.16
4/26/10	0.1	13.2	5	10	nd	nd	nd	24.2	24.4
4/28/11	0.42	30	2.2	15	10.24	nd	1620	30.75	31.44
4/23/12	0.21	17.5	4.7	15.3	14.23	8	951	15.45	16.22
5/2/13	0.03	8.75	2.5	14.7	9.26	6.4	1375	9.44	9.99
5/5/14	0.06	5.5	2.25	14.9	7.6	8.3	1423	6.85	6.85
Upper Topanga 4500m									
date	avg flow ft/sec2	avg depth cm	wetted width m	water °C	DO mg/l	pH	conductivity mS	rain to date in.	total rain in.
2001	nd	nd	nd	nd	nd	nd	nd	27.8	27.8
2002	nd	nd	nd	nd	nd	nd	nd	6.88	7.24
5/14/03	0.43	10	4	14.7	9.18	nd	1694	17.92	17.92
5/4/04	nd	nd	nd	nd	nd	nd	nd	13.16	13.16
5/17/05	0.34	nd	5	15.1	6.99	7.6	1450	61.22	61.58
5/9/06	0.15	28.75	6	15.6	10.24	7.9	1560	20.04	21.98
5/4/07	nd	nd	nd	nd	nd	nd	nd	4.61	4.62
4/29/08	nd	nd	5.1	12.2	11.25	8.3	nd	23.08	23.08
2009	nd	nd	nd	nd	nd	nd	nd	14.97	16.16
4/22/10	1.13	23.6	5.3	10	nd	nd	nd	24.2	24.4
4/29/11	nd	53	7.25	14.8	9.64	nd	1690	30.75	31.44
4/24/12	0.04	18	5.1	14.1	12.56	7.7	1630	15.45	16.22
4/30/13	nd	13.9	5	16	7.65	6.7	1491	9.44	9.99
5/6/14	nd	24.4	5	14.7	7.19	8.3	nd	6.85	6.85

Precipitation

The pattern of precipitation varied dramatically over the years as shown in Figure 11-1. Additionally, the intensity, duration and pulses of storm events also varied, from years with rainfall distributed over several months, to a more recent pattern of isolated storms separated by long dry interludes. It was not possible to correlate these observations with the larger climatic cycles of the El Nino Southern Oscillation or the Pacific Decadal Oscillation, although both could play a role in the rainfall received in the watershed. Complex multi-year cycles of drought, shifting rainfall patterns and intensity of storms characteristic of southern California Mediterranean conditions can play an important role in the variability of streams, which are then linked to changes in the biotic community, and particularly influence the diversity and persistence of BMI (Durance and Ormerod 2007). The County of Los Angeles has been in and out of drought conditions since 2000. However, winter rains were enough to alleviate drought and remove the lowest drought distinction of 'D0 abnormally dry' at least temporarily. The winter of 2012/13 was the first winter in a decade that this alleviation did not occur, and the county dove into a more intense drought 'D3 extreme drought' (US Drought Monitor 2014).

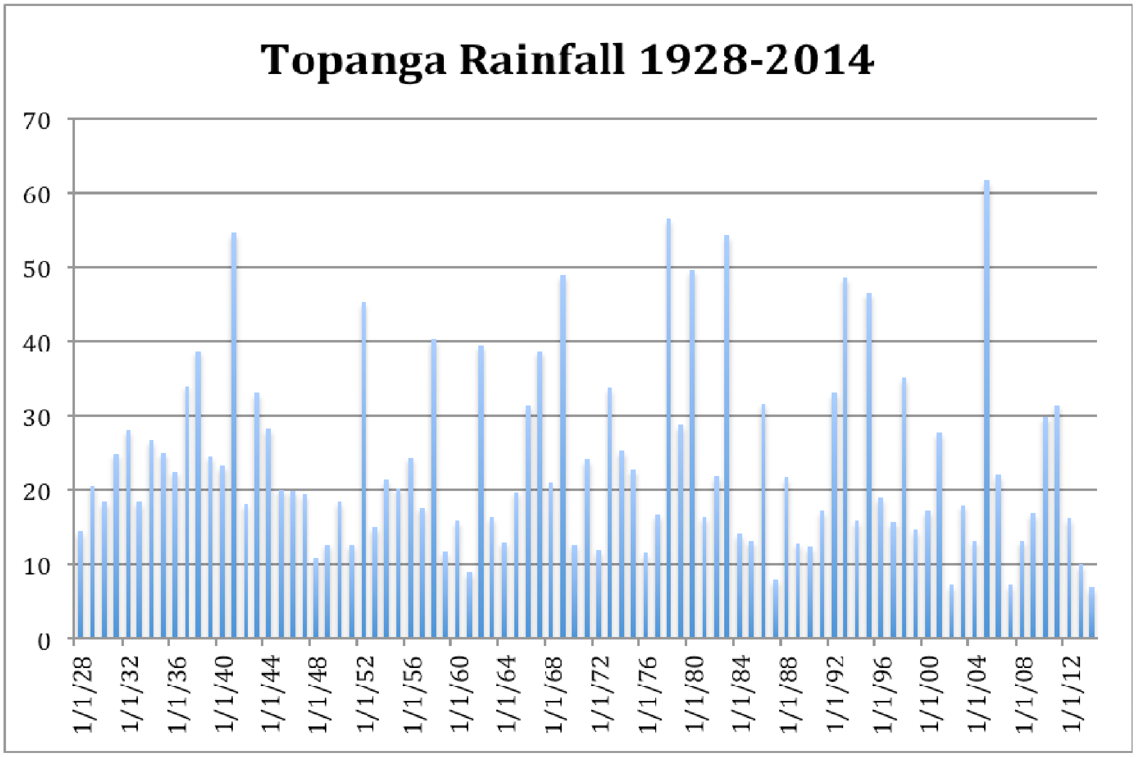

Figure 11-1 Summary of Precipitation in Topanga Creek (based on Los Angeles County Rain gage #318).

Groundwater Influences

The locations of seeps and springs contributing groundwater year round to the main stem of Topanga Creek were mapped in 2005 (GeoPentech 2006). These groundwater inputs are not directly related to the distribution of steelhead trout, although the main refugia pools consistently used by trout receive inputs from groundwater, which may help moderate summer/fall water temperatures (Tobias 2006). Input from these sources can augment flows adjacent and downstream of the sources.

Flow Habitats

The variety and complexity of flow habitats (riffles, runs, pools, etc.) contribute to the diversity of niches available for aquatic species. Underlying geomorphology, especially gradient, determine the distribution and abundance of each habitat type. Topanga Creek contains a wide range of habitat types, but is primarily pool and riffle dominant (Table 7-1). Analysis of the relationship between habitat types and steelhead trout (*Oncorhynchus mykiss*) distribution showed that adults tend to be associated with pools of greater depth and higher gradient (upstream reach), whereas juveniles are found more often in lower gradient (lower reach) and shallow habitats (Krug et al. 2014). Distribution and abundance of this top-level predator can influence the dynamics of the prey community.

Water Quality

Water quality sample sites for this study (Figure 2-1) were selected to reflect the variety of conditions found as Topanga Creek flows downstream from the town through the more isolated canyon, and then adjacent to the highway before reaching the creek mouth at Topanga Lagoon. Sites are as follows: Owl Falls (6500 m), Scratchy Trail (4800 m), Topanga Bridge (3600 m), Brookside (1700 m), and Snake Pit (300 m).

Levels of nutrients measured including nitrate-N, nitrite-N, ammonia-N and orthophosphate were consistently low with isolated spikes, however even the highest levels documented in Topanga Creek were significantly lower than those observed in other regional creeks such as Malibu (Table 6-22). Levels of nitrogen, phosphorus or light can limit stream algal growth, and increases in any of these resources can result in algal blooms (Borchardt 1996). Figure 11-2 summarizes the FIB, nutrient and turbidity levels observed between 2012-2014. The highest values occurred during first flush rain events, which is consistent with observations in most river systems (Surbeck et al. 2006). Phosphates were often in exceedance at Owl Falls, and to lesser degrees at Scratchy Trail and Topanga Bridge downstream. Correlations between high phosphate levels and ENT at Owl Falls suggest there may be a septage or graywater input somewhere in town, but that its effects are diluted to a point where they are undetectable at Scratchy Trail (low ENT).

The role turbidity is playing in the overall dynamics of the food web is not clear. Bioturbation may be having an influence on the BMI community either directly or indirectly, perhaps related to the effects of crayfish (Yamamoto 2010). The effects of turbidity on BMI need further study in Topanga Creek.

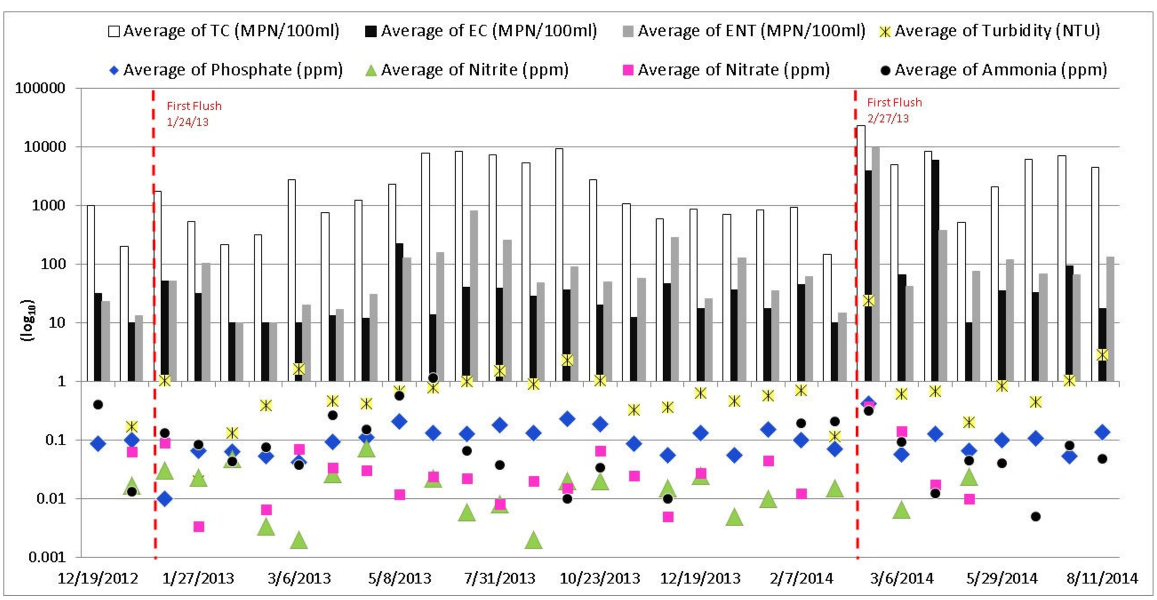

Figure 11-2 Summary of Average FIB and Nutrient Levels in Topanga Creek 2012-2014.

It has been shown that algal communities have a complicated relationship with nitrogen and phosphorus levels in the water column due to storage, uptake patterns that fluctuate depending on seasonal loads, substrate availability and flows which can result in delayed growth responses (Busse et al. 2006, Luce and Abramson 2005). With the low nutrient levels observed in Topanga Creek it is hard to determine if either nitrogen or phosphorus are limiting factors in algal growth or if algal growth is more synergistic with other factors such as flow and light. Biggs (2000) suggests that nutrients influence algal biomass concentration more during periods of low flow. Observations in Topanga Creek suggest that during the low flow period between 2012-2014, overall algal growth was not as high as had been observed during previous low flow periods (Krug et al 2014), potentially suggesting that nutrients were limiting during this time.

The relationship between dissolved oxygen (DO) levels and water temperatures are well documented and levels of DO below 5 mg/l are considered stressful for steelhead trout. These low levels were observed in five out of 21 sample events at Owl Falls (6500 m) and 17 out of 21 sample events at Snake Pit (300 m) during the low flow dry conditions when the pool was isolated and stagnant. Steelhead have not been able to reach 6500 m upstream due to natural stream barriers and only pass through Snake Pit when rains reconnect surface flow sufficiently to permit fish passage. Lower DO levels were significantly correlated to a higher percentage of non-insect taxa and higher DO levels were correlated to lower percentage of non-insect taxa.

Substrate and Embeddedness

Habitat mapping done for the watershed characterization as part of the steelhead trout monitoring program found that the composition of substrate remained fairly consistent over time (Dagit et al. 2007). Pulses of sediment were observed to move through the system driven by storm events, but despite a shift in pool depth at specific sites, overall amount of stream suitable to support steelhead remained fairly constant. The percent embeddedness ranged from 20 to 50% (Stillwater et al 2010). In 2013, the 3200m site was considerably more embedded (49%) than the upper 4500m site (26%), but while the lower site remained the same in 2014, the upper site increased to 44% (Table 7-1). This could reflect either the loss of wetted width as the flows diminished, increased sedimentation, or both. Trout prefer loosely embedded gravels for preparing their redds, and increased embeddedness reduces interstitial niches for many other aquatic organisms. High levels of embeddedness are also associated with reduced biodiversity and abundance of BMI (McGinley et al. 2013).

Bank Stability

Bank instability and erosion can negatively affect aquatic communities by altering substrate composition (increasing fines) and changing habitat types from pools to riffles, or other variations depending on the intensity of the failure. The impacts of bank instability were observed in Topanga Creek in 2008, when Caltrans blew up a boulder that blocked Topanga Canyon Boulevard, resulting in the collapse of a rip rap bank into the creek channel, which changed a consistent refugia pool habitat into a riffle habitat (RCDSMM *unpublished data*).

Due to the geology of the steep canyon walls that define much of the main stem of Topanga Creek, overall bank stability is quite high (Table 7-1) and erosion from upstream sources is episodic.

Instream Habitat Complexity

Instream habitat complexity includes abundance levels of filamentous algae, aquatic macrophytes, boulders, woody debris, undercut banks, overhanging vegetation, living tree roots and artificial structures. These provide a variety of niches for aquatic species from bacteria to fish. In 2013 and 2014, pools, riffles, glides and runs were the dominant habitat available. As flows decreased during 2014, the proportion of runs decreased in the lower reach (3200m) and the percentage of glides and pools decreased in the upper reach (4500m) (Table 7-1).

Canopy Cover and Riparian Vegetation

Canopy cover is fairly high (>80%) throughout Topanga Creek and appears to be increasing with the low flow condition and lack of storm events to clear the channels of macrophytes. The riparian vegetation of Topanga Creek is dominated by trees and saplings (>5 m) in the lower reach, but is dominated by herbs and grasses in the upper reach, which is more defined by steep rock walls (Table 7-1). Invasive plants are found throughout the watershed, including large stands of *Arundo donax*, and increasing spread of cape ivy.

11.2.2 *<u>Biotic Factors</u>*

Microbial Communities

Although it was not possible to characterize the non-fecal microbial community in Topanga Creek, it is important to recognize that the growth and decay of both fecal and non-fecal microbes is a critical underlying factor in the function and response of Topanga Creek to natural and anthropogenic inputs. The role of indigenous microbiota on the persistence and rate of decline of FIB is still not clearly identified but predation and competition impacts, as well as limits to FIB reproduction are important considerations when examining the dynamics of the creek. Using laboratory microcosms to examine samples from Topanga Creek, the growth and decay of bacteria in sediment identified that decay rates were faster in the more natural undisturbed reach samples at Scratchy Trail when compared to the upstream site at Owl Falls, which is closest to urban inputs (Zimmer-Faust *unpublished data*). This is consistent with observations that Scratchy Trail represents a reach where natural cycling of nutrients is most functional. However, the sediment microcosm results from Brookside Dr. (1700 m) suggest that nutrient cycling may be less downstream of Scratchy Trail. More information on these interactions was beyond the scope of this study but presents an interesting question for subsequent work.

Benthic Algae

The abundance of benthic algae can be influenced by abiotic factors such as flows and flood scouring, stability of the sediments, by inputs of nutrients or limitations of nitrogen and phosphorus in low nutrient systems, and finally by the effects of grazing by aquatic organisms. There were no flood events during the course of this study (2012-2014) that were sufficient to mobilize the substrate or scour benthic algae, macroalgae or macrophytes, although such flows were observed in 2005, 2008, 2010 and 2011. Topanga Creek has relatively low levels of nutrients, making it is possible that nitrogen (N) and phosphorus (P) are limiting factors for growth. The Mediterranean climate is characterized by long undisturbed growing season for algae, which suggests that available N and P may ultimately not be the only limiting factor, but rather that available light, stream substrate composition and wetted channel may also be important factors (Busse et al. 2006).

Although a dense benthic diatom algal biomass was not observed during this study, our data were unable to distinguish between possible nutrient uptake/availability limitations versus effects of grazers. Once established, filamentous algae are inedible for many aquatic insects (Cummins 1973) but foraging by grazers can both stimulate (under less intense conditions) and reduce (under more intense foraging pressure) density and cover of benthic algae (Diehl et al. 2000). For example, mayflies (*Baetis sp*) are important benthic algal grazers and their population fluctuates with availability of algae, especially that on epibenthic substrates. Additionally, their use of these food resources is dependent on the type of predators they are avoiding. When present, trout can alter the behavior pattern of *Baetis* foraging by making it more risky to forage during the day, or in particular areas, thus potentially increasing the algal density in more exposed areas, and decreasing the density in more protected areas (Diehl et al. 2000).

The species composition of benthic diatoms and soft-bodied algae observed in Topanga is based on such limited samples that it would be premature to make much of the snapshot baseline available at this time.

Benthic Macroinvertebrates

As primary consumers of allochthonous (terrestrial leaf litter derived) and autochthonous (aquatic plants derived) detritus, benthic macroinvertebrates are the most basic link between both aquatic and riparian vegetation and the rest of the river community. Filling distinct feeding niches, some species shred whole leaves and stalks, others scrape up the film left behind, ultimately releasing a large pool of nutrients that can be absorbed by higher trophic levels. Analysis of functional feeding group (FFG) diversity can shed light on how nutrients begin to flow at these primary trophic levels. In addition to FFG designations, many families, genera, or species have assigned tolerance values 0-10 (CAMLnet. 2003) that designate the organism's ability to live in polluted waters.

Another key feature of benthic macroinvertebrates is their tendency to reveal current and past ecological disturbance. Some taxa, such as mosquitoes, may appear and disappear within a week, while others, like some common dragonflies, develop under water over the course of a year or more (Voshell 2002). Therefore, shifts in species composition may be the result of a current disturbance event or one that occurred within the year. Habitat preferences, limitations, and additional life-history traits have been described for many macroinvertebrate species (Vieira et al. 2006). Indexes of Biotic Integrity (IBI) have been developed using this information to evaluate BMI community composition and distribution and to assign numeric and descriptive scores of ecological health.

A total of 17 BMI samples were collected at each sampling location from upstream to downstream as part of this study. This augmented information compiled by analyzing the annual stream survey BMI collections between 2003-2014. A summary of the SCC-IBI for Topanga Creek is found in Table 8-3 and 8-4. Examination of the samples from upstream to downstream confirm our hypothesis that BMI communities improved the further they were from human influences.

The number of BMI individuals collected from the annual springtime stream surveys from Upper and Lower Topanga Creek ranged from 104 to 3516, representing six phyla, 21 orders, and a total of 76 taxa. The majority of individuals fell within the phylum Arthropoda and class Insecta, followed by the subphylum crustacean including class Ostracoda and order Amphipoda. To date, the invasive New Zealand mud snails (*Potamopyrgus antipodarum*) have not yet been observed in Topanga Creek.

From 2003-2012, *Baetis sp. (blue-winged olives),* a prolific genera of small minnow mayfly was the first or second most abundant taxon every year in both Upper and Lower reaches (Figure 8-5). *Baetis sp.* made up between 33-79% relative abundance (RA) in Upper Topanga, and 13-67% in Lower. The family Baetidae are characterized as strong swimmers, most prevalent in flowing, shallow waters with ample cobbles and/or pebbles (Voshell 2002). *Baetis sp.* are collector-gatherers and have a tolerance value of 6. In 2013 and 2014, *Baetis sp.* were no longer dominant and in fact comprised less than 10% RA of all four samples. Chironomidae, or non –biting midges, which had previously made up between 5-36% shifted to occupy 63-72% of all samples 2013-2014. Chironomids are also primarily collector-gatherers, and are ascribed a family-wide tolerance value of 6. However, the Chironomidae family is extremely diverse, including over 1,000 species, and thrive in equally diverse habitats. Chironomids were identified to sub-family or tribe for a few select samples, and similar taxa were found before and after 2013.

Overall SCC-IBI scores for Topanga Creek were Fair to Very Poor between 2003-2014. Many of the samples had too few individuals collected to be analyzed by the SCC-IBI, which means that they were extremely poor. It is not clear if this might be due to heavy predation by amphibians, crayfish and steelhead or if it is an accurate reflection of the BMI community response to environmental conditions (low flow, low dissolved oxygen). In any case, it is a cause for concern.

Invertebrates – Crayfish

Low flow, shallow conditions such as have been present since 2011 provide preferred habitat for red swamp crayfish (*Procambarus clarkii*) (Voshell 2002), and the lack of flushing storm pulses that have been shown to reduce their numbers has resulted in the population explosion of this species in Topanga Creek.

P. clarkii grow rapidly, maturing within three months after hatching and can reproduce twice a year in warm conditions (Barnes 1974, Vodopich and Moore 1999, Safra et al. 1999). Furthermore, large healthy females typically produce 600 viable young (Barnes 1974, Vodopich and Moore 1999, Safra et al. 1999). The generalist and predatory feeding habits of this Gulf Coast native have been linked to observed declines in macrophyte abundance (Feminella et al. 2006, Rodriguez et al. 2005), macroinvertebrate diversity (Correia et al. 2008), increased bioturbation (Mueller 2007, Yamamoto 2010), and amphibian species richness and recruitment (Gamradt and Kats 2002, Cruz et al. 2006, Ficetola et al. 2011). *P. clarkii* consume an array of plant and animal matter, aquatic vertebrate eggs and larvae, aquatic invertebrates, and can affect food webs on a polytrophic scale.

Pease and Wayne (2013) also observed that Pacific tree frog tadpoles (*Pseudarcris regilla*) responded to predation by crayfish both behaviorally and morphologically by selecting for deeper tail muscles. Gamradt and Kats (2002) conducted amphibian surveys from 1981-1986, and identified ten Santa Monica Mountain streams supporting populations of California newts. When the surveys were repeated in 1994, newts were missing from three of those 10 streams. Further study documented that *P. clarkii* consumed newt egg masses, as well as attacked adults (RCDSMM *unpublished data*).

A short term removal effort conducted by the Watershed Steward Members and RCDSMM Stream Team volunteers between Fall 2013 and spring 2014 suggests that these indiscriminant predators are directly affecting the BMI community and potentially competing for scarce food resources with native amphibians and fish. Additionally, they have been observed to directly attack CA Newts and the numbers of young of the year trout was reduced as the population of crayfish increased (Figure 11-3). While there are numerous other factors that could play a role in that observation (reduced numbers of redds, increased young of the year mortality from drought or predation), it is difficult to ignore the potential for crayfish to be impacting recruitment of steelhead.

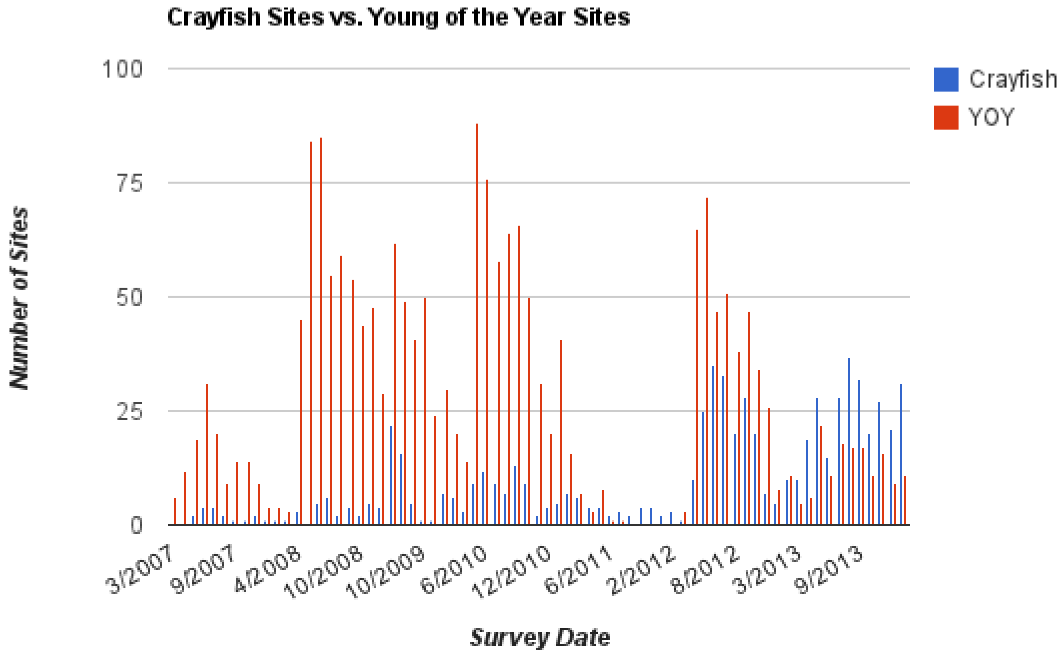

Figure 11-3 Comparison of Young of the Year Trout and Crayfish populations based on snorkel surveys in Topanga Creek 2007-2014.

Herpetofauna

Topanga Creek is home to 23 of a possible 33 species of amphibians and reptiles known from the Santa Monica Mountains (De Lisle 1986, Dagit and Webb 2002). A number of these species are commonly or sporadically observed inhabiting the main stem of Topanga Creek below town. The most commonly observed species are the Pacific tree frog (*Pseudarcris regilla*) and the California tree frog (*Pseudarcris cadaverina*) both of which feed on a variety of invertebrates. Preliminary results of data collected during the annual stream surveys suggests that their numbers are declining as the number of crayfish increase, although this could be related to the rainfall patterns as well. Additional analysis of data is needed to confirm this observation (RCDSMM *unpublished data*).

Prior to the increased abundance of crayfish, California newts (*Taricha torosa*) were regularly observed. They too rely upon a variety of small invertebrates as their food source as adults, and may consume decaying organic matter during their larval stage. The number of CA newt egg masses and adults observed within the study reaches have dropped as the number of crayfish has increased (Figure 11-4). Gamardt and Kats (2002) have documented that newts avoid streams with crayfish but return to them following crayfish removal by flood events.

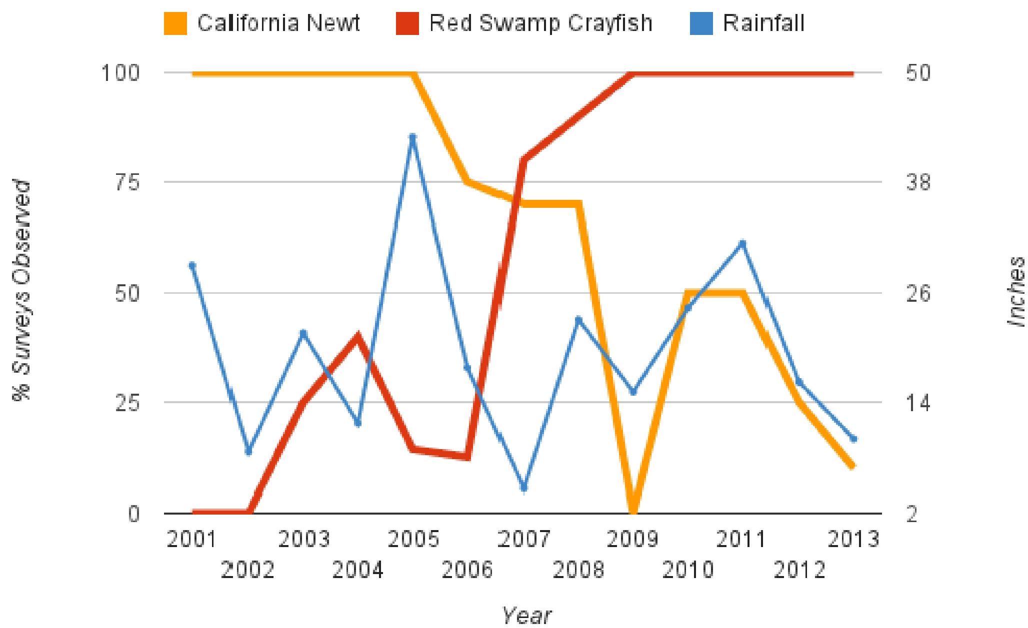

Figure 11-4 Comparison of CA newt and Crayfish observations during annual stream surveys in Topanga Creek. (Note: data is not continuous, but lines were used to highlight the changes observed).

Another aquatic species frequently observed in the study reach is the two-striped garter snake (*Thamnophis hammondi*). The preferred diet of these snakes include tadpoles, newt larvae, small frogs and fish and occasionally fish eggs.

Potentially present and contributing to the diversity of the aquatic food web but rarely observed in the study reach are western toads (*Anaxyrus boreas*) who consume invertebrates as adults and algae and detritus as tadpoles; western garter snakes (*Thamnophis elegans*) which will eat whatever they can find, and occasionally a southwestern pond turtle (*Actinemys marmorata*) straying from the upper watershed (DeLisle 1986). These omnivores will eat algae, some macrophytes, invertebrates, tadpoles, crayfish, and small fish or frogs that are captured and consumed in the water.

Fish

Three native fish species are found in lower Topanga Creek, but the tidewater goby (*Eucyclogobius newberryi*) is confined to the lower and upper portion of the lagoon and rarely observed further upstream. Both southern steelhead trout (*Oncorhynchus mykiss*) and arroyo chub (*Gila orcutti*) are distributed throughout the study reach (Krug et al. 2014). In spring 2014, fathead minnows (*Pimephales promelas*), an invasive exotic fish most often used for bait were detected throughout the study reach of Topanga Creek. All of these species are known to consume a wide variety of aquatic invertebrates and even some algae, but only steelhead trout have been documented eating other fish and crayfish (Krug et al. 2012). The abundance of arroyo chub varies seasonally with increased numbers in summer and fall

(RCDSMM *unpublished data*). This corresponds with the increased numbers of amphibian tadpoles, larval newts and juvenile steelhead trout observed during the same time frame. It is possible that the increased competition for BMI resources at the time of the annual spring stream surveys plays a role in the low numbers of individuals collected.

Steelhead trout were extirpated from Topanga Creek during the 1970-80's but recolonized in the 1990's (Bell et al. 2011). Since that time, the population has increased both in abundance and distribution throughout the creek. Prior to the high flows in 2005, trout were restricted to the reaches below 4400m, but have expanded upstream to the natural limit of anadromy since (Krug et al. 2014). The variability of the population reflects both seasonal trends (increases with young of the year in spring) and response to rainfall (Table 11-2). During low rain years, habitat limitations due to low flow conditions restrict movement through the creek, often isolating individual fish in specific reaches for extended periods of time. Adults are most often found in refugia pools, and juvenile fish are found more often in shallow habitat types, including riffles, runs and glides. A large decline in the number of fish observed occurred following a major storm event in March 2011, when the creek was connected to the ocean for several days, allowing juvenile smolts to out-migrate (Krug et al. 2014). Predation by trout in specific pools and short reaches of the creek can be intense and consistent over time (RCDSMM *unpublished data*).

Table 11-2 Average number of each size class based on Topanga Creek snorkel survey observations 2001–2013. (Krug et al. 2014)

Year of observation	Juvenile (<100 mm)	Intermediate (100–250 mm)	Adult (>250 mm)	Total
2001	25	25	3	53
2002	34	56	6	95
2003	6	34	19	59
2004	46	50	12	103
2005	6	46	20	71
2006	62	68	40	170
2007	35	36	16	86
2008	250	47	18	316
2009	112	81	14	209
2010	115	125	13	253
2011	9	85	20	114
2012	68	21	7	95
2013	28	26	2	56

Stomach contents taken from trout during mark recapture events in November and March of 2010-2013 using gastric lavage, showed that trout in Topanga Creek, similar to elsewhere, are opportunistic feeders (Figure 11-5). Aquatic insects are the preferred prey of trout as they are generally higher in caloric values compared to other potential prey items. When aquatic insects were readily available, trout in Topanga Creek consumed mainly aquatic insects, however, during summer months when aquatic insects were less available, they supplemented with terrestrial insects. Arroyo chub, crayfish and snails were also eaten occasionally. After 2012, as low flows persisted due to lack of rainfall, crayfish increased in abundance throughout the creek, and prey found in trout stomachs consisted more of crayfish and less of aquatic macroinvertebrates (Krug et al. 2012). This could have been due to a number of factors, including lower aquatic insect abundance and biomass, increased biomass of crayfish and increased ease of catching crayfish. A switch in prey consumption by a top-level predator can affect prey population dynamics. Here, it seemed like the lack of rainfall and low flow conditions were a major factor contributing to the increase in crayfish and decrease in benthic macroinvertebrates, suggesting that abiotic factors are an important driving force behind food web dynamics in Topanga Creek.

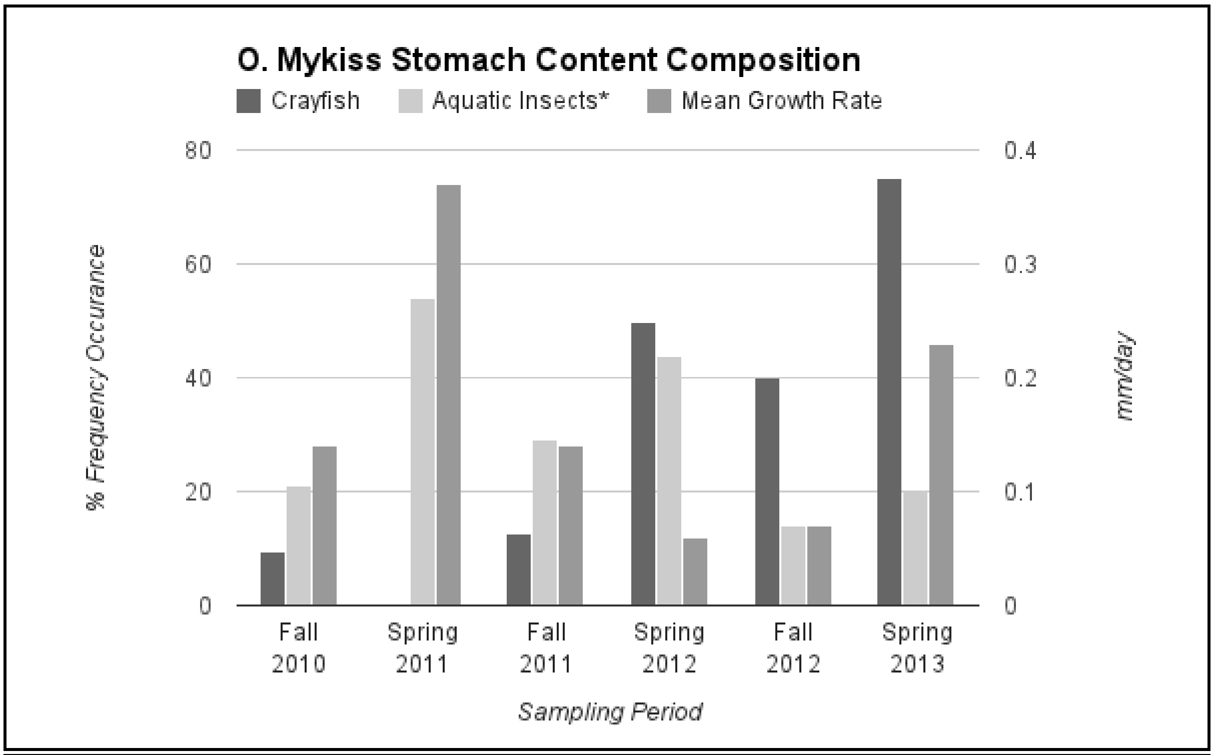

Figure 11-5 *O. mykiss* stomach content composition (Krug et al. 2014)

11.3 <u>PRELIMINARY Conceptual Model of the Topanga Creek Food Web</u>

One of the principle questions in ecology is how a variety of abiotic and biotic factors limit or regulate resources throughout a system. Are predators controlling the abundance of primary producers, which is known as top-down theory, or is the availability of resources (i.e. carbon, nitrogen, phosphorous, organic matter) needed to support primary producers limiting their abundance (bottom-up theory)? How do biological communities respond to changes in flow or other disturbances? The debate continues concerning the relative importance of each of these forces, as well as the recognition that most biological systems are extremely complex and that both forces are important and dynamic (Porter 1992).

The model of algal growth and biomass controlled by resource supply (bottom-up), disturbance, and grazing may not fit Mediterranean stream conditions because of the extended low flow summer periods and the effects of abiotic factors on algae productivity patterns (Busse et al. 2006). Flow patterns can also cause seasonal changes in BMI (Hurtubia 1973) resulting in fluctuating abundance and functional feeding group composition, that in turn impacts the density and abundance of benthic algae. One of the limitations of the top-down model is that it is often difficult to accurately identify the diversity of prey species taken by each predator species, the breadth of food niches, and the competitive impacts of multiple predators in a limited system (Hurtubia 1973, Diehl et al. 2000, Power 1992).

Finally, it is important to examine these relationships within the context of watershed landscape conditions, especially the potential implications of both direct and indirect influences of urbanization, such as the percent of impervious surface (Riley et al. 2004).

Below we attempt to examine the possible constructs of top-down forces, bottom-up forces and a more complex interaction using abiotic and biotic observations from Topanga Creek.

Top-Down Scenario:

In this scenario, the key driver of the Topanga Creek food web would be steelhead trout as the top predator, consuming crayfish, other fish, tadpoles and both terrestrial and aquatic insects. Crayfish, arroyo chub, tree frogs and newts make up the intermediate trophic levels, as they are both prey of steelhead and predators on BMI. The composition of the BMI community changed in 2013, shifting away from dominance by Baetidae, and becoming more dominated by chironimids, amphipods and snails. Since 2001, the numbers of both trout and crayfish have increased, suggesting that food was sufficiently available to support growth and reproduction. The different styles of predation (trout are visual predators more active during the day as compared to crayfish who are more nocturnal feeders) could mean that these predators are able to co-exist by creating predation pressure 24 hours a day. This continued predation pressure, combined with the low flow conditions of the past two years could be a factor associated with the observed decline in Southern California Coastal Index of Biotic Integrity (SCC-IBI) BMI scores.

Bottom-Up Scenario:

Availability of resources (carbon, nitrogen, phosphorous, organic matter) are potential factors that can limit growth of microbes and algae, as well as BMI. BMI are key to the recycling of detritus, resulting in conversion of leaf litter into dissolved nutrients that can be easily accessed by bacteria, algae and other microbes, accelerating and supporting their growth. Low levels of both course and fine organic matter, combined with a limited number of representatives of various functional feeding groups were observed. The overall low levels of nitrates, nitrites, ammonia and phosphorous observed throughout Topanga Creek could be due either to efficient uptake and absorption of these resources by the biological community, or simply that Topanga Creek is limited by low input levels of these resources. This condition can shift in response to nutrient loading such as occurs during storm events. The pattern of low nutrient levels in the water samples, low density of algae, as well as the low

SCC-IBI scores for BMI, suggests that the creek could either be resource limited, or that the low levels of primary producers are strongly influenced by heavy predation by amphibians, crayfish and fish.

Integrated Food Web Scenario:

Figure 11-6 illustrates the integration of both the top-down and bottom-up processes that may be occurring in Topanga Creek. In the integrated scenario, top-down and bottom-up forces are in a continuous feedback loop, with each trophic level responding to on-going changes throughout the system. The pattern of water column nutrient reduction observed between the inputs at Owl Falls (6500 m) and the levels observed at Scratchy Trail (4800 m) suggests that these inputs support increased productivity at Scratchy Trail, which is reflected in a more abundant benthic algae and BMI community, which in turn supports a higher density of predators (amphibians, crayfish and fish). Snorkel survey data shows increasing numbers of crayfish, chub and larger trout individuals also observed in that reach (RCDSMM *unpublished data*).

However, nutrient levels downstream of Scratchy Trail are relatively consistent, and both the benthic algae and the BMI community metric scores decline from Topanga Bridge (3600 m) downstream to the lagoon. This suggests that resource limitations, combined with the presence of predators could be controlling the community structure in these lower reaches of the creek. These observations occurred within the context of variable, but predominately low flow conditions experienced since 2002, especially downstream of Topanga Bridge. A shift in the dominant BMI taxa from Baetid/Simulidae to Chironomid/Amphipod suggests that the combination of flood events, as well as extended low flow periods has restructured the BMI community. Combined with the increasing numbers of steelhead trout and crayfish since 2001, it appears that the overall condition of Topanga Creek has changed.

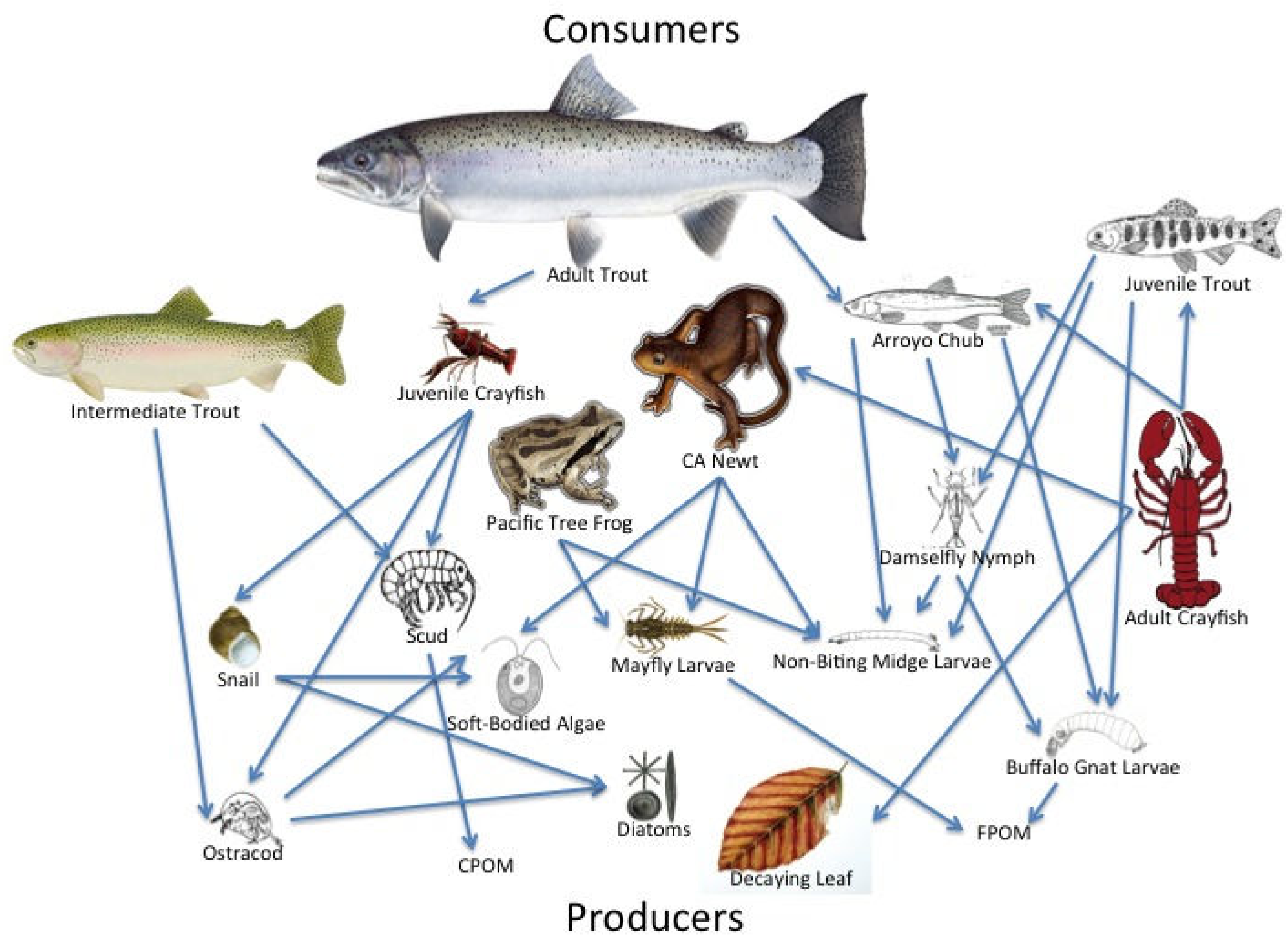

Figure 11-6 Conceptual model of the Topanga Creek Food Web.

11.4 Discussion

Food web interactions in aquatic systems can strongly influence biogeochemical cycling, fisheries production, and responses to anthropogenic influences (Brett and Goldman 1997). Due to the complexity of both abiotic (fires, floods, drought, climate change and anthropogentic inputs) and biotic (introduced invasive species) stresses over time it is important to have long-term perspectives on trophic level and food web dynamics, especially in Mediterranean ecosystems, where both seasonal and annual changes, especially drought, can shift community structure on many levels (Resh et al. 1988, Resh et al. 2013). In Topanga Creek, we are interested in determining how these processes are involved in uptake of nutrients and how they accomplish the absorption of anthropogenic inputs from the upper watershed. We are also concerned about the possibility that excessive loading could unhinge these processes and the consequences to aquatic diversity that might result from that failure. Abiotic changes can confound our ability to distinguish changes caused by natural variability from changes caused by anthropogenic stressors (Morais et al. 2004). Biotic pressures like predation and intensify as space and resources become limited as water levels drop (Robson et al 2011). These synergistic and dynamic factors make it extremely difficult to identify tolerance thresholds for anthropogenic inputs over which the creek will no longer be resilient.

Collected information on BMI, crayfish and trout abundance provide the most information on food web interactions at this time. Since 2001, the populations of both crayfish and trout have continued to increase, while the BMI community biotic integrity appears to have declined. There are several ways to interpret this information. The redundancy hypothesis posits that as long as the functional feeding group is represented, and that as long as trophic levels remain uniform (even with different species present at each level) both energy flow and ecosystem processes will continue to work in the same way (Power 1992). By contrast, the keystone species hypothesis suggests that certain species are critical to the function of the food web and cannot be replaced by others with similar, but not exactly the same role (Power 1992, Morais et al. 2004). This is of concern in Topanga, where management is focused on supporting the continued survival of steelhead trout, which are considered to be an umbrella species. The theory has been that if the creek is able to support a reproducing population of steelhead, then other aquatic species will benefit as well.

Other studies have found that the food web interactions of BMI are often species specific, and influence nutrient cycling and energy flow throughout the food web (Covich et al. 1999), thus even slight shifts from baetids to chironomids, could potentially have ripple effects on the dynamics of a system. Forrester et al. (1999) examined the relationship between fish biomass, baetid productivity and nutrient inputs finding that the distribution of baetids responded to predation pressure with patchy distribution and emigration, and that nutrient inputs that increased algal biomass also increased the number of herbivores, such as baetids. In Topanga Creek, we observed that the shift from baetids to chironomids, although both in the same FFG, was associated with decreased IBI scores, reflecting a less robust BMI community. BMI species can take many years to recover from local extirpation to pre-disturbance levels of multi-age population, suggesting that hydrologic conditions and changes can have population level consequences (Resh et al. 2013). Continued monitoring of the BMI community in Topanga Creek is one of the only ways to identify how the creek food web responds as drought conditions either change or continue.

Despite these fluctuations during the drought, steelhead continue to reproduce and survive throughout Topanga Creek. Their abundance has increased or at least remained steady during the past 14 years. This is in contrast to observations in Malibu Creek, where abundance levels are much more variable, despite the documented influence of anadromous adults in reproduction. Understanding the dynamics of these complex interactions will help inform recovery actions for this endangered species in southern California.

11.5 Summary

Current conditions in Topanga Creek suggest that at this time, the reach most inaccessible to humans at Scratchy Trail is the most functional and that other sample sites downstream of Topanga Bridge reflect more disturbances. It is unclear exactly where the tipping point occurs, but the low flow conditions, combined with the anthropogenic inputs, have resulted in reduced BMI diversity, a shift of BMI community, increases in exotic aquatic species (crayfish and fathead minnow), decreases in egg masses of frogs and newts, and lower numbers of both arroyo chub and steelhead trout.

Topanga Creek is in trouble, although it is still functional enough to support resident steelhead.

As we cannot control the rain or flow, the only positive actions we can take are to

- Reduce nutrient inputs (graywater and septic) into the creek,
- Protect the reach between Owl Falls and Topanga Bridge from increasing rock climbing, hiking and transient activity,
- Reduce impacts from transient encampments, marijuana farms, taggers in the more accessible reach between Topanga Bridge and the ocean.

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12 Best Management Practices (BMP's)

12.1 Evaluation of BMP's

One of the main efforts of this study was to collect data to monitor current water quality conditions, compare the current levels to previous studies, and identify sources and recommend specific Best Management Practices to reduce, and eliminate if possible, identified contributions to bacteria and nutrient exceedances.

In the 2013-2014 summer dry season a total of 19 exceedances were recorded at Topanga Beach. Since April 2014, there have only been a total of four exceedances, which are potentially tied to the drought conditions.

The Los Angeles Region Sub-watershed Specific Implementation Plan (NSMR 11/4 Bacterial TMDP Implementation Plan 2005) identified target exceedance day reductions for creeks within the Santa Monica Bay watershed as a way of examining watershed specific compliance milestones. Topanga Creek is allowed 17 exceedance days, with a total required day reduction of nine exceedance days. To achieve the target reduction, the Plan recommends a series of Best Management Practices, benefits and performance evaluation measures and methods (Table 12-1).

In addition to the recommendations in the Basin Plan, our results suggest that there are a few specific actions that can be taken to reduce possible sources of FIB at Topanga Beach.

12.2 Recommended BMP's for Topanga Beach

1) Restore Topanga Lagoon and Lower Topanga Creek State Park. This is a longer-term project, but by restoring natural function to Topanga Lagoon, it would be possible to not only reduce the bacterial sources but also improve habitat for a variety of endangered species, especially tidewater gobies and southern steelhead trout.
2) Continued enforcement of the County code and additional signage may reduce impact and presence of dog feces. The marker data documents a rise in dog associated markers in the winter months when lifeguard supervision and peer-pressure from beach visitors are reduced. During the study, dogs and dog feces, were routinely observed on the beach. The winning student posters have been affixed to the lifeguard station to assist with public outreach.

3) Continue coordinated enforcement to reduce the number of homeless and transients camping in and around the beach and under the PCH underpass. A mass balance calculation of input of one direct deposit to the lagoon (~200g of human feces) was calculated to result in an exceedance of ENT (Riedel et al. 2014 submitted). Direct deposits were observed at both the lagoon and beach on multiple occasions during the study. Direct deposits associated with the transient population is again an enforcement issue but one that could potentially reduce exceedances.

4) Continued maintenance and monitoring of the Lifeguard Station shower and restrooms. Some drainage from the showers directly to the beach was observed on several occasions. When tides are high or storm events shift the lagoon mouth downcoast in front of the building, there is potential for this to become a source.

5) Investigate possible installation and maintenance of culvert filters along Pacific Coast Highway at Topanga Beach to prevent direct road surface run-off spills into Topanga Lagoon.

6) Upgrade the septic systems at the Topanga State Park along PCH as conditions change and opportunities arise. As the lagoon park plan evolves, incorporating state of the art septic systems into any visitor serving facilities is recommended.

7) Increase outreach to commercial facilities that are on septic systems along the beach. The Feed Bin has the last remaining septic system that is connected to a seepage pit. Upgrading that system should be a priority.

8) Additional patrolling of the state park for transient and RV dumping activity could help with any exceedances in the creek, similarly, further enforcement of the no-dogs-allowed-on-beach rule would probably help with the FIB issues at the beach/lagoon.

9) Increase public outreach concerning the problem with dog feces pollution. While changing behaviors is difficult, peer pressure to pick up after your dog, as well as to reduce the number of dogs visiting the beaches could help.

10) Participate in future monitoring and develop funding to initiate a quantitative microbial source identification study to evaluate the potential for developing appropriate site specific objectives.

Table 12-1 Summary of BMP's Benefits and Performance Evaluation Measures for Topanga Lagoon and Creek
(Excerpted from: NSMR 11/4 Bacterial TMDP Implementation Plan 2005)

BMP's and Activities	Water Quality Benefits	Integrated Water Resources Benefits	Performance Evaluation Measure and Method
TMDL Monitoring and studies:	Monitor bacteria, nutrients, metals and organics	N/A	Monitoring results (Note: metals and organics are not being monitored by this study)
Hydrologic Loading Estimates	N/A	Hydrology/ Geomorphology	Study results
Id most relevant Human Health Indicators Study	Bacteria and pathogens	N/A	Study results from this and SIPP
Hydrology vs. Bacteria loading	Bacteria	N/A	Study results from this and SIPP
Bacterial Seasonal Variation Study	Bacteria	N/A	Study results from this and SIPP
Non-Structural Measures:			
Outreach to pet owners (especially dogs on the beach) concerning link between animal wastes and health issues	Bacteria, nutrients and pathogens	N/A	Study results from this and SIPP
Locate areas with corralled animals and educate property owners on bacteria TMDL's	Bacteria and pathogens	N/A	Study results from this and SIPP, Community meetings
Identify horse stables and implement pilot program for manure management	Bacteria and pathogens	N/A	Study results from this and SIPP
Outreach at trailheads encouraging hikers to use restroom facilities	Bacteria and pathogens	N/A	Study results from this and SIPP
Commercial Facilities Control Programs:			
Provide outreach to all commercial facilities with corralled animals	Bacteria and pathogens	N/A	Study results from this and SIPP
Development Planning and Construction Programs:			
Further emphasize applicable existing BMP's in development planning and construction programs	Bacteria, nutrients, metals, organics, pathogens, trash	Water conservation, reuse/recycling, habitat, geomorphology, hydrology, flood volumes	Community meetings to highlight County recommendations
Structural Measures:			
Encourage residential cisterns	Bacteria, nutrients, metals, pathogens,	Water conservation, reuse/recycling,	Community meetings to highlight County

BMP's and Activities	Water Quality Benefits	Integrated Water Resources Benefits	Performance Evaluation Measure and Method
		habitat, geomorphology, hydrology, flood volumes	recommendations
On-site storage and reuse projects	Bacteria, nutrients, metals, organics, pathogens, trash	Water conservation, reuse/recycling, habitat, geomorphology, hydrology, flood volumes	Community meetings to highlight County recommendations
Small scale Infiltration projects	Bacteria, nutrients, metals, organics, pathogens, trash	Water conservation, reuse/recycling, habitat, geomorphology, hydrology, flood volumes	Community meetings to highlight County recommendations

12.3 Recommended Voluntary BMP's for the Topanga Creek Watershed

Although it does not appear that inputs into the upper watershed are associated with the exceedances at Topanga Beach there are indications that they negatively impact the creek's ecosystem. A number of BMP's could be implemented throughout the watershed in order to reduce inputs to the creek and possibly improve overall conditions in Topanga Creek.

1) Establish a community outreach program to inform residents of potential septic system impacts to the creek and encourage them to upgrade their existing septic systems by installation of effluent-filters in septic tank outlets to reduce particulates into leach fields or seepage pits, thus reducing bacterial and nutrient contamination potential. The community outreach program should include identifying funding sources to assist property owners in upgrading their septic systems.
2) Establish a community outreach program to inform residents of potential impacts to the creek from sub-surface and surface graywater discharges.
3) Through community outreach, encourage the installation of additional trash receptacles behind Topanga Market and Abuelita's.

4) Through community outreach, encourage the availability of public restrooms in Topanga Center.
5) Continue coordinated efforts to remove transient encampments and illegal marijuana farms located adjacent to the creek.
6) Implement the Santa Monica Mountains Local Coastal Program policy for existing equestrian facilities to encourage such facilities to come into compliance with all of the LCP policies and regulations as soon as possible.

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13 Recommendations

13.1 Recommendations for Further Study

The intention of this study was to enable the County to understand the sources of bacterial contamination at Topanga Beach, and identify possible ways to eliminate, reduce or mitigate those sources. As with most studies, answering one set of questions leads to more questions. Based on our final results, we would like to suggest several additional studies that would provide more in-depth understanding of this complicated problem, as well as actions that could help the County achieve the Basin Plan targets in the future.

13.1.1 FIB and host associated markers

- Cov- IMS/ATP methods can be used to adaptively track sources in the watershed, furthering our understanding of concentration and dispersal.
- Inv-IMS/ATP Bacteroides method can also be used to adaptively track potential sources of human associated fecal pollution.
- Examine the buoy data to look at the patterns of nearshore flow along Topanga Beach
- What more, if anything, do we need to know in order to identify sources of bacterial contamination?
- Examine ENT speciation when ENT levels are in exceedance at beach and lagoon sites-compare ENT speciation results to marker values for further understanding of sources.
- Further examine relationship between sand/sediment and water FIB and marker levels to better understand if resuspension of FIB/markers is contributing to water column FIB and marker levels. Further examine sediment/sand as potential reservoir for FIB and markers.
- What impacts might Sea Level Rise have on the movement and dilution of FIB between the lagoon and the ocean?
- In collaboration with Dr. Doug Hammond at USC, examine the isotope signatures of water leaching through the sand berm from the lagoon to the ocean to get a better idea of the time lag and potential for filtration.
- Expand field sampling to examine the patterns of gull and dog markers as they travel from the lagoon to the ocean. Examining persistence of these markers in situ in water and sand would allow for a better understanding of these patterns.

- Why does enterococci survive the transition from the lagoon to the ocean in higher concentrations?
- Identify types of bacterial colonies marketed to homeowners to improve their septic function and examine their potential contributions or impacts on FIB found in the creek and lagoon.
- Participate in future monitoring and develop funding to initiate a quantitative microbial source identification study to evaluate the potential for developing appropriate site specific objectives.

13.1.2 Ecological interactions

- Develop an ecosystem process model using stable isotopes to examine ecological controls such as nutrient cycling and predation on FIB, benthic macroinvertebrates, diatoms and soft-bodied algae dynamics.
- Compare diatom and soft-bodied algae species abundance, growth patterns and ecological tolerances between Malibu and Topanga, and within a southern California region context (work with Las Virgenes Municipal Water District, Aquatic Bioassay and Consulting Inc., and SCCWRP). Data for 2014 should be available in winter 2015.
- Continue annual stream surveys to track response to drought by BMI, amphibians and fish populations in relation to algae cover and water quality in Topanga Creek.
- Track the presence and abundance of beach wrack (kelp) and sea birds on the berm between Topanga Lagoon and the ocean.
- Continue monitoring and active removal efforts for invasive plants and animals, especially crayfish.

13.1.3 Best Management Practices and Community Outreach

- Develop a survey for the community regarding how pet wastes are handled to encourage active management. Conduct active outreach effort to provide information on the effects of dog waste on water quality. The 2014-2015 Watershed Stewards will work on this effort.
- Establish volunteer bird monitoring at Topanga Lagoon and Beach to obtain more information on numbers of birds and use/roosting patterns.
- Find funding to repair the Feed Bin OWTS in Topanga State Park.
- Investigate the correlation between marijuana farms and water quality in Topanga Creek.

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT ENHANCED WATERSHED MANAGEMENT PROGRAMS

Draft Program Environmental Impact Report

Prepared for
County of Los Angeles
Department of Public Works

January 2015

ESA

RB-AR 8195

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Acronym List

AB	Assembly Bill
ACS	American Community Survey
AGB	Alamitos Gap Barrier
AOA	Air Operations Area
AQMP	Air Quality Management Plan
AR4	IPCC Fourth Assessment Report
ARMR	Archaeological Resource Management Reports
ASBS	Areas of Special Biological Significance
ASTM	American Society for Testing and Materials
ASTs	Aboveground Storage Tanks
ATCM	Airborne Toxics Control Measure
B.P.	Before Present
BACT	Best Available Control Technology
BAU	Business As-usual
BMP	Best Management Practices
BMPs	Best Management Practices
BWER	Ballona Wetlands Ecological Reserve
C1-C4	Chlordane (tissue), Chrysene
CAA	Clean Air Act
CAAA	CAA Amendments of 1990
CAAQS	California Ambient Air Quality Standards
Cal/OSHA	California Division of Occupational Safety and Health
CalARP	California Accidental Release Prevention
CalEPA	California Environmental Protection Agency
CARB	California Air Resources Board
CB	Catch Basin
CBC	California Building Code
CCAA	California Clean Air Act
CCAP	Community Climate Action Plan
CCAT	California Climate Action Team
CCC	California Coastal Commission
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CDP	Coastal Development Permit
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFCs	Chlorofluorocarbons
CFR	Code of Federal Regulations
CGP	Construction General Permit
CH4	Methane
CHLs	California Historical Landmarks
CIRS	Coastal Interceptor Relief Sewer
CIWMB	California Integrated Waste Management Board
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	Carbon Monoxide
CO2	Carbon Dioxide
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources

Acronym List (cont.)

CWA	Clean Water Act
DGSG	Dominguez Channel Spreading Grounds
DHS	Department of Health Services
DNL	Day-Night Average Noise Level
DOT	Department of Transportation
DTSC	Department of Toxic Substances Control
EIR	environmental impact report
ERP	Emergency Response Plan
ESA	Environmental Site Assessment
ET	Evapotranspiration
EWMP	Enhanced Watershed Management Program
FAA	Federal Aviation Administration
FESA	Federal Endangered Species Act
FHSZs	Fire Hazard Severity Zones
FMMP	Farmland Mapping and Monitoring Program
GHG	Greenhouse Gas
GWP	Global Warming Potential
HAPs	Hazardous Air Pollutants
HFCs	Hydrofluorocarbons
HMBP	Hazardous Materials Business Plan
HR	Hydrologic Region
HVAC	Heating, Ventilation, and Air Conditioning
IC/ID	Illicit Connection / Illicit Discharges
IPCC	Intergovernmental Panel on Climate Change
IRAs	Identified Resource Areas
JWPCP	Joint Water Pollution Control Plant
LACFCD	Los Angeles County Flood Control District
LACFD	Los Angeles County Fire Department
LACOE	Los Angeles County Office of Education
LACSD	Los Angeles County Sanitation Districts
LARWQCB	Los Angeles Regional Water Quality Control Board
LASD	Los Angeles County Sheriff's Department
LAUSD	Los Angeles Unified School District
LCFS	Low Carbon Fuel Standard
LCPs	Local Coastal Programs
LFD	Low-Flow Diversion
LID	Low-Impact Development
LOS	Level of Service
LST	Localized Significance Threshold
LUSTs	Leaking Underground Storage Tanks
MACT	Maximum Achievable Control Technology
MBTA	Migratory Bird Treaty Act
MCM	Minimum Control Measure
ML	Richter Local Magnitude
MMRP	Mitigation Monitoring and Reporting Program
MMT	Million Metric Tons
MOU	Memorandum of Understanding
MPO	Metropolitan Planning Organization
MRZs	Mineral Resource Zones
MS4	Municipal Separate Storm Sewer System

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Acronym List (cont.)

N2O	Nitrous Oxide
NAAQS	National Ambient Air Quality Standards
NCCP/HCP	Natural Community Conservation Planning/Habitat Conservation Plan
NESHAPs	National Emission Standards for Hazardous Air Pollutants
NH3	Ammonia
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO	Nitric Oxide
NO2	Nitrogen Dioxide
NOI	Notice of Intent
NOP	Notice of Preparation
NOX	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
OEHHA	Office of Environmental Health Hazard Assessment
OES	Office of Emergency Services
OPR	Office of Planning and Research
OSHA	Office of Safety and Health Administration
P-C	Production-Consumption
PEIR	Program Environmental Impact Report
PFCs	Perfluorocarbons
PGA	Peak Ground Acceleration
PHI	Points of Historical Interest
PM10	Particulate Matter (10 micrometers or less)
PM2.5	Particulate Matter (2.5 micrometers or less)
PPV	Peak Particle Velocity
PRDs	Permit Registration Documents
PSD	Prevention of Significant Deterioration
PVC	Polyvinyl Chloride
RAA	Reasonable Assurance Analysis
RCRA	Resource Conservation and Recovery Act
RMP	Risk Management Plan
RMS	Root Mean Square
ROG	Reactive Organic Gases
RWLs	Receiving Water Limitations
RWQCB	Regional Water Quality Control Board
RWQCBs	Regional Water Quality Control Boards
SAR	Second Assessment Report
SB	Senate Bill
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SEAs	Significant Ecological Areas
SF6	Sulfur Hexafluoride
SIP	State Implementation Plan
SLIC	Spills, Leaks, Investigations, and Cleanups Program
SMARA	State Surface Mining and Reclamation Act
SMURRF	Santa Monica Urban Runoff Recycling Facility
SO2	Sulfur Dioxide
SO3	Sulfur Trioxide
SO4	Sulfates

Acronym List (cont.)

SOX	Sulfur Oxides
SPCC	Spill Prevention, Control and Countermeasure
SVP	Society for Vertebrate Paleontology
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
SZs	Scientific Resource Zones
TAC	Technical Advisory Committee
TACs	Toxic Air Contaminants
TDS	Total Dissolved Solids
TMDLs	Total Maximum Daily Loads
UCMP	University of California Museum of Paleontology
ULSD	Ultra Low Sulfur Diesel
UNFCCC	United Nations Framework Convention on Climate Change
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USTs	Underground Storage Tanks
UWMP	Urban Water Management Plan
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compound
WCBB	West Coast Basin Barrier Project
WDRs	Waste Discharge Requirements
WMA	Watershed Management Area
WMG	Watershed Management Group
WMP	Watershed Management Program
WRP	Water Reclamation Plants
WWII	World War II

EXECUTIVE SUMMARY

ES.1 Introduction

The Los Angeles County Flood Control District (LACFCD) has prepared this Draft Program Environmental Impact Report (Draft PEIR) to provide the public and responsible and trustee agencies with information about the potential effects, both beneficial and adverse, on the local and regional environment associated with implementation of the Enhanced Watershed Management Programs (proposed program). This Draft PEIR has been prepared pursuant to the California Environmental Quality Act (CEQA) of 1970 (amended), codified at California Public Resources Code Sections 21000 et. seq., and the CEQA Guidelines in the Code of Regulations, Title 14, Division 6, Chapter 3.

This document is being circulated to local, state and federal agencies, and to interested organizations and individuals who may wish to review and comment on the Draft PEIR. Publication of this Draft PEIR marks the beginning of a 45-day public review period, during which written comments may be directed to the address below. Comments on the project should be directed to:

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ES.2 Background

The Los Angeles County Flood Control District (LACFCD) was created in 1915 when the State Legislature adopted the Los Angeles County Flood Control Act to provide flood risk management, water conservation, and recreation and aesthetic enhancement within its boundaries. The LACFCD owns and maintains a broad network of flood control facilities that convey stormwater to the local rivers and ultimately to the ocean. The LACFCD is governed as a separate entity by the County of Los Angeles Board of Supervisors, and is operated by the County's Department of Public Works. The LACFCD, the County of Los Angeles, and 84 incorporated cities within Los Angeles County (collectively referred to as Permittees) are covered under a Municipal Separate Storm Sewer System (MS4) Permit (Order No. R4-2012-0175; National Pollutant Discharge Elimination System [NPDES] Permit No. CAS004001) for the discharge of urban runoff to waters of the United States. The purpose of the MS4 Permit is to achieve and maintain water quality objectives to protect beneficial uses of the receiving waters in the Los Angeles region. Each of the Permittees identified in the MS4 permit is responsible for meeting the conditions of the permit for MS4 discharges occurring within their jurisdiction.

The 2012 MS4 Permit for Los Angeles County gives Permittees the option of implementing an innovative approach to Permit compliance through development of an Enhanced Watershed Management Program (EWMP). The EWMPs will identify potential and priority structural and non-structural Best Management Practices (BMPs) within the region's stormwater collection system to improve runoff water quality. The LACFCD, along with participating Permittees, has opted to exercise this option and has submitted to the LARWQCB 12 separate Notices of Intent (NOIs) for the development of EWMPs within 12 distinct watershed groups (refer to **Figure 1-1**). Implementation of the EMWPs would be the responsibility of each Permittee and would occur following approval of the EWMPs by the LARWQCB.

The LACFCD, as a regional agency, is a member of each of the 12 EWMP working groups, and as such provides a commonality within each EWMP group. However, LACFCD does not have a special status or authority designated by the MS4 Permit over any of the other Permittees. The LACFCD will be working with the applicable Permittees in all 12 EWMP watersheds as an equal partner to identify the types and locations of BMPs needed to achieve permit compliance within each watershed.

The timeline identified in the MS4 Permit requires that Permittees submit the EWMP to the LARWQCB by June 28, 2015, in order to be in compliance with the permit conditions. The LACFCD recognizes that implementation of the EWMPs may potentially result in changes to environmental conditions. As a result, the LACFCD has prepared this Program Environmental Impact Report (PEIR) in compliance with the California Environmental Quality Act (CEQA) to provide the public and the responsible and trustee agencies with information about the potential effects on the local and regional environment associated with implementation of the EWMPs. The LACFCD will submit the PEIR to its governing body, the Los Angeles County Board of Supervisors, for approval prior to submittal of the EWMPs. The EWMPs will be submitted by each EWMP to the LARWQCB.

This PEIR describes and evaluates each of the EWMPs being prepared by the Permittees collectively. The discretionary action prompting the need for CEQA compliance is the submittal of the completed EWMPs to the LARWQCB. The EWMPs will identify management strategies including hundreds of structural Best Management Practices (BMPs) that may be designed and implemented by the Permittees to meet permit compliance objectives. A few of the BMPs are currently well defined but most are yet to be fully developed under the EWMPs. A set of priority BMPs will be detailed in each of the EWMPs; these are being developed in parallel with the PEIR. The PEIR describes the details that are available for each of the EWMPs currently under preparation by the EWMP working groups.

The PEIR analysis is not intended to focus on the site-specific construction and operation details of each management strategy and project included in the EWMP. Rather, this PEIR serves as a first-tier environmental document that focuses on the effects of implementing the EWMPs to reduce urban runoff pollution. The analysis assesses worst case situations where construction or operation of projects may significantly impact environmental resources. The analysis outlines mitigation strategies to be followed by implementing agencies to avoid or minimize impacts wherever feasible.

LACFCD is the CEQA Lead Agency for this PEIR. This PEIR can be used by the LACFCD or other Permittees to streamline environmental review of individual EWMP projects. As individual projects identified in the EWMPs are fully developed, the implementing agency (i.e., the Permittee responsible for implementing the project) will conduct CEQA analysis for individual projects as appropriate or may determine that no additional CEQA analysis is required or that a project is exempt from CEQA.

ES.3 Project Objectives

The primary goals and objectives of the EWMPs are:

- To collaborate among agencies (Permittee jurisdictions) across the watershed to promote more cost-effective and multi-beneficial water quality improvement projects to comply with the MS4 Permit.
- To develop watershed-wide EWMPs that will, once implemented, remove or reduce pollutants from dry- and wet-weather urban runoff in a cost-effective manner.
- To reduce the impact of stormwater and non-stormwater on receiving water quality.

ES.4 Project Description

The 12 EWMPs will vary for each watershed group, but will generally provide the opportunity for Permittees to customize their stormwater programs to achieve compliance with applicable receiving water limitations (RWLs) and water-quality-based effluent limits (WQBELs) in accordance with the MS4 Permit through implementation of stormwater best management practices (BMPs) or watershed control measures. BMPs vary in function and type, with each BMP providing unique design characteristics and benefits from implementation. The overarching goal of BMPs in the EWMP is to reduce the impact of stormwater and non-stormwater on receiving water quality and address the water quality priorities as defined by the MS4 Permit. The development of each EWMP will involve the evaluation and selection of multiple BMP types, including nonstructural (institutional) and distributed, centralized, and regional structural watershed control measures, that will be implemented to meet compliance goals and strategies under the 2012 MS4 Permit. The LACFCD has limited jurisdictional authority for ordinance and code enactment or enforcement and therefore is limited in nonstructural BMPs to education and outreach measures. The structural watershed control measures that will be implemented by the LACFCD will be multi-benefit stormwater projects that emphasize flood risk mitigation and water conservation and supply.

The LACFCD has a vested interest in increasing opportunities for stormwater capture and groundwater recharge as a means of assisting local water supply augmentation. The LACFCD will be working with the applicable Permittees and other stakeholders in all 12 EWMP watersheds to develop such projects. The EWMPs will be implemented by the Permittees that have jurisdiction within each EWMP area. The implementing agencies will be responsible for the contents of the EWMPs affecting their jurisdictions and for implementing the projects developed by the EWMPs..

Structural control measures are constructed BMPs that reduce the impact of stormwater and non-stormwater on receiving water quality. They are broken into three categories:

- ***Distributed Structural BMPs***, which treat runoff close to the source and are typically implemented at a single- or few-parcel level (e.g., facilities typically serving a contributing area less than one acre).
- ***Centralized Structural BMPs***, which treat runoff from a contributing area of multiple parcels (e.g., facilities typically serving a contributing area on the order of tens or hundreds of acres or larger).
- ***Regional Structural BMPs***, which are meant to retain the 85th percentile storm over 24 hours from a contributing area. Generally, the 85th percentile storm is approximately 0.75 inches over 24 hours

Whether distributed, centralized, or regional, the major structural BMP functions are infiltration, treatment, and storage, which may be used individually or combination:

- ***Infiltration***, where runoff is directed to percolate into the underlying soils. Infiltration generally reduces the volume of runoff and increases groundwater recharge.
- ***Treatment***, where pollutants are removed through various unit processes, including filtration, settling, sedimentation, sorption, straining, and biological or chemical transformations.
- ***Storage***, where runoff is captured, stored (detained), and slowly released into downstream waters. Storage can reduce the peak flow rate from a site, but does not directly reduce runoff volume.

The types of structural BMPs to be implemented will vary between EWMPs, but most EMWPs will include a variety of distributed, centralized, and regional BMPs.

These are policies, actions, and activities which are intended to minimize or eliminate pollutant sources. Most institutional BMPs are implemented to meet Minimum Control Measure (MCM) requirements in the MS4 permit; MCMs are considered a subset of institutional BMPs. These BMPs are not constructed, but may have costs associated with the procurement and installation of items such as signage or spill response kits

ES.5 Project Alternatives

An EIR must describe a range of reasonable alternatives to the proposed project or alternative project locations that could feasibly attain most of the basic project objectives and would avoid or substantially lessen any of the significant environmental impacts to the proposed project. The alternatives analysis must include the "No Project Alternative" as a point of comparison. The No Project Alternative includes existing conditions and reasonably foreseeable future conditions that would exist if the proposed project were not approved (CEQA Guidelines §15126.6).

ES.6 Summary of Impacts

Table ES-1, at the end of this chapter, presents a summary of the impacts and mitigation measures identified for the proposed project. The complete impact statements and mitigation measures are presented in Chapter 3. The level of significance for each impact was determined using significance criteria (thresholds) developed for each category of impacts; these criteria are presented in the appropriate sections of Chapter 3. Significant impacts are those adverse environmental impacts that meet or exceed the significance thresholds; less-than-significant impacts would not exceed the thresholds. Table ES-1 indicates the measures that will avoid, minimize, or otherwise reduce significant impacts to a less-than-significant level if implemented by the Permittees.

ES.7 Areas of Controversy

Several comment letters from agency and public comments were received during the scoping period. Public comments received are provided in Appendix A of this PEIR. Some of the comments from non-governmental organizations and the public expressed concerns regarding the lack of project-specific details provided in the NOP for individual BMPs. Several comments were received questioning the funding strategies to be employed by Permittees. The full list of comments highlighting areas of potential controversy received during the public scoping period is included in Appendix A.

ES.8 Issues to be Resolved

Section 15123(b)(3) of the *CEQA Guidelines* requires that an EIR contain issues to be resolved, which includes the choice among alternatives and whether or how to mitigate significant impacts. The following major issues are to be resolved:

- Determine whether the PEIR adequately describes the environmental impacts of the proposed program;
- Choose among alternatives;
- Determine whether the recommended mitigation measures should be adopted or modified; and
- Determine whether additional mitigation measures need to be applied to the project.

ES.9 Organization of this PEIR

This Draft PEIR is organized into the following chapters and appendices:

Executive Summary. This chapter summarizes the contents of the Draft PEIR.

Chapter 1, Introduction and Project Background. This chapter discusses the CEQA process and the purpose of the PEIR and provides background info on the proposed project.

Chapter 2, Project Description. This chapter provides an overview of the proposed program, describes the need for and objectives of the proposed program, and provides detail on the characteristics of the proposed program.

Chapter 3, Environmental Setting, Impacts and Mitigation Measures. This chapter describes the environmental setting and identifies impacts of the proposed program for each of the following environmental resource areas; Aesthetics; Air Quality; Biological Resources; Cultural Resources; Geology and Soils / Mineral Resources; Greenhouse Gas Emissions; Hazards and Hazardous Waste; Hydrology and Water Quality; Land Use and Planning / Agriculture; Noise; Population and Housing; Public Services / Recreation; Transportation and Circulation; and Utilities and Service Systems. Measures to mitigate the impacts of the proposed program are presented for each resource area.

Chapter 4, Cumulative Impacts. This chapter analyzes the potential for the proposed program to have significant cumulative effects when combined with other past, present, and reasonably foreseeable future projects in each resource area's cumulative geographic scope.

Chapter 5, Growth Impacts. This chapter identifies areas of the EIR where significant environmental effects that cannot be avoided would occur, if any. It will also include an analysis of growth inducement impacts that would be provided by the program.

Chapter 6, Alternatives. This chapter presents an overview of the alternatives development process and describes the alternatives to the proposed program that were considered.

Chapter 7, Organizations and Persons Contacted.

Chapter 8, Report Preparers. This chapter identifies authors involved in preparing this Draft DEIR, including persons and organizations consulted.

Chapter 9, References.

TABLE ES-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE ENHANCED WATERSHED MANAGEMENT PROGRAMS

Impacts	Mitigation Measures	Significance before Mitigation	Significance if Mitigation is Implemented
Aesthetics			
3.1-1: The proposed program could create a substantial adverse effect on a scenic vista.	**AES-1:** Aboveground structures shall be designed to be consistent with local zoning codes and applicable design guidelines and to minimize features that contrast with neighboring development.	Significant	Less than significant
3.1-2: The proposed program could substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.	Implementation of **AES-1**	Significant	Less than significant
3.1-3: The proposed program could substantially degrade the existing visual character or quality of the site and its surroundings.	Implementation of **AES-1** **AES-2:** Implementing agencies shall develop BMP maintenance plans that are approved concurrently with each structural BMP approval. The maintenance plans must include measures to ensure functionality of the structural BMPs for the life of the BMP. These plans may include general maintenance guidelines that apply to a number of smaller distributed BMPs.	Significant	Less than significant
3.1-4: The proposed program could create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.	None required	Less than significant	Not applicable
Air Quality			
3.2-1: The project could conflict with or obstruct implementation of the applicable air quality plan.	None required	Less than significant	Not applicable
3.2-2: The project could violate any air quality standard or contribute substantially to an existing or projected air quality violation.	**AIR-1:** Implementing agencies shall require for large Regional or Centralized BMPs the use of low-emission equipment meeting Tier II emissions standards at a minimum and Tier III and IV emissions standards where available as CARB-required emissions technologies become readily available to contractors in the region **AIR-2:** For large construction efforts that may result in significant air emissions, implementing agencies shall encourage contractors to use lower-emission equipment through the bidding process where appropriate.	Significant	Significant and unavoidable for construction; Less than significant for operations.

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TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impacts	Mitigation Measures	Significance before Mitigation	Significance if Mitigation is Implemented
3.2-3: The program could result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).	Implementation of **AIR-1** and **AIR-2**	Significant	Significant and unavoidable for construction; less than significant for operations.
3.2-4: The project could expose sensitive receptors to substantial pollutant concentrations.	**AIR-3:** For large construction efforts associated with Regional or Centralized BMPs, implementing agencies shall conduct a project-specific LST analysis where necessary to determine local health impacts to neighboring land uses. Where it is determined that construction emissions would exceed the applicable LSTs or the most stringent applicable federal or state ambient air quality standards, the structural BMP project shall reduce its daily construction intensity (e.g., reducing the amount of equipment used daily, reducing the amount of soil graded/excavated daily) to a level where the structural BMP project's construction emissions would no longer exceed SCAQMD's LSTs or result in pollutant emissions that would cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standards.	Significant	Less than significant
3.2-5: The proposed program could create objectionable odors affecting a substantial number of people.	**AIR-4:** During planning of structural BMPs, implementing agencies shall assess the potential for nuisance odors to affect a substantial number of people. BMPs that minimize odors shall be considered the priority when in close proximity to sensitive receptors.	Significant	Less than significant
Biological Resources			
3.3-1: The proposed project could have a substantial adverse effect, either directly or through habitat modifications, on any sensitive species identified as special-status in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.	**BIO-1:** Prior to approving a Regional or Centralized BMP., the Permittee shall conduct an evaluation of the suitability of the BMP location. Appropriate BMP sites should avoid impacting large areas of native habitats including upland woodlands and riparian forests that support sensitive species to the extent feasible. The evaluation shall include an assessment of potential downstream impacts resulting from flow diversions. **BIO-2:** Prior to ground disturbing activities in areas that could support sensitive biological resources, a habitat assessment shall be conducted by a qualified biologist to determine the potential for special-status wildlife species to occur within	Significant	Less than significant

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TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impacts	Mitigation Measures	Significance before Mitigation	Significance if Mitigation is Implemented
	affected areas, including areas directly or indirectly impacted by construction or operation of the BMPs.		
	BIO-3: If a special-status wildlife species is determined to be present or potentially present within the limits of construction activities, a qualified biologist shall conduct pre-construction surveys of proposed work zones and within an appropriately sized buffer around each area as determined by a qualified biologist within 14 days prior to ground disturbing activities. Any potential habitat capable of supporting a special-status wildlife species shall be flagged for avoidance if feasible.		
	BIO-4: If avoidance of special-status species or sensitive habitats that could support special-status species (including, but not limited to, critical habitat, riparian habitat, and jurisdictional wetlands/waters) is not feasible, the Permittee shall consult with the appropriate regulating agency (USACE/USFWS or CDFW) to determine a strategy for compliance with the Endangered Species Act, California Fish and Game Code, and other regulations protecting special-status species and sensitive habitats. The Permittee shall identify appropriate impact minimization measures and compensation for permanent impacts to sensitive habitats and species in consultation with regulatory agencies. Construction of the project will not begin until the appropriate permits from the regulatory agencies are approved.		
	BIO-5: If construction and vegetation removal is proposed between February 1 and August 31, a qualified biologist shall conduct a pre-construction survey for breeding and nesting birds and raptors within 500-feet of the construction limits to determine and map the location and extent of breeding birds that could be affected by the project. Active nest sites located during the pre-construction surveys shall be avoided until the adults and young are no longer reliant on the nest site for survival as determined by a qualified biologist.		
	BIO-6: All construction areas, staging areas, and right-of-ways shall be staked, flagged, fenced, or otherwise clearly delineated to restrict the limits of construction to the minimum necessary near areas that may support special-status wildlife species as determined by a qualified biologist.		
	BIO-7: Prior to construction in areas that could support special status plants, a qualified botanist shall conduct a pre-		

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TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impacts	Mitigation Measures	Significance before Mitigation	Significance if Mitigation is Implemented
	construction floristic inventory and focused rare plant survey of project areas to determine and map the location and extent of special-status plant species populations within disturbance areas. This survey shall occur during the typical blooming periods of special-status plants with the potential to occur. The plant survey shall follow the CDFW Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (November 24, 2009). **BIO-8:** If temporary construction-related impacts to special-status plant populations are identified within a disturbance area, the implementing agencies shall prepare and implement a special-status species salvage and replanting plan. The salvage and replanting plan shall include measures to salvage, replant, and monitor the disturbance area until native vegetation is re-established under the direction of CDFW and USFWS.		
3.3-2: The proposed project could have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS.	Implement **BIO-1** through **BIO-8**	Significant	Less than significant
3.3-3: The proposed project could have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.	Implement **BIO-1** through **BIO-8** **BIO-9:** Prior to construction, a qualified wetland delineator shall be retained to conduct a formal wetland delineation in areas where potential jurisdictional resources (i.e., wetlands or drainages) subject to the jurisdiction of USACE, RWQCB, and CDFW, may be affected by the project. If jurisdictional resources are identified in the EWMP area and would be directly or indirectly impacted by individual projects, the qualified wetland delineator shall prepare a jurisdictional delineation report suitable for submittal to USACE, RWQCB, and CDFW for purposes of obtaining the appropriate permits. Habitat mitigation and compensation requirements shall be implemented prior to construction in accordance with Mitigation Measure BIO-4.	Significant	Less than significant
3.3-4: The proposed project could interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the	None required	Less than significant	Not applicable

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impacts	Mitigation Measures	Significance before Mitigation	Significance if Mitigation is Implemented
use of native wildlife nursery sites.			
3.3-5: The proposed project could conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.	**BIO-10:** Oak trees and other protected trees shall be avoided to the extent feasible. If trees may be impacted by project construction, a certified arborist shall conduct a tree inventory of the construction impact area. If any oak trees or other protected trees will be impacted by BMP construction, the implementing agency shall obtain any required County or City permits.	Significant	Less than significant
3.3-6: The proposed project could conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.	None required	Less than significant	Not applicable
Cultural Resources			
3.4-1: The proposed program could cause a substantial adverse change in the significance of an historical resource as defined in §15064.5.	**CUL-1:** For individual EWMP projects that could impact buildings or structures (including infrastructure) 45 years old or older, implementing agencies shall ensure that a historic built environment survey is conducted or supervised by a qualified historian or architectural historian meeting the Secretary of the Interior's Professional Qualification Standards for Architectural History. Historic built environment resources shall be evaluated for their eligibility for listing in the CRHR or local register prior to the implementing agency's approval of project plans. If eligible resources that would be considered historical resources under CEQA are identified, demolition or substantial alteration of such resources shall be avoided. If avoidance is determined to be infeasible, the implementing agency shall require the preparation of a treatment plan to include, but not be limited to, photo-documentation and public interpretation of the resource. The plan will be submitted to the implementing agency for review and approval prior to implementation. **CUL-2:** Implementing agencies shall ensure that individual EWMP projects that require ground disturbance shall be subject to a Phase I cultural resources inventory on a project-specific basis prior to the implementing agency's approval of project plans. The study shall be conducted or supervised by a qualified archaeologist, defined as an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for Archaeology, and shall be conducted in	Significant	Significant and Unavoidable

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TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impacts	Mitigation Measures	Significance before Mitigation	Significance if Mitigation is Implemented
	consultation with the local Native American representatives expressing interest. The cultural resources inventory shall include a cultural resources records search to be conducted at the South Central Coastal Information Center; scoping with the NAHC and with interested Native Americans identified by the NAHC; a pedestrian archaeological survey where deemed appropriate by the qualified archaeologist; and formal recordation of all identified archaeological resources on California Department of Parks and Recreation 523 forms and significance evaluation of such resources presented in a technical report following the guidelines in *Archaeological Resource Management Reports (ARMR): Recommended Contents and Format*, Department of Parks and Recreation, Office of Historic Preservation, State of California, 1990. If potentially significant archaeological resources are encountered during the survey, the implementing agency shall require that the resources are evaluated by the qualified archaeologist for their eligibility for listing in the CRHR and for significance as a historical resource or unique archaeological resource per *CEQA Guidelines* Section 15064.5. Recommendations shall be made for treatment of these resources if found to be significant, in consultation with the implementing agency and the appropriate Native American groups for prehistoric resources. Per *CEQA Guidelines* Section 15126.4(b)(3), preservation in place shall be the preferred manner of mitigation to avoid impacts to archaeological resources qualifying as historical resources. Methods of avoidance may include, but shall not be limited to, project re-route or re-design, project cancellation, or identification of protection measures such as capping or fencing. Consistent with *CEQA Guidelines* Section 15126.4(b)(3)(C), if it is demonstrated that resources cannot be avoided, the qualified archaeologist shall develop additional treatment measures, which may include data recovery or other appropriate measures, in consultation with the implementing agency, and any local Native American representatives expressing interest in prehistoric or tribal resources. If an archaeological site does not qualify as an historical resource but meets the criteria for a unique archaeological resource as defined in Section 21083.2, then the site shall be treated in accordance with the provisions of Section 21083.2. **CUL-3:** The implementing agency shall retain archaeological		

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impacts	Mitigation Measures	Significance before Mitigation	Significance if Mitigation is Implemented
	monitors during ground-disturbing activities that have the potential to impact archaeological resources qualifying as historical resources or unique archaeological resources, as determined by a qualified archaeologist in consultation with the implementing agency, and any local Native American representatives expressing interest in the project. Native American monitors shall be retained for projects that have a high potential to impact sensitive Native American resources, as determined by the implementing agency in coordination with the qualified archaeologist. **CUL-4:** During project-level construction, should subsurface archaeological resources be discovered, all activity in the vicinity of the find shall stop and a qualified archaeologist shall be contacted to assess the significance of the find according to *CEQA Guidelines* Section 15064.5. If any find is determined to be significant, the archaeologist shall determine, in consultation with the implementing agency and any local Native American groups expressing interest, appropriate avoidance measures or other appropriate mitigation. Per *CEQA Guidelines* Section 15126.4(b)(3), preservation in place shall be the preferred means to avoid impacts to archaeological resources qualifying as historical resources. Methods of avoidance may include, but shall not be limited to, project re-route or re-design, project cancellation, or identification of protection measures such as capping or fencing. Consistent with *CEQA Guidelines* Section 15126.4(b)(3)(C), if it is demonstrated that resources cannot be avoided, the qualified archaeologist shall develop additional treatment measures, such as data recovery or other appropriate measures, in consultation with the implementing agency and any local Native American representatives expressing interest in prehistoric or tribal resources. If an archaeological site does not qualify as an historical resource but meets the criteria for a unique archaeological resource as defined in Section 21083.2, then the site shall be treated in accordance with the provisions of Section 21083.2.		
3.4-2: The program could cause a substantial adverse change in the significance of unique archaeological resources as defined in §15064.5.	Implementation of **CUL-2** through **CUL-4**	Significant	Less than significant

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TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impacts	Mitigation Measures	Significance before Mitigation	Significance if Mitigation is Implemented
3.4-3: The program could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	**CUL-5:** For individual structural BMP projects that require ground disturbance, the implementing agency shall evaluate the sensitivity of the project site for paleontological resources. If deemed necessary, the implementing agency shall retain a qualified paleontologist to evaluate the project and provide recommendations regarding additional work, potentially including testing or construction monitoring. **CUL-6:** In the event that paleontological resources are discovered during construction, the implementing agency shall notify a qualified paleontologist. The paleontologist will evaluate the potential resource, assess the significance of the find, and recommend further actions to protect the resource.	Significant	Less than significant
3.4-4: The program could disturb any human remains, including those interred outside of a formal cemetery.	**CUL-7:** The implementing agency shall require that, if human remains are uncovered during project construction, work in the vicinity of the find shall cease and the County Coroner shall be contacted to evaluate the remains, following the procedures and protocols set forth in Section 15064.5 (e)(1) of the CEQA Guidelines. If the County Coroner determines that the remains are Native American, the Coroner will contact the Native American Heritage Commission, in accordance with Health and Safety Code Section 7050.5, subdivision (c), and Public Resources Code 5097.98 (as amended by AB 2641). The NAHC will then designate a Most Likely Descendant of the deceased Native American, who will engage in consultation to determine the disposition of the remains.	Significant	Less than significant
Geologic and Mineral Resources			
3.5-1: The proposed program could locate new facilities in areas susceptible to seismic impacts such as (1) rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault, (2) strong seismic groundshaking, or (3) seismically induced liquefaction or landslides, which could expose people, structures, or habitat to potential risk of loss, damage, injury, or death.	None required	Less than significant	Not applicable

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impacts	Mitigation Measures	Significance before Mitigation	Significance if Mitigation is Implemented
3.5-2: The proposed program could result in substantial soil erosion or the loss of topsoil.	None required	Less than significant	Not applicable
3.5-3: The proposed program could be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the program, and potentially result in on-site or off-site non-seismically induced geologic hazards such as landslides, lateral spreading, subsidence, collapse or sinkholes, settlement, or slope failure.	**GEO-1:** Prior to approval of infiltration BMPs, implementing agencies shall conduct a geotechnical investigation of each infiltration BMP site to evaluate infiltration suitability. If infiltration rates are sufficient to accommodate an infiltration BMP, the geotechnical investigation shall recommend design measures necessary to prevent excessive lateral spreading that could destabilize neighboring structures. Implementing agencies shall implement these measures in project designs.	Significant	Less than significant
3.5-4: The proposed program could be located on expansive soil as defined in 24 CCR 1803.5.3 of the California Building Code (2013), creating substantial risks to life or structures.	None required	Less than significant	Not applicable
3.5-5: The proposed program could have soils incapable of adequately supporting the use of a septic tank or alternative wastewater treatment systems where sewers are not available for the disposal of wastewater.	None required	Less than significant	Not applicable
3.5-6: The proposed program could result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state or a locally important mineral resource recovery site delineated on a local General Plan, Specific Plan, or other land use plan.	None required	Less than significant	Not applicable
Cumulative Impacts	**GEO-2:** Prior to installing BMPs designed to recharge local groundwater supplies, the Implementing Agency shall notify local groundwater managers including the Upper Los Angeles River Area Water Master, the Water Replenishment District of Southern California, or the San Gabriel Water Master as well as local water producers such as local municipalities and water companies. The Implementing Agency shall coordinate BMP siting efforts with groundwater managers and producers to mitigate high groundwater levels while increasing local water supplies.	Significant	Less than significant
Greenhouse Gas Emissions			

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TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impacts	Mitigation Measures	Significance before Mitigation	Significance if Mitigation is Implemented
3.6-1: The proposed program could generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.	None required	Less than significant	Not applicable
3.6-2: The proposed program could conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.	None required	Less than significant	Not applicable
Hazards and Hazardous Materials			
3.7-1: The proposed program would create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or the accidental release during construction and maintenance activities.	None required	Less than significant	Not applicable
3.7-2: The proposed program could create a significant hazard to the public or the environment through the accumulation of potentially hazardous materials into BMPs.	**HAZ-1:** Implementing agencies shall prepare and implement maintenance practices that include periodic removal and replacement of surface soils and media that may accumulate constituents that could result in further migration of constituents to sub-soils and groundwater. A BMP Maintenance Plan shall be prepared by Implementing Agencies upon approval of the individual BMP projects that identifies the frequency and procedures for removal and/or replacement of accumulated debris, surface soils and/or media (to depth where constituent concentrations do not represent a hazardous conditions and/or have the potential to migrate further and impact groundwater) to avoid accumulation of hazardous concentrations and the potential to migrate further to sub-soils and groundwater. The BMP Maintenance Plan may consist of a general maintenance guideline that applies to several types of smaller distributed BMPs. For smaller distributed BMPs on private property, these plans may consist of a maintenance covenant that includes requirements to avoid the accumulation of hazardous concentrations in these BMPs that may impact underlying sub-soils and groundwater. Structural BMPs shall be designed to prevent migration of constituents that may impact groundwater.	Significant	Less than significant
3.7-3: The proposed program could emit hazardous emissions or handle hazardous	Implementation of **HAZ-1**	Less than significant	Not applicable

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TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impacts	Mitigation Measures	Significance before Mitigation	Significance if Mitigation is Implemented
or acutely hazardous materials, substances, or waste within one-quarter mile of an existing school.			
3.7-4: The proposed program could be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, could create a significant hazard to the public or the environment.	**HAZ-2**: Prior to the initiation of any construction requiring ground-disturbing activities in areas where hazardous material use or management may have occurred, the implementing agencies shall complete a Phase I Environmental Site Assessment (ESA) in accordance with American Society for Testing and Materials (ASTM) Standard E1527-13 for each construction site. Any recommended follow up sampling (Phase II activities) set forth in the Phase I ESA shall be implemented prior to construction. The results of Phase II studies, if necessary, shall be submitted to the local overseeing agency and any required remediation or further delineation of identified contamination shall be completed prior to commencement of construction.	Significant	Less than significant
3.7-5: For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, for a project within the vicinity of a private airstrip, the project could result in a safety hazard for people residing or working in the project area.	**HAZ-3:** Implementing Agencies shall require that those BMPs that are within an airport land use plan area are compatible with criteria specified in FAA Advisory Circular No: 150/5200-33B (FAA, 2007). If the proposed BMP is within the minimum separation criteria, the Implementing Agency shall consult with the airport and collaboratively evaluate whether the potential increase in wildlife hazards can be mitigated.	Significant	Less than significant
3.7-6: The proposed program could impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.	None required	Less than significant	Not applicable
3.7-7: The proposed program could expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.	None required	Less than significant	Not applicable
Hydrology and Water Quality			
3.8-1: The proposed project would result in higher groundwater levels and could	**HYDRO-1:** Prior to approving an infiltration BMP, the Permittee shall conduct an evaluation of the suitability of the BMP location. Appropriate infiltration BMP sites should avoid	Significant	Less than significant

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TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impacts	Mitigation Measures	Significance before Mitigation	Significance if Mitigation is Implemented
potentially affect groundwater quality.	areas with low permeability where recharge could adversely affect neighboring subsurface infrastructure. **HYDRO-2:** Prior to approving an infiltration BMP, the Permitee shall identify pre-treatment technologies, type, and depth of filtration media; depth to groundwater; and other design considerations necessary to prevent contaminants from impacting groundwater quality. The design shall consider stormwater quality data within the BMP's collection area to assess the need and type of treatment and filtration controls. Local design manuals and ordinances requiring minimum separation distance to groundwater shall also be met as part of the design. **HYDRO-3:** Prior to the installation of an infiltration BMP, the Permitee shall conduct a database review for contaminated groundwater sites within a quarter mile of the proposed infiltration facility. The Permittee shall identify whether any contaminated groundwater plumes are present and whether coordination with the local and state environmental protection overseeing agency and responsible party is warranted prior to final design of infiltration facility.		
3.8-2: The proposed project could substantially alter the existing drainage pattern of a site or area through the alteration of the course of a stream or river, or by other means, in a manner that would result in substantial erosion or siltation on- or off-site.	None required	Less than significant	Not applicable
3.8-3: The project could substantially alter the existing drainage pattern of a site or area through the alteration of the course of a stream or river or, by other means, substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site.	None required	Less than significant	Not applicable
3.8-4: The proposed project could create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.	None required	Less than significant	Not applicable

RB-AR 8224

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impacts	Mitigation Measures	Significance before Mitigation	Significance if Mitigation is Implemented
3.8-5: The project could place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other authoritative flood hazard delineation map.	None required	No impact	Not applicable
3.8-6: The project could place within a 100-year flood hazard area structures that would impede or redirect flood flows.	None required	Less than significant	Not applicable
3.8-7: The proposed project could expose structures to a significant risk of loss, including flooding as a result of the failure of a levee or dam.	None required	Less than significant	Not applicable
3.8-8: The proposed project could place structures in areas subject to inundation by seiche, tsunami, or mudflow.	None required	Less than significant	Not applicable
Land Use and Agriculture			
3.9-1: The proposed program could physically divide an established community.	None required.	No Impact	Not applicable
3.9-2: The proposed program could conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the program (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.	None required	No Impact	Not applicable
3.9-3: The proposed program could conflict with any applicable habitat conservation plan or natural community conservation plan.	None required	No Impact	Not applicable
3.9-4: The proposed program could convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping	None required	No Impact	Not applicable

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TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impacts	Mitigation Measures	Significance before Mitigation	Significance if Mitigation is Implemented
and Monitoring Program of the California Resources Agency, to non-agricultural use. The proposed program could involve other changes in the existing environment which, due to their location or nature, could result in conversion of agricultural land to non-agricultural use or conversion of forest land to non-forest use.			
3.9-5: The proposed program could conflict with existing zoning for agricultural use, or a Williamson Act contract.	None required	No Impact	Not applicable
3.9-6: The proposed program could conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g)). The proposed program could result in the loss of forest land or conversion of forest land to non-forest use.	None required	No Impact	Not applicable
Noise			
3.10-1: The proposed program could result in exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.	**NOISE-1:** The implementing agencies shall implement the following measures during construction as needed:: • Include design measures necessary to reduce the construction noise levels where feasible. These measures may include noise barriers, curtains, or shields. • Place noise-generating construction activities (e.g., operation of compressors and generators, cement mixing, general truck idling) as far as possible from the nearest noise-sensitive land uses. • Locate stationary construction noise sources as far from adjacent noise-sensitive receptors as possible. • If construction is to occur near a school, the construction contractor shall coordinate the with school administration in order to limit disturbance to the campus. Efforts to limit construction activities to non-school days shall be encouraged.	Significant	Significant and unavoidable for construction; less than significant for operations

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TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impacts	Mitigation Measures	Significance before Mitigation	Significance if Mitigation is Implemented
	• For the centralized and regional BMP projects located adjacent to noise-sensitive land uses, identify a liaison for these off-site sensitive receptors, such as residents and property owners, to contact with concerns regarding construction noise and vibration. The liaison's telephone number(s) shall be prominently displayed at construction locations. • For the centralized and regional BMP projects located adjacent to noise-sensitive land uses, notify in writing all landowners and occupants of properties adjacent to the construction area of the anticipated construction schedule at least 2 weeks prior to groundbreaking. **NOISE-2:** All structural BMPs that employ mechanized stationary equipment that generate noise levels shall comply with the applicable noise standards established by the implementing agency with jurisdiction over the structural BMP site. The equipment shall be designed with noise-attenuating features (e.g., enclosures) and/or located at areas (e.g., belowground) where nearby noise-sensitive land uses would not be exposed to a perceptible noise increase in their noise environment.		
3.10-2: The proposed program could result in exposure of persons to, or generation of, excessive groundborne vibration.	None required	Less than significant	Not applicable
3.10-3: The proposed program could result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.	Implementation of **NOISE-1** and **NOISE-2**	Significant	Less than significant
3.10-4: The proposed program could result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.	Implementation of **NOISE-1**	Significant	Significant and unavoidable
3.10-5: For a project located within an airport land use plan area, or, where such a plan has not been adopted, in an area within 2 miles of a public airport or public use airport, implementation of the proposed program could expose people residing or working in the area to excessive noise	None required	Less than significant	Not applicable

RB-AR 8227

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impacts	Mitigation Measures	Significance before Mitigation	Significance if Mitigation is Implemented
levels.			
3.10-6: For a project located in the vicinity of a private airstrip, the proposed program could expose people residing or working in the project area to excessive noise levels.	None required	Less than significant	Not applicable
Population and Housing and Environmental Justice			
3.11-1: Implementation of the proposed program could induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure).	None required	No Impact	Not applicable
3.11-2: Implementation of the proposed program could displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere.	None required	No Impact	Not applicable
3.11-3: Implementation of the proposed program could displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.	None required	No Impact	Not applicable
3.11-4: Implementation of the proposed program could affect the health or environment of minority or low income populations disproportionately.	None required	Less than significant	Not applicable
Public Services and Recreation			
3.12-1: The proposed program could result in substantial adverse physical impacts associated with the provision of, or the need for, new or physically altered governmental fire protection facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for fire protection services.	**PS-1:** The Permittee implementing the EWMP project shall provide reasonable advance notification to the service providers such as fire, police, local businesses, home owners and residents of adjacent to and within areas potentially affected by the proposed EWMP project about the nature, extent and duration of construction activities. Interim updates should be provided to inform them of the status of the construction activities.	Significant	Less than significant

RB-AR 8228

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impacts	Mitigation Measures	Significance before Mitigation	Significance if Mitigation is Implemented
3.12-2: The proposed program could result in substantial adverse physical impacts associated with the provision of, or the need for, new or physically altered governmental police protection facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for police protection services.	None required	Less than significant	Not applicable
3.12-3: The proposed program could result in substantial adverse physical impacts associated with the provision of, or the need for, new or physically altered schools, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for schools.	None required	Less than significant	Not applicable
3.12-4: The proposed program could increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.	None required	Less than significant	Not applicable
3.12-5: The proposed program could include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.	None required	Less than significant	Not applicable
Transportation and Circulation			
3.13-1: The proposed program could intermittently and temporarily increase traffic levels and traffic delays due to vehicle trips generated by construction workers and construction vehicles on area roadways.	**TRAF-1:** For projects that may affect traffic, implementing agencies shall require that contractors prepare a construction traffic control plan. Elements of the plan should include, but are not necessarily limited to, the following: • Develop circulation and detour plans to minimize impacts to local street circulation. Use haul routes minimizing truck traffic on local roadways to the extent possible. • To the extent feasible, and as needed to avoid adverse	Significant	Less than significant

RB-AR 8229

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impacts	Mitigation Measures	Significance before Mitigation	Significance if Mitigation is Implemented
	impacts on traffic flow, schedule truck trips outside of peak morning and evening commute hours. • Install traffic control devices as specified in Caltrans' Manual of Traffic Controls for Construction and Maintenance Work Zones where needed to maintain safe driving conditions. Use flaggers and/or signage to safely direct traffic through construction work zones. • Coordinate with facility owners or administrators of sensitive land uses such as police and fire stations, hospitals, and schools. Provide advance notification to the facility owner or operator of the timing, location, and duration of construction activities.		
3.13-2: Construction of the proposed program could potentially cause traffic safety hazards for vehicles, bicyclists, and pedestrians on public roadways, and could increase traffic hazards due to possible road wear.	None required	Less than significant	Not applicable
3.13-3: The proposed program could result in inadequate emergency access during construction.	None required.	Less than significant	Not applicable
3.13-4: Construction of the proposed program could contribute to cumulative impacts to traffic and transportation (traffic congestion, traffic safety, and emergency vehicle access).	Implementation of **TRAF-1**	Significant	Less than significant
Utilities and Service Systems			
3.14-1: Implementation of the proposed program could exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board or result in the construction of new treatment facilities or expansion of existing facilities if the wastewater treatment provider has inadequate capacity to serve the proposed program.	None required	Less than significant	Not applicable
3.14-2: The proposed program could require or result in the construction of new storm water drainage facilities or expansion	None required	Less than significant	Not applicable

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TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impacts	Mitigation Measures	Significance before Mitigation	Significance if Mitigation is Implemented
of existing facilities, the construction of which could cause significant environmental effects.			
3.14-3: The proposed program could require new or expanded water supply resources or entitlements or require or result in the construction of new water facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.	**UTIL-1:** Prior to approval of BMPs, implementing agencies shall evaluate the potential for impacts to downstream beneficial uses including surface water rights. Implementing agencies shall not approve BMPs that result in preventing access to previously appropriated surface water downstream.	Significant	Less than significant
3.14-4: The proposed program could be served by a landfill with insufficient permitted capacity to accommodate the project solid waste disposal needs or the project could not comply with federal, state, and local statutes and regulations related to solid waste.	**UTIL-2:** Implementing agencies shall encourage construction contractors to recycle construction materials and divert inert solids (asphalt, brick, concrete, dirt, fines, rock, sand, soil, and stone) from disposal in a landfill where feasible. Implementing agencies shall incentivize construction contractors with waste minimization goals in bid specifications where feasible.	Significant	Less than significant
3.14-5: Construction and operation of the proposed program would require additional energy use that could result in wasteful consumption, affect local and regional energy supplies, or conflict with applicable energy efficiency policies or standards.	None required	Less than significant	Not applicable

CHAPTER 1
Introduction

1.1 Introduction

The Los Angeles County Flood Control District (LACFCD) was created in 1915 when the State Legislature adopted the Los Angeles County Flood Control Act to provide flood risk management, water conservation, and recreation and aesthetic enhancement within its boundaries. The LACFCD owns and maintains a broad network of flood control facilities that convey stormwater to the local rivers and ultimately to the ocean. This vast network of regional flood control channels is interconnected with local flood control facilities owned and maintained by the both the LACFCD and the incorporated municipalities within Los Angeles County.

In December 2012, the Los Angeles Regional Water Quality Control Board (LARWQCB) issued a Municipal Separate Storm Sewer System (MS4) Permit (Order No. R4-2012-0175; National Pollutant Discharge Elimination System [NPDES] Permit No. CAS004001) covering discharges within coastal watersheds from the collective storm sewer systems in Los Angeles County (except from the City of Long Beach). The Permit regulates the discharge of stormwater runoff to waters of the United States from facilities owned and maintained by the LACFCD, the County of Los Angeles, and 84 incorporated cities within Los Angeles County (collectively referred to as Permittees). The purpose of the MS4 Permit is to achieve and maintain water quality objectives to protect beneficial uses of the receiving waters in the Los Angeles region. Each of the Permittees identified in the MS4 permit is responsible for meeting the conditions of the permit for MS4 discharges occurring within their jurisdiction.

The MS4 Permit gives Permittees the option of implementing an innovative approach to permit compliance through development of an Enhanced Watershed Management Program (EWMP). The EWMPs will identify potential and priority structural and non-structural Best Management Practices (BMPs) within the region’s stormwater collection system to improve runoff water quality. The LACFCD, along with participating Permittees, has opted to exercise this option and has submitted to the LARWQCB 12 separate Notices of Intent (NOIs) for the development of EWMPs within 12 distinct watershed groups (refer to **Figure 1-1**). Implementation of the EMWPs would be the responsibility of each Permittee and would occur following approval of the EWMPs by the LARWQCB.

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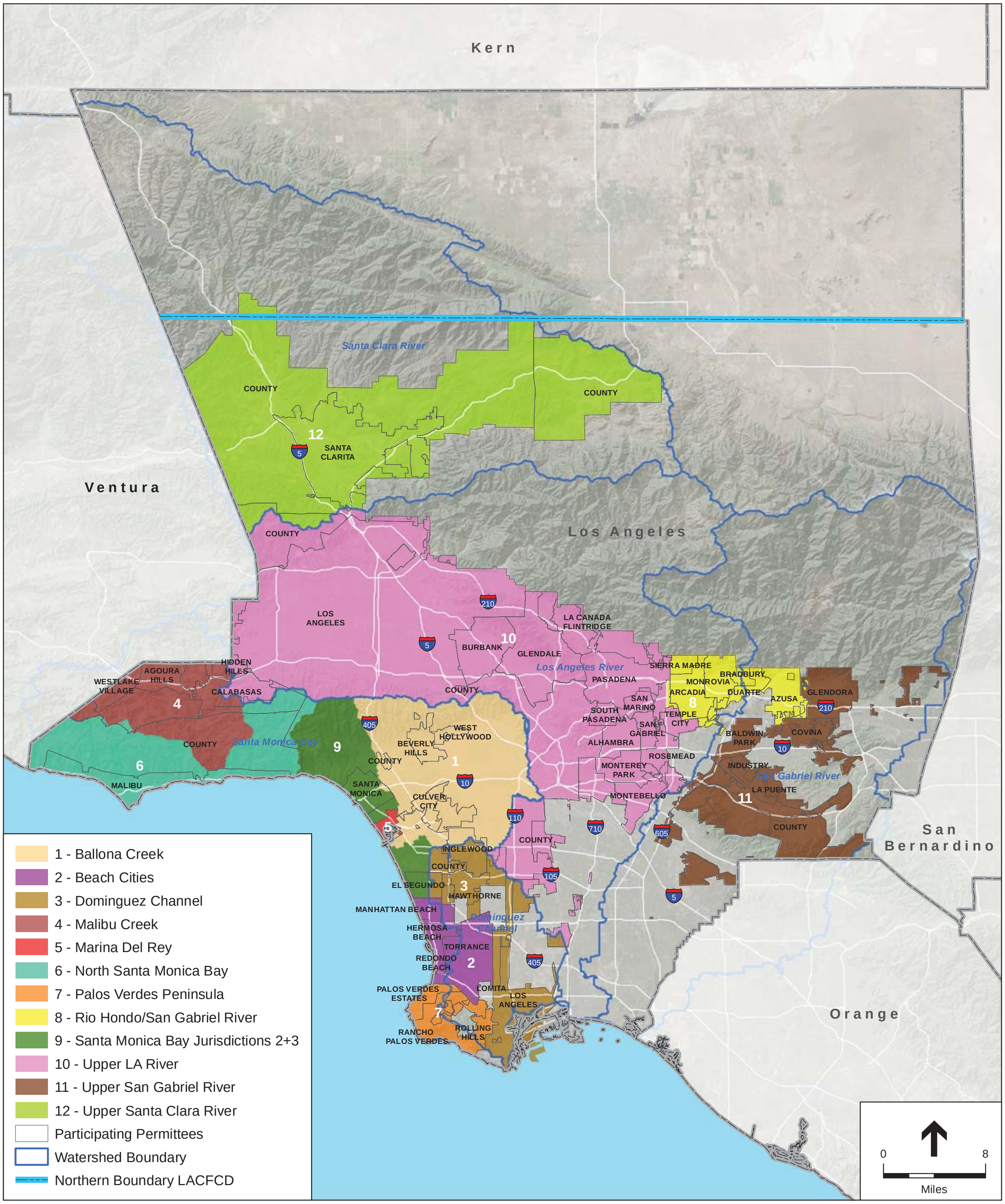

SOURCE: ESRI.

LA County PEIR EWMP . 140474

Figure 1-1
Watersheds and EWMP Groups within LACFD Boundaries

The LACFCD, as a regional agency, is a member of each of the 12 EWMP working groups, and as such provides a commonality within each EWMP group. However, LACFCD does not have a special status or authority designated by the MS4 Permit over any of the other Permittees. The LACFCD will be working with the applicable Permittees in all 12 EWMP watersheds as an equal partner to identify the types and locations of BMPs needed to achieve permit compliance within each watershed.

The timeline identified in the MS4 Permit requires that Permittees submit the EWMP to the LARWQCB by June 28, 2015, in order to be in compliance with the permit conditions. The LACFCD recognizes that implementation of the EWMPs may potentially result in changes to environmental conditions. As a result, the LACFCD has prepared this Program Environmental Impact Report (PEIR) in compliance with the California Environmental Quality Act (CEQA) to provide the public and the responsible and trustee agencies with information about the potential effects on the local and regional environment associated with implementation of the EWMPs. The LACFCD will submit the PEIR to its governing body, the Los Angeles County Board of Supervisors, for approval prior to submittal of the EWMPs. The EWMPs will be submitted by each EWMP group to the LARWQCB.

This PEIR describes and evaluates each of the EWMPs being prepared by the Permittees collectively. The discretionary action prompting the need for CEQA compliance is the submittal of the completed EWMPs to the LARWQCB. The EWMPs will identify management strategies including hundreds of structural Best Management Practices (BMPs) that may be designed and implemented by the Permittees to meet permit compliance objectives. A few of the BMPs are currently well defined but most are yet to be fully developed under the EWMPs. A set of priority BMPs will be detailed in each of the EWMPs; these are being developed in parallel with the PEIR. The PEIR describes the details that are available for each of the EWMPs currently under preparation by the EWMP working groups.

The PEIR analysis is not intended to focus on the site-specific construction and operation details of each management strategy and project included in the EWMP. Rather, this PEIR serves as a first-tier environmental document that focuses on the effects of implementing the EWMPs to reduce urban runoff pollution. The analysis assesses worst case situations where construction or operation of projects may significantly impact environmental resources. The analysis outlines mitigation strategies to be followed by the LACFCD and other implementing agencies that rely on this PEIR to avoid or minimize impacts wherever feasible. The determinations of significance after mitigation in this PEIR will apply to the LACFCD and other implementing agencies that rely on this PEIR and the mitigation measures proposed herein.

LACFCD is the CEQA Lead Agency for this PEIR. This PEIR can be used by the LACFCD or other Permittees to streamline environmental review of individual EWMP projects. As individual projects identified in the EWMPs are fully developed, the implementing agency (i.e., the Permittee responsible for implementing the project) will conduct CEQA analysis for individual projects as appropriate or may determine that no additional CEQA analysis is required or that a project is exempt from CEQA. Each implementing agency would determine the significance after mitigation for potential impacts of their proposed projects.

The PEIR provides the LACFCD a foundation for any necessary future environmental review documents that focus on individual projects of the EWMPs for which the LACFCD is the designated Lead Agency. In addition, the PEIR can provide several advantages during the development and implementation of the EWMPs that may include:

- More exhaustive consideration of effects and alternatives than would be practical in an environmental impact report (EIR) for an individual BMP project.
- Consideration of cumulative impacts that might not be evident in a case-by-case or project-by-project analysis.
- Consideration by LACFCD as Lead Agency of broad policy alternatives and program-wide mitigation measures early in the process when there is greater flexibility to deal with basic problems or cumulative impacts.

The EWMPs are to include a discussion of the environmental documents, assessments, and permitting required for the implementation of the priority projects. The PEIR can provide a basis for this discussion. The use of the PEIR in the development and implementation of the EWMPs is further discussed in this chapter in the *Purpose of the Program Environmental Impact Report*.

1.2 Project Background

Stormwater/Water Quality

MS4 discharges consist of stormwater and non-stormwater generated from point sources throughout a watershed, collected and conveyed through the MS4, and ultimately discharged into surface waters. The MS4 system includes curbs and gutters, man-made channels, catch basins, and storm drains throughout the Los Angeles region. Discharges may adversely affect receiving surface water quality with pollutants such as bacteria, nutrients (nitrogen and phosphorus), metals, pesticides, and other man-made organic compounds. Aquatic toxicity, particularly during wet weather, is also a concern. Stormwater and non-stormwater discharges of debris and trash are also a pervasive water quality problem in the Los Angeles region. Pollutants in stormwater and non-stormwater may have damaging effects on both human health and aquatic ecosystems when persistent at certain concentrations above water quality criteria/thresholds.

Through water quality assessments conducted by the LARWQCB, the LARWQCB and U.S. Environmental Protection Agency (USEPA) have established 33 Total Maximum Daily Loads (TMDLs) that identify Los Angeles County MS4 discharges as pollutant sources causing or contributing to water quality impairments. The TMDL development process is explained in more detail in Chapter 2.0, *Project Description*. The MS4 Permit (described briefly later in this chapter) is designed to reduce pollutant loads into local surface waters. The implementation of the 12 EWMPs and their watershed-specific compliance strategies (which are explained in more detail in Chapter 2.0) would address the need for reduction in urban runoff pollution through treatment and infiltration, as well as increasing stormwater retention throughout the Los Angeles region.

MS4 NPDES Permit

On November 8, 2012, the LARWQCB adopted the fourth NPDES MS4 Permit (Order No. R4-2012-0175) for discharges from the MS4s located within the coastal watersheds of Los Angeles County (excepting the City of Long Beach), which became effective on December 28, 2012. The MS4 Permit identifies conditions, requirements, and programs that municipalities must comply with to protect regional water resources from adverse impacts associated with pollutants in stormwater and urban runoff. The MS4 Permit contains effluent limitations, receiving water limitations (RWLs), minimum control measures, and TMDL provisions and outlines the process for developing watershed management programs, including EWMPs.

Watershed Management Programs

The MS4 Permit Section VI.C (page 47) includes provisions that allow Permittees to voluntarily choose to implement a Watershed Management Program (WMP). The purpose of this program is to "allow Permittees the flexibility to develop Watershed Management Programs to implement the requirements of [the] Order on a watershed scale through customized strategies, control measures, and BMPs." The permit states that "participation in a Watershed Management Program is voluntary and allows a Permittee to address the highest watershed priorities."

Several areas of the County covered in the permit chose to comply with the MS4 Permit through the preparation of WMPs only. In these areas, the structural BMPs needed to achieve local water quality objectives were primarily distributed BMPs that were found to be categorically exempt from CEQA. Actions needed to achieve MS4 Permit compliance in areas that have chosen to implement WMPs only are not evaluated in this PEIR.

Enhanced Watershed Management Programs

The Permit Section VI.C.1.g (page 48) allows for watersheds to collaborate in preparing an EWMP to achieve Permit compliance with RWLs. The intent of the EWMP is to comprehensively evaluate opportunities for collaboration on multi-benefit regional projects that retain MS4 discharges and also address flood control and/or water supply within the participating Permittees' collective jurisdictional boundaries. Twelve EWMP groups have formed to implement a collaborative approach to meeting the requirements of the 2012 MS4 Permit.

As required by the provisions of the MS4 Permit, each of the 12 EWMPs includes several components aimed at identifying priorities for water quality improvement and the mechanisms that will achieve those improvements. In general, these components include:

1. ***Stakeholder outreach and collaboration***, so that development and implementation of the EWMP is a collaborative effort between Permittees, stakeholders, and the public.
2. ***Identification of water quality priorities***, which serve as the basis for implementation and monitoring activities within the EWMP.

3. ***Identification of candidate watershed control measures*** that Permittees and stakeholders can customize to address water quality priorities.
4. ***Implementation of a Reasonable Assurance Analysis,*** so that the Permittees, stakeholders, and regulatory authorities can identify which control measures are likely to be the most effective, and have confidence in the performance of the selected watershed control measures.

These components are discussed in further detail below.

Stakeholder Outreach and Collaboration

According to Part VI.C.1.f.v (page 48) of the MS4 Permit, each EWMP must provide appropriate opportunities for meaningful stakeholder input, including the development of a watershed management program Technical Advisory Committee (TAC) that will advise and participate in the development of the EWMP. The MS4 Permit requires that at a minimum, the TAC include at least one Permittee representative from each Watershed Management Area (WMA) for which an EWMP is being developed (e.g., city administrators, stormwater program managers), one public representative from a non-government organization with public membership (e.g., environmental and community groups), and staff from the Regional Board, USEPA Region IX, and collaborating agencies (e.g., California Department of Transportation, U.S. Army Corps of Engineers).

Broader stakeholder groups will also be engaged through a series of workshops specific to each EWMP. The precise number and format of workshops will likely vary by watershed, with the overarching goal of providing a common and consistent orientation for stakeholders to the EWMP process, and a clear structure for stakeholders to contribute to the EWMPs. The TAC and stakeholders are expected to help define appropriate water quality priorities and identify suitable watershed control measures; these project elements are discussed further in this chapter.

Water Quality Priorities

The identification of water quality priorities is required in Section VI.C.5.a (p. 58) of the MS4 Permit as part of EWMP development. The Permit describes a four-step process for prioritizing and sequencing water quality concerns within each EWMP watershed:

1. Water quality characterization based on available monitoring data, TMDLs, 303(d) lists, stormwater annual reports, etc.
2. Water body-pollutant classification
3. Source assessment for the water body-pollutant categories
4. Prioritization of the water body-pollutant categories

The prioritization of pollutants under Step 4 is conducted for each EWMP watershed according to the following guidelines, established in the MS4 Permit:

- TMDLs (**first category**):

- Controlling pollutants for which there are water-quality-based effluent limitations and/or receiving water limitations with interim or final compliance deadlines within the permit term, or TMDL compliance deadlines that have already passed and limitations have not been achieved.
- Controlling pollutants for which there are water-quality-based effluent limitations and/or receiving water limitations with interim or final compliance deadlines between September 6, 2012, and October 25, 2017.

- Other Receiving Water Considerations (**second category**):
  - The second highest priority shall be considered controlling pollutants for which data indicate impairment of exceedances of receiving water limitations and the findings from the source assessment implicates discharges from the MS4.

The EWMP prioritization process includes identifying the priority pollutants and the schedule for implementing BMPs to meet the following criteria:

- For pollutants in the same class as TMDLs, the EWMPs evaluate the ability to consider these pollutants within the same time frame as the TMDLs.
- For pollutants on 303(d) list or in same class as 303(d) listings, the EWMPs develop a schedule to address these pollutants as soon as possible with milestones.
- For pollutants with exceedances that are not in the same class as the 303(d) listing, the EWMPs propose monitoring under CIMP to confirm exceedances and, if those exceedances are confirmed, the Permittees shall then develop a schedule to address these pollutants as soon as possible with milestones.
- For pollutants without exceedances in the last five years, the EWMPs will include them in monitoring plans but not prioritize them for BMPs.

The outcome of this process is the identification of water quality priorities in each EWMP and the proposed schedule for which BMPs are to be implemented to address these pollutants. Pollutants under a TMDL have higher priority and will be addressed under the timelines defined in the TMDLs. This further highlights that the EWMP is a continuation of water quality improvement efforts by the Permittees under existing TMDLs through adopted TMDL Implementation Plans. BMP types that are assessed in this PEIR therefore include BMPs that are under various stages of implementation and plan to meet TMDL waste load allocations.

Identification of Candidate Watershed Control Measures

The EWMPs describe a broad range of structural and non-structural control measures aimed at achieving compliance with the provisions of the MS4 Permit. These control measures are more commonly referred to as BMPs. BMPs vary in function and type, with each BMP providing unique design characteristics and benefits of implementation. Further description of both non-structural and structural BMP types, examples and anticipated distribution of the BMPs are presented in Chapter 2.0, *Project Description*, as these are the basis for the proposed program.

Reasonable Assurance Analysis

The Reasonable Assurance Analysis (RAA) is a critical component of the EWMPs and is used to demonstrate "that the activities and control measures will achieve applicable water-quality-based effluent limitations and/or RWLs with compliance deadlines during the Permit term" (Los Angeles MS4 Permit, Part VI.C.5.b.iv.(5), page 63). While the MS4 Permit prescribes the RAA as a quantitative demonstration that control measures (such as BMPs) will be effective, the RAA also provides an opportunity to use a modeling process to identify and prioritize potential control measures. The RAA for each EWMP uses a model to simulate a critical storm (design storm) and demonstrate that the selected BMPs for each watershed will achieve compliance with the TMDLs and water-quality-based effluent limitations.

The RAA is being performed as part of the preparation of the EWMPs, and in parallel with the preparation of this PEIR. The RAA demonstrates that the primary goal of the EWMP is to meet the water quality goals. The modeling being performed as part of the RAA will determine if the number and distribution of the BMP types and specific projects identified in the EWMP Work Plans will meet the water quality goals. This PEIR will assess the types of BMPs that may be implemented to meet these goals. Chapter 2.0, *Project Description,* provides examples of these types and maps showing the approximate location and potential distribution of these BMP types to meet these goals. These BMP examples are subject to change through the EWMP planning process that is developing on a parallel track to this PEIR. The EWMPs are also planning documents that will be revised periodically to reflect new data, further modeling, emerging technologies, and results of BMP monitoring and assessments.

1.3 CEQA Environmental Review Process

CEQA Process Overview

The basic purposes of CEQA are to: (1) inform the public and government decision makers regarding potential significant environmental effects of proposed activities, (2) identify ways in which potential environmental damage can be avoided or significantly reduced, (3) prevent significant, avoidable environmental damage by requiring changes in projects through the use of alternatives or mitigation measures, and (4) disclose to the public the reasons why a government agency approved the project if significant environmental effects are involved.

CEQA states that an EIR should use a multidisciplinary approach applying social and natural sciences to make a qualitative and quantitative analysis of all the foreseeable environmental impacts that a proposed project would exert on the surrounding area. As stated in Section 15151 of the CEQA Guidelines:

> "An EIR should be prepared with a sufficient degree of analysis to provide decision-makers with information which intelligently takes an account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in the light of what is reasonable feasible."

This PEIR for the proposed program was prepared to comply with CEQA regulations, and is to be used by local agencies and the public in their review of the potential environmental impacts of the EWMP's implementation, proposed alternatives, and mitigation measures that would minimize, avoid, or eliminate the potential environmental effects. The LACFCD will consider the information presented in this PEIR, along with other factors, in the development and implementation of the EWMPs. The EWMPs are to include a discussion of the environmental documents, assessments and permitting required for the implementation of the priority projects. The PEIR can provide a basis for this discussion.

Significance criteria have been developed for each environmental resource analyzed in this Draft PEIR. The significance criteria are defined at the beginning of each impact analysis section. Impacts are categorized as follows:

- **Significant and Unavoidable:** Mitigation might be recommended but impacts are still significant.
- **Less than Significant with Mitigation:** Potentially significant impact but mitigated to a less-than-significant level.
- **Less than Significant:** Mitigation is not required under CEQA but may be recommended.
- **No Impact.**

Purpose of the Program Environmental Impact Report

The LACFCD determined that implementation of the 12 EWMPs could have a significant effect on the environment and therefore required preparation of a PEIR. The LACFCD prepared this Draft PEIR to provide the public and the responsible and trustee agencies with information about the potentially significant environmental effects of the proposed program, to identify possible ways to minimize potentially significant effects, and to describe and evaluate feasible alternatives to the proposed program.

This document has been prepared as a PEIR. According to the CEQA Guidelines, Section 15168(a), a PEIR is one type of environmental review document that may be used to evaluate a plan or program that has multiple components (projects and actions) or to address a series of actions that are related in any of the following ways:

- Geographically.
- As logical parts in the chain of contemplated actions.
- In connection with the issuance of rules, regulations, plans, or other general criteria to govern the conduct of a continuing program.
- As individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental affects that can be mitigated in similar ways.

The EWMPs would include multiple projects and actions that cover a broad geographic scale. This PEIR provides a foundation for any necessary future environmental review documents that focus on individual projects of the EWMPs. A PEIR can provide the following additional advantages (CEQA Guidelines, Section 15168[b]):

- Provide for a more exhaustive consideration of effects and alternatives than would be practical in an EIR on an individual action.
- Ensure consideration of cumulative impacts that might not be evident in a case-by-case or project-by-project analysis.
- Avoid duplicative consideration of basic policy issues.
- Allow Lead Agency to consider broad policy alternatives and program-wide mitigation measures early in the process when the agency has greater flexibility to deal with basic problems or cumulative impacts.
- Facilitate a reduction in paperwork.

A PEIR may be prepared on a plan before the details of each and every project within the long-term plan have been developed, as is the case for the EWMPs. Therefore, this PEIR addresses the environmental effects of the program as a whole. The analyses focus on the environmental effects of implementing the EWMPs as a program to improve surface water quality and increase water conservation. For the proposed program, many management strategies are only in the concept development or planning phase. The PEIR analysis is not intended to focus on the site-specific construction and operation details of each management strategy and project included in the EWMPs. Rather, this PEIR serves as a first-tier environmental document that focuses on the effects of implementing the EWMPs overall as a plan to reduce urban runoff pollution.

This PEIR evaluates the major environmental effects of implementing proposed EWMP projects from a broad perspective; this evaluation is a *program-level* analysis. While the Permittees are developing the design, construction, and operation details of the projects that would be included in the EWMPs, these project details are not the focus of this PEIR. Instead, the PEIR frames the nature and magnitude of the expected environmental impacts associated with these proposed EWMP projects and identifies program mitigation measures to reduce the impacts of the projects as proposed. As discussed further in this report, more detailed *project-level* analyses of individual EWMP projects may be conducted separately by each of the Permittees as required by CEQA. The EWMPs are to include a discussion of the environmental documents, assessments, and permitting required for the implementation of the priority projects. The PEIR can provide a basis for this discussion. This PEIR can be used by the LACFCD or other local implementing agencies to streamline environmental review of individual EWMP projects. The implementing agency may determine that a more detailed, *project-level* analysis is required, or may determine some projects to be exempt from CEQA. For non-exempt projects, project-level CEQA review will be conducted separately by the appropriate implementing agency. The separate environmental review of individual projects will evaluate site-specific impacts and incorporate feasible mitigation measures and alternatives (CEQA Guidelines, Section 15168[c]).

Impact Assessment Methodology

This PEIR provides a "program level" assessment, meaning that the type of BMPs that are envisioned for implementation are described and evaluated in concept, with examples of implemented projects provided to illustrate typical features. Each EWMP includes a list of potential locations where these BMP types may be installed, along with available information on the anticipated scale, location, and construction methods required for installation. Maps identifying potential and priority BMP locations are provided in Chapter 2, *Project Description*, with the overall EWMP watershed characteristics and BMP implementation strategy. The PEIR focuses its assessment on construction and operation of these potential and priority BMPs to be installed throughout the watersheds—but primarily within urbanized areas where the pollutant loading is greatest and where these BMPs can be most cost-effective in meeting water quality goals. The analysis assesses worst case situations where construction or operation of projects may significantly impact environmental resources. The analysis outlines mitigation strategies to be followed by Implementing Agencies to avoid or minimize impacts wherever feasible. Exact locations and BMP designs are not defined. Rather, the overall compliance strategy of BMP type, quantity, and geographic distribution is assessed on a cumulative, regional scale.

Scoping Period

A Notice of Preparation (NOP) was published by the LACFCD on August 29, 2014 (**Appendix A**). The NOP was circulated to federal, state, and local agencies, as well as other interested parties, for a period of 30 days. The distribution list is also located in Appendix A. The NOP was made available in print and electronic form, and the LACFCD accepted comments on the NOP for a 30-day period, closing on September 29, 2014. In addition, an email notification regarding the availability of the NOP was sent to over 700 interested EWMP stakeholders. The NOP discussed the purpose of the EWMPs and their management strategies, identified the EWMP Study Areas, and provided a brief and preliminary list of environmental issue areas that could be impacted. The initial 30-day comment period was extended an additional 30 days to October 29, 2014, to provide greater opportunity for public comment on the NOP. The notification for the extension of the comments period was sent by email to the over 700 interested EWMP stakeholders. The notice of the extension was also provided through the LACFCD Twitter account. In addition, a recording of the Scoping Meeting presentation was posted on the LACFCD website. A link to the website (www.LACoH2Osheds.com) was provided in the email and Twitter feed announcements.

Table 1-1 provides a list of the commenters that sent comments on the NOP. The comment letters are located in Appendix A.

TABLE 1-1
NOP COMMENTERS

	Date	Name	Organization
1	10/16/2014	Enrique Huerta	At-Large Stakeholder (Downey, CA)
2	10/23/2014	Enrique Huerta	At-Large Stakeholder (Downey, CA)
3	10/28/2014	George Ball	Citizen
4	10/29/2014	Jane Williams	Los Angeles County Arboretum
5	10/27/2014	Kenneth Hill	Los Angeles County Arboretum Foundation, President
6	10/23/2014	Marsha Perez	Citizen, Los Angeles County Arboretum
7	09/29/2014	Rex Frankel	Ballona Ecosystem Education Project, Director
8	10/29/2014	Rex Frankel	Ballona Ecosystem Education Project, Director
9	10/29/2014	Tom Williams	Sierra Club, Water Committee
10	10/08/2014	Elizabeth Byrne Debreu	Los Angeles Arboretum Foundation
11	09/29/2014	Dianna Watson	Department of Transportation
12	09/24/2014	Deirdre West	Metropolitan Water District
13	09/25/2014	Katy Sanchez	NAHC
14	09/29/2014	Douglas Fay	Citizen
15	09/29/2014	Donna Murray	Citizen
16	09/29/2014	Joyce Dillard	Citizen
17	10/03/2014	Patricia McPherson	Grassroots Coalition
18	10/14/2014	Jane Florentinus	Citizen
19	10/29/2014	Dale Carter	Arboretum volunteer and docent
20	08/29/2014	Scott Morgan	State Clearinghouse

Public Scoping Meetings

Pursuant to CEQA Guidelines Section 15083, the LACFCD held three public Scoping Meetings on September 9, 10, and 15 of 2014 to receive comments on the NOP, as detailed below. The purpose of the meetings was to present the proposed EWMPs to the interested stakeholders and receive public input regarding the proposed scope of the PEIR analysis. Attendees were provided an opportunity to voice comments or concerns regarding potential effects of the program. A scoping report was prepared to summarize the public scoping process and the comments received in response to the NOP; the scoping report is included in **Appendix B** of this PEIR. Appendix B also includes the written comments received on the NOP.

Scoping Meeting 1 — Tuesday, September 9, 2014
6:00 P.M.
Chace Park Community Room
13650 Mindanao Way
Marina del Rey, CA 90292

Scoping Meeting 2	Wednesday, September 10, 2014 6:00 P.M. County of Los Angeles Department of Public Works 900 South Fremont Avenue First Floor Conference Room C Alhambra, CA 91803
Scoping Meeting 3	Monday, September 15, 2014 6:30 P.M. K Dalton Room Monrovia Community Center 119 W Palm Ave Monrovia, CA 91016

Draft Program EIR Public Review

In accordance with Section 15105 of the CEQA Guidelines, the Draft PEIR is available for public review and comment for a 45-day review period. The Draft PEIR has been circulated to federal, state, and local agencies and interested parties who may wish to review and issue comments on its contents. All written comments should be sent to:

Gregg BeGell, P.E.
County of Los Angeles Department of Public Works
Project Management Division II
900 South Fremont Avenue, 5th Floor
Alhambra, CA 91803

All written comments received on the Draft PEIR will be commented on and included in the Final PEIR. Comments on the Draft PEIR must be received in writing by the end of the public review period. Copies of the Draft PEIR and related key documents, as well as documents incorporated by reference, are available for review at the following public locations:

Lead Agency	County of Los Angeles Department of Public Works Project Management Division II 900 South Fremont Avenue, 5th Floor Alhambra, CA 91803
Ballona Creek	Culver City Julian Dixon Library 4975 Overland Ave. Culver City, CA 90230
	View Park Library 3845 W. 54th Street Los Angeles, CA 90043

Beach Cities WMG	Hermosa Beach Library 550 Pier Ave. Hermosa Beach, CA 90254
	Manhattan Beach Library 1320 Highland Ave. Manhattan Beach, CA 90266
Dominguez Channel WMG	Hawthorne Library 12700 Grevillea Ave. Hawthorne, CA 90250
	Carson Library 151 E. Carson St. Carson, CA 90745
Malibu Creek	Agoura Hills Library 29901 Ladyface Court Agoura Hills, CA 91301
Marina del Rey	Lloyd Taber Marina del Rey Library 4533 Admiralty Way Marina del Rey, CA 90292
North Santa Monica Bay Coastal Watersheds	Malibu Library 23519 W. Civic Center Way Malibu, CA 90265
Palos Verdes Peninsula	Lomita Library 24200 Narbonne Ave. Lomita, CA 90717
Rio Hondo/San Gabriel WQG	Duarte Library 1301 Buena Vista St. Duarte, CA 91010
	Live Oak Library 4153-55 E. Live Oak Ave. Arcadia, CA 91006
Santa Monica Bay	Wiseburn Library 5335 W. 135th St. Hawthorne, CA 90250

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Upper Los Angeles River	San Gabriel Library 500 S. Del Mar Ave. San Gabriel, CA 91776
	La Cañada Flintridge Library 4545 N. Oakwood Ave. La Cañada Flintridge, CA 91011
Upper San Gabriel River	Baldwin Park Library 4181 Baldwin Park Blvd. Baldwin Park, CA 91706
	La Puente Library 15920 E. Central Ave. La Puente, CA 91744
Upper Santa Clara River	Stevenson Ranch Express Library Dr. Richard H. Rioux Memorial Park 26233 W. Faulkner Dr. Stevenson Ranch, CA 91381

The Draft PEIR can also be accessed through the internet at: www.LACoH2Osheds.com.

Public Hearings

Public comments on the Draft PEIR will be accepted from January 16, 2015 to March 2, 2015. Public hearings on the Draft PEIR to accept written or oral comments are scheduled as follows:

1st Meeting	Thursday, January 29: 6:00 P.M. – 8:00 P.M. Florence-Firestone Service Center – Contact: Tony Brookins, Director 7807 S. Compton Ave., Los Angeles, CA 90001 Phone: (323) 586-6502
2nd Meeting	Tuesday, February 3: – 6:00 P.M. – 8:00 P.M. LA County Fire Camp #2 Classroom (Hahamongna Watershed Park) – Contact: Celia Hernandez 4810 Oak Grove Dr, La Cañada Flintridge, CA 91011 (818) 790-6434
3rd Meeting	Thursday, February 5 – 6:00 P.M. – 8:00 P.M. San Pedro Service Center – Contact: Lilia Andres, Regional Manager 769 W. Third St., San Pedro, CA 90731 Phone: (310) 519-6091
4th Meeting	Tuesday, February 10: 6:00 P.M. – 8:00 P.M. Topanga Library – Contact: Oleg Kagan, Library Manager 122 N. Topanga Canyon Blvd., Topanga, CA 90290 Phone: (310) 455-3480
5th Meeting	Wednesday, February 11: 6:00 P.M. – 8:00 P.M. Hacienda Heights Community Center 1234 Valencia Avenue, Hacienda Heights CA 91745

6th Meeting — Tuesday, February 17: 6:00 P.M. – 8:00 P.M.
East Los Angeles Library – Contact: Alice Medina, Librarian
4837 East 3rd Street, Los Angeles, CA 90022 Phone: (323) 264-0155

Final PEIR Publication and Certification

Written comments received on the Draft PEIR will be addressed in a Response to Comments document which, together with the Draft PEIR, will constitute the Final PEIR. As required by CEQA, responses to comments submitted by responsible public agencies will be distributed to those agencies for review prior to consideration of the Final EIR by the Board of Supervisors. The Board of Supervisors will decide whether to certify the Final PEIR at a public meeting. Upon certification of the PEIR, LACFCD may proceed to take action on program approval and submittal of the EWMPs to the LARWQCB.

CEQA requires the adoption of findings prior to approval of a project where a certified EIR identifies significant environmental effects (CEQA Guidelines, Sections 15091 and 15092). If the Board of Supervisors approves the program even though significant impacts identified by the PEIR cannot be mitigated, it will adopt a Statement of Overriding Considerations that states in writing the reasons for its actions (CEQA Guidelines Section 15093[b]). This Statement of Overriding Considerations must be included in the record of the project approval and mentioned in the Notice of Determination (CEQA Guidelines Section 15093(c)).

Mitigation Monitoring and Reporting Program

CEQA Section 21081.6(a) requires lead agencies to "adopt a reporting and mitigation monitoring program for the changes to the project which it has adopted or made a condition of project approval in order to mitigate or avoid significant effects on the environment." This Draft PEIR identifies and presents mitigation measures that would form the basis of such a monitoring program. Any mitigation measures adopted by the LACFCD will be included in a Mitigation Monitoring and Reporting Program (MMRP) to verify compliance. The MMRP will be included within the Final PEIR.

1.4 Documents Incorporated by Reference

The following documents are incorporated by reference in this PEIR:

Ballona Creek Watershed Management Group, *Enhanced Watershed Management Program (EWMP) Final Work Plan*, prepared by City of Beverly Hills, City of Culver City, City of Los Angeles, City of Inglewood, City of Santa Monica, City of West Hollywood, County of Los Angeles, and Los Angeles County Flood Control District, June 2014.

Ballona Creek Watershed Management Group, *Revised Notice of Intent: Enhanced Watershed Management Program and Coordinated Integrated Monitoring Program*, December 2013.

Beach Cities Watershed Management Group, *Enhanced Watershed Management Program (EWMP) Work Plan*, prepared by City of Hermosa Beach, City of Manhattan Beach, City

of Redondo Beach, City of Torrance, and Los Angeles County Flood Control District, June 2014.

Beach Cities Watershed Management Group, *Notice of Intent: Enhanced Watershed Management Program and Coordinated Integrated Monitoring Program*, December 2013.

California Environmental Protection Agency State Water Resources Control Board, official website, http://www.waterboards.ca.gov/losangeles/, accessed July 29, 2014.

California Regional Water Quality Control Board Los Angeles Region, *Waste Discharge Requirements for Municipal Separate Storm Sewer System (MS4) Discharges Within the Coastal Watersheds of Los Angeles County, Order NO. R4-2012-0175, NPDES Permit NO. CAS004001*, December 2012.

Dominguez Channel Watershed Management Area Group, *Enhanced Watershed Management Program Work Plan*, prepared by City of Los Angeles, County of Los Angeles, City of Hawthorne, City of Inglewood, City of El Segundo, City of Lomita, and Los Angeles County Flood Control District, June 2014.

Dominguez Channel Watershed Management Area Group, *Notice of Intent: Enhanced Watershed Management Program and Coordinated Integrated Monitoring Program*, June 2013.

Malibu Creek Watershed Group, *Revised Notice of Intent: Enhanced Watershed Management Program and Coordinated Integrated Monitoring Program*, June 2013.

Malibu Creek Watershed Management Group, *Enhanced Watershed Management Program Work Plan*, prepared for City of Calabasas, City of Agoura Hills, City of Westlake Village, City of Hidden Hills, County of Los Angeles and Los Angeles County Flood Control District, June 2014.

Marina del Rey Enhanced Watershed Management Agencies, *Marina del Rey Enhanced Watershed Management Program Work Plan*, prepared for County of Los Angeles, Los Angeles County Flood Control District, City of Los Angeles, and City of Culver City, June 2014.

Marina del Rey Watershed Group, *Revised Notice of Intent: Enhanced Watershed Management Program and Coordinated Integrated Monitoring Program*, March 2014.

North Santa Monica Bay Coastal Watersheds EWMP Group, *Enhanced Watershed Management Program (EWMP) Work Plan*, prepared by City of Malibu, County of Los Angeles, and Los Angeles County Flood Control District, June 2014.

North Santa Monica Bay Coastal Watersheds, *Notice of Intent: Enhanced Watershed Management Program and Coordinated Integrated Monitoring Program*, March 2014.

Palos Verdes Peninsula EWMP Agencies, *Notice of Intent: Peninsula Enhanced Watershed Management Plan*, June 2013.

Palos Verdes Peninsula Watershed Management Group, *Palos Verdes Peninsula Enhanced Watershed Management Program Work Plan*, June 2014.

Rio Hondo/San Gabriel River Water Quality Group, *Enhanced Watershed Management Program Work Plan*, prepared for City of Arcadia, City of Azusa, City of Bradbury, City of Duarte, City of Monrovia, City of Sierra Madres, County of Los Angeles, and Los Angeles County Flood Control District, June 2014.

Rio Hondo/San Gabriel River Water Quality Group, *Notice of Intent: Enhanced Watershed Management Program (EWMP)*, June 2013.

Santa Monica Bay Watershed (J2, J3), *Notice of Intent: Enhanced Watershed Management Program and Coordinated Integrated Monitoring Program*, December 2013.

Santa Monica Bay Watershed Jurisdictions 2 & 3, *Enhanced Watershed Management Program Work Plan*, prepared by City of Los Angeles, Los Angeles County Flood Control District, County of Los Angeles, City of Santa Monica, and City of El Segundo, June 2014.

Upper Los Angeles River Watershed Group, *Notice of Intent: Enhanced Watershed Management Program and Coordinated Integrated Monitoring Program*, June 2013.

Upper Los Angeles River Watershed Management Group, prepared by City of Alhambra, City of Burbank, City of Calabasas, City of Glendale, City of Hidden Hills, City of La Canada Flintridge, City of Los Angeles, City of Montebello, City of Monterey Park, City of Pasadena, City of Rosemead, City of San Gabriel, City of San Marino, City of South Pasadena, City of Temple City, County of Los Angeles, and Los Angeles County Flood Control District, *Enhanced Watershed Management Program Work Plan*, June 2014.

Upper San Gabriel River EWMP Group, *Draft Enhanced Watershed Management Program Work Plan*, prepared for City of Baldwin Park, City of Covina, City of Glendora, City of Industry, City of La Puente, County of Los Angeles, and Los Angeles County Flood Control District, June 2014.

Upper San Gabriel River EWMP Group, *Notice of Intent: Enhanced Watershed Management Program and Coordinated Integrated Monitoring Program*, June 2013.

Upper Santa Clara River Watershed Management Group, *Enhanced Watershed Management Program – Work Plan*, prepared for City of Santa Clarita, County of Los Angeles, and Los Angeles County Flood Control District, June 2014.

Upper Santa Clara River Watershed Management Group, *Notice of Intent: Enhanced Watershed Management Program and Coordinated Integrated Monitoring Program*, June 2013.

1.5 PEIR Organization

This Draft PEIR is organized into the following chapters and appendices:

Executive Summary**.** This chapter summarizes the contents of the Draft PEIR.

Chapter 1.0, *Introduction*. This chapter discusses the CEQA process and the background and purpose of the PEIR for the proposed program.

Chapter 2.0, *Project Description*. This chapter provides an overview of the proposed program and each EWMP group, describes the need for and objectives of the proposed program, and provides detail on the characteristics of the proposed program.

Chapter 3.0, *Environmental Impact Analysis*. This chapter describes the environmental setting and identifies impacts of the proposed program for each of the following environmental resource areas: Aesthetics; Air Quality; Biological Resources; Cultural Resources; Geology and Soils/Mineral Resources; Greenhouse Gas Emissions; Hazards and Hazardous Waste; Hydrology and Water Quality; Land Use and Planning/Agriculture; Noise; Population and Housing; Public Services/Recreation; Transportation and Circulation; and Utilities, Service Systems, and Energy. Measures to mitigate the impacts of the proposed program, if necessary, are presented for each resource area.

Chapter 4.0, *Cumulative Impacts*. This chapter evaluates the potential for the proposed program to result in secondary environmental cumulative effects.

Chapter 5.0, *Growth-Inducement Potential*. This chapter evaluates the potential for the proposed program to induce population growth and result in secondary environmental effects due to such growth.

Chapter 6.0, *Alternatives Analysis*. This chapter presents an overview of the alternatives development process and describes the alternatives to the proposed program that were considered.

Chapter 7.0, *Organizations and Persons Contacted*. This chapter identifies authors involved in preparing this Draft PEIR, including persons and organizations consulted.

Chapter 8.0, *Report Preparers*. This chapter identifies authors involved in preparing this Draft PEIR, including persons and organizations consulted.

Chapter 9.0, *References*. This chapter includes all citations for sources used in the preceding chapters.

CHAPTER 2
Project Description

2.1 Introduction

The preparation of the 12 separate Enhanced Watershed Management Programs (EWMPs) is a collective effort among the Los Angeles County Flood Control District (LACFCD) and the applicable Permittees in each Watershed Management Group (WMG). The 12 EWMPs are being prepared on a parallel schedule to the Program Environmental Impact Report (PEIR). The 12 EWMPs will vary for each watershed group, but will generally provide the opportunity for Permittees to customize their stormwater programs to achieve compliance with applicable receiving water limitations and/or water-quality-based effluent limits in accordance with the Municipal Separate Storm Sewer System (MS4) Permit through implementation of stormwater Best Management Practices (BMPs) or watershed control measures. Each Permittee is responsible for discharges in its jurisdiction and meeting the water quality goals for these discharges.

The EWMPs provide for a collaborative effort by Permittees on a watershed basis. The EWMP process allows for greater collaboration and accountability. The EWMPs, once complete, will include specific projects and identify Permittees that may benefit from the projects. Projects may be implemented individually or with partners. Each Permittee is responsible for the content of the EWMP projects that meet the water quality goals for the MS4 discharges within their jurisdiction.

This Project Description describes types of BMPs presented in the 12 Notices of Intent (NOIs), EWMP Work Plans, and input from the EWMP WMG. The BMPs listed in each EWMP are in various phases of planning or implementation. Examples of existing BMPs are used to illustrate the function, type of construction, and general locations of the BMP types for the purpose of the environmental assessment of the BMP types identified in the EWMPs.

BMPs vary in function and type, with each BMP providing unique design characteristics and benefits from implementation. The overarching goal of BMPs in the EWMPs is to reduce the impact of stormwater and non-stormwater on receiving water quality and address the water quality priorities as defined by the MS4 Permit. The development of each EWMP will involve the evaluation and selection of multiple BMP types, including nonstructural (institutional) and distributed, centralized, and regional structural watershed control measures, that will be implemented to meet compliance goals and strategies under the 2012 MS4 Permit. The LACFCD has limited jurisdictional authority for ordinance and code enactment or enforcement and therefore is limited in nonstructural BMPs to education and outreach measures.

The structural watershed control measures that will be implemented by the LACFCD will be multi-benefit stormwater projects that emphasize flood risk mitigation and water conservation and supply.

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The LACFCD has a vested interest in increasing opportunities for stormwater capture and groundwater recharge as a means of assisting local water supply augmentation. The LACFCD will be working with the applicable Permittees and other stakeholders in all 12 EWMP watersheds to develop such projects. The EWMPs will be implemented by the Permittees that have jurisdiction within each EWMP area. The implementing agencies will be responsible for the contents of the EWMPs affecting their jurisdictions and for implementing the projects developed by the EWMPs.

2.2 Goals and Objectives

The primary goals and objectives of the EWMPs are:

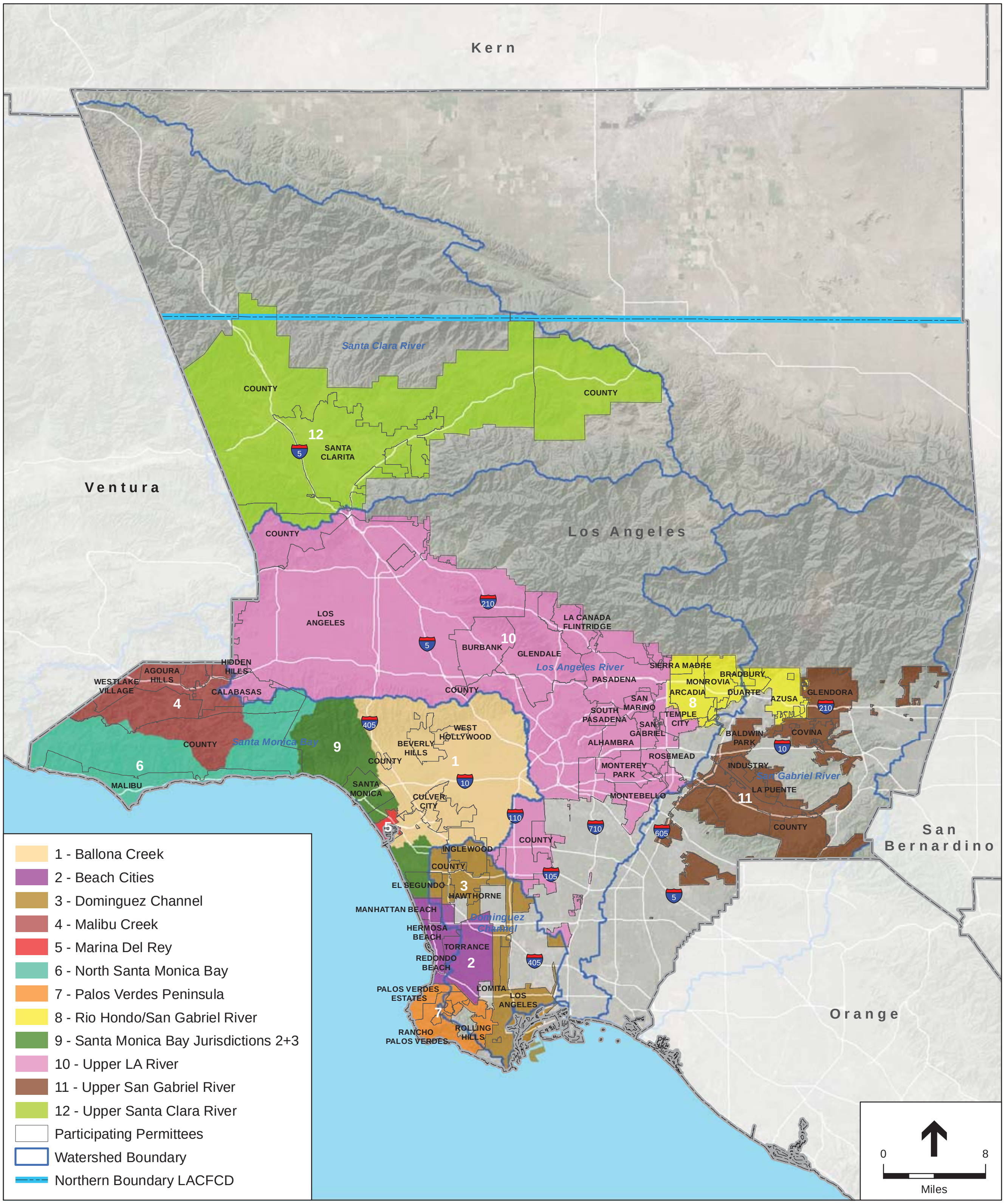
- To collaborate among agencies (Permittee jurisdictions) across the watershed to promote more cost-effective and multi-beneficial water quality improvement projects to comply with the MS4 Permit.
- To develop watershed-wide EWMPs that will, once implemented, remove or reduce pollutants from dry- and wet-weather urban runoff in a cost-effective manner.
- To reduce the impact of stormwater and non-stormwater on receiving water quality.

2.3 Watersheds, Participants, and Process

Following the adoption of the MS4 Permit by the Los Angeles Regional Water Quality Control Board (LARWQCB), some Permittees from each EWMP area formed WMGs to collaborate on the development of EWMPs. The proposed program includes several WMGs of Los Angeles County, covering the following EWMP areas: Ballona Creek, Beach Cities, Dominguez Channel, Malibu Creek, Marina del Rey, North Santa Monica Bay Coastal Watersheds, Palos Verdes Peninsula, Rio Hondo/San Gabriel River, Santa Monica Bay, Upper Los Angeles River, Upper San Gabriel River, and Upper Santa Clara River. The geographic scope covered by each of these 12 EWMPs is detailed in **Table 2-1** and shown in **Figure 2-1.**

TABLE 2-1 - EWMP PARTICIPANTS AND WATERSHEDS

Watershed Management Group	Affected Watersheds	Cities/Permittees	Lead/Coordinator
Ballona Creek	Ballona Creek Watershed	Beverly Hills, Culver City, Inglewood, Los Angeles, Santa Monica, West Hollywood, LA County, LACFCD	Los Angeles
Beach Cities	Santa Monica Bay Watershed Jurisdictional Group (SMB JG) 5 & 6, Dominguez Channel Watershed, and Machado Lake Watershed	Hermosa Beach, Manhattan Beach, Redondo Beach, Torrance, LACFCD	Redondo Beach
Dominguez Channel	Dominguez Channel Watershed, the Machado Lake Watershed, and the Los Angeles/Long Beach Harbors Watershed	El Segundo, Hawthorne, Inglewood, Los Angeles, Lomita, LA County, LACFCD	Los Angeles
Malibu Creek	Malibu Creek Watershed	Agoura Hills, Calabasas, Hidden Hills, Westlake Village, LA County, LACFCD	Calabasas
Marina del Rey	Marina del Rey Watershed	Culver City, Los Angeles, LACFCD, LA County	LA County
North Santa Monica Bay	SMB JG 1, SMB JG 4, and a portion of Malibu Creek within the City of Malibu's borders	LA County, LACFCD, Malibu	Malibu
Palos Verdes Peninsula	Most of the SMB JG7, the Los Angeles Harbor subwatershed, and the Machado Lake subwatershed	Palos Verdes Estates, Rancho Palos Verdes, Rolling Hills Estates, LA County, LACFCD	Rancho Palos Verdes
Rio Honda/San Gabriel River	Portions of the Los Angeles and San Gabriel River Watersheds	Arcadia, Azusa, Bradbury, Duarte, Monrovia, County, LACFCD, Sierra Madre	Sierra Madre
Santa Monica Bay	SMB JG2 and SMB JG3	Los Angeles, El Segundo, Santa Monica, LA County, LACFCD	Los Angeles
Upper LA River	Upper reaches of the Los Angeles River Watershed	Alhambra, Burbank, Calabasas, Glendale, Hidden Hills, La Canada Flintridge, Los Angeles, Montebello, Monterey Park, Pasadena, Rosemead, San Gabriel, San Marino, South Pasadena, Temple City, LA County, LAFCD	Los Angeles
Upper San Gabriel River	Portions of the San Gabriel River Watershed	Baldwin Park, Covina, Glendora, Industry, La Puente, LACFCD, LA County	LA County
Upper Santa Clara River	Upper Santa Clara River Watershed	LA County, LACFCD, Santa Clarita	Santa Clarita



SOURCE: ESRI.

LA County PEIR EWMP . 140474

Figure 2-1

Watersheds and EWMP Groups within LACFD Boundaries

2.4 EWMP BMP Types

A variety of BMP types are defined in the EWMP Work Plans and NOIs. The following section provides an overview of non-structural and structural BMP types that will be part of the EWMPs. This section also includes a summary of planned and ongoing projects listed in the EWMP Work Plans for each BMP type to provide information on the anticipated scale, construction methods, and general locations of these BMP types. Additional information and figures on the location and distribution of potential and priority BMPs based on available data at the time of publication of this PEIR, are presented in Section 2.5*, EWMP Watershed Characteristics and BMP Implementation Strategies*.

2.4.1 Non-Structural Control Measures/Institutional BMPs

These are policies, actions, and activities which are intended to minimize or eliminate pollutant sources. Most institutional BMPs are implemented to meet Minimum Control Measure (MCM) requirements in the MS4 permit; MCMs are considered a subset of institutional BMPs. These BMPs are not constructed, but may have costs associated with the procurement and installation of items such as signage or spill response kits. The MS4 Permit categorizes institutional BMPs into six program categories:

- ***Development Construction Programs***, which establish standards for stormwater management from construction sites of all sizes (e.g., with or without a stormwater pollution prevention plan [SWPPP]).
- ***Industrial/Commercial Facilities Programs***, which establish standards for pollutant reduction and control measures at industrial and commercial facilities.
- ***Illicit Connection and Illicit Discharges (IC/ID) Detection and Elimination Programs***, which describe procedures for identifying, eliminating, and reporting illicit connections and discharges to the stormwater system.
- ***Public Agency Activities Programs***, which describe a broad range of municipal practices such as street cleaning, landscape management, storm drain operation, and more.
- ***Planning and Land Development Programs***, which encourage the application of smart growth and low-impact development (LID) practices to development and redevelopment projects.
- ***Public Information and Participation Programs***, which educate and engage the public on a broad range of pollution- and stormwater-related issues.

Permittees can evaluate the MCMs, identify potential modifications that will address water quality priorities, and provide justification for modification or elimination of any MCM that is determined to be ineffective (with the exception of the Planning and Land Development Program, which may not be eliminated or modified). MCM customization may include replacement, reduced implementation, augmented implementation, focused implementation, or elimination.

Because the LACFCD has limited jurisdictional authority for ordinance and code enactment or enforcement, it is limited in application of MCMs to activities such as public information and participation programs.

2.4.2 Structural Control Measures/Structural BMPs – General BMP Types and Categories

Structural control measures are constructed BMPs that reduce the impact of stormwater and non-stormwater on receiving water quality. They are broken into three categories:

- ***Distributed Structural BMPs***, which treat runoff close to the source and typically implemented at a single- or few-parcel level (e.g., facilities typically serving a contributing area less than one acre).
- ***Centralized Structural BMPs***, which treat runoff from a contributing area of multiple parcels (e.g., facilities typically serving a contributing area on the order of tens or hundreds of acres or larger).
- ***Regional Structural BMPs***, which are meant to retain the 85th percentile storm over 24 hours from a contributing area. Generally, the 85th percentile storm is approximately 0.75 inches over 24 hours

Whether distributed, centralized, or regional, the major structural BMP functions are infiltration, treatment, and storage that may be used individually or combination:

- ***Infiltration,*** where runoff is directed to percolate into the underlying soils. Infiltration generally reduces the volume of runoff and increases groundwater recharge.
- ***Treatment***, where pollutants are removed through various unit processes, including filtration, settling, sedimentation, sorption, straining, and biological or chemical transformations.
- ***Storage***, where runoff is captured, stored (detained), and slowly released into downstream waters. Storage can reduce the peak flow rate from a site, but does not directly reduce runoff volume.

The types of structural BMPs to be implemented will vary between EWMPs, but most EMWPs will include a variety of distributed, centralized, and regional BMPs.

Table 2-2 describes the sub-types of distributed, centralized, and regional structural BMPs that form the basis of the water quality improvements proposed in the EWMPs. The following sub-sections provide further description and examples of the BMP types and subcategories under the categories of distributed, centralized, and regional structural BMPs.

TABLE 2-2
TYPICAL STRUCTURAL BEST MANAGEMENT PRACTICES

Main BMP Category	BMP Types to be Assessed	Sub-types of BMPs
Distributed Structural BMPs	Site-scale detention	Dry detention basin Wet detention pond Detention chambers
	Green infrastructure/Low-impact development (LID)	Bioretention Biofiltration Permeable pavement Green streets Infiltration BMPs Bioswales Planter boxes Rainfall harvest
	Flow-through treatment BMPs	Debris booms/nets End-of-pipe nets Floating trash booms Hydrodynamic separators Water clarifiers Stormwater quality vaults
	Source control treatment BMPs	
Centralized Structural BMPs (do not retain the 85th percentile storm)	Infiltration BMPs	Surface infiltration BMPs (infiltration basins, infiltration trenches, infiltration galleries, bioretention, permeable pavement – implemented as single or multiple types), subsurface infiltration galleries Multi-directional infiltration BMPs (dry wells, hybrid bioretention and dry wells)
	Capture and use BMPs	Underground cisterns, storage and use as irrigation
	Bioinfiltration BMPs	Generally implemented as multiple types for regional BMPs: Bioretention with underdrain, bioinfiltration, high-flow biotreatment and raised underdrain, vegetated swales, filter strips
	Detention (promote settling out of larger particles)	Aboveground, belowground
	Treatment facilities (capture, storage and treatment-train)	
	Low-flow diversion (dry-weather flow and low-flow storm events)	
	Engineered/constructed wetlands	Aboveground, belowground
	Creek/river/floodplain/estuary restoration	
	Multi-benefit flood management project	
Regional Structural BMPs (retain the 85th percentile storm)	Infiltration	Surface infiltration BMPs: Infiltration basins, infiltration trenches, infiltration galleries, and bioretention-implemented as single or multiple types Multidirectional infiltration BMPs: Dry wells, hybrid bioretention, and dry wells
	Capture and use BMPs	Underground cisterns, storage, and use as irrigation

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2.4.3 Distributed Structural BMPs – Overview and Example BMPs

The following discussion presents an overview of various types of distributed BMPs and illustrates these further through example projects. The example project lists are based on existing and planned projects that will be part of the EWMPs. Included with each overview of the types of these BMPs is a discussion of the anticipated construction activities to implement these projects.

Because of their nature (intended to treat runoff at the parcel-scale), distributed BMPs are most likely to be implemented in high-density urban, commercial, industrial, and transportation areas, where they will either replace or improve upon existing stormwater infrastructure. These types of BMPs are generally "retrofit" type projects that replace existing impervious surfaces with pervious surfaces such as bioinfiltration cells, bioswales, porous pavement, and filter strips that tie into existing stormwater management systems as part of the MS4. These projects may also augment the existing MS4 with additional inlet screens, filter media systems, sediment removal systems, and diversions to sanitary sewer lines. Types of distributed structural BMPs are discussed in the following pages; the definitions and photographs of these BMPs are from the "Structural Fact Sheets" as presented in some EWMP Work Plans (e.g., Ballona Creek).

Site-scale detention. Site-scale detention facilities are designed to detain runoff from an individual parcel and improve water quality through pollutant settling. Site-scale detention facilities can reduce peak flows and improve water quality by storing water in a basin before slowly draining the water through an orifice to the downstream waterway. Settling of sediment and sediment-bound pollutants is the primary pollutant removal mechanism. There are two primary types of site-scale detention: *dry detention basin*s, in which runoff fully drains during storm events, and *wet detention ponds*, which capture water in a temporary storage zone above a permanent pool. Both types are illustrated in the following photographs..

Drv Detention Basin

Wet Detention Pond

Anticipated Construction Activities: The construction of detention basins typically requires the permanent removal of aboveground infrastructure and/or surface materials such as asphalt and concrete for retrofit type projects and excavation and grading for projects on soil-covered sites. Ground disturbance for distributed detention is typically less than 1 to 2 acres in extent, but may extend in some limited applications up to 5 acres where space is available. Site soils must be excavated to create the desired storage volume for stormwater. The depth of excavation will vary with available space, existing grades, and desired storage volume. For these smaller-scale systems, excavation is likely to be several feet and up to 10 feet. Generally, excavation below

6 feet is limited by the size of these systems and available space to provide adequate slope grading for safety and stability. Berms may be used to increase storage to reduce cost of excavation. Berms for these types of projects are several feet. Higher berms may be possible in some limited locations where space is available. Increasing berm height increases the footprint of these facilities to accommodate side slopes for safety and stability factors. On parcels where there is adequate room, soils may be placed on-site to balance cut and fill; smaller parcels may necessitate the off-hauling of excavated soils. Construction of dry detention basins in areas with high groundwater may limit the depth of the basins to meet minimum groundwater separation distances. The construction of dry detention basins may include the installation of recreational elements (nets, benches, etc.) so that the basins can serve as playing fields when not inundated. Wet detention ponds may require engineering (separate outlet structures with low-flow orifices, circulation elements, etc.) to ensure that the permanent pool does not become stagnant and a magnet for mosquito production (must be emptied within 72 hours). Detention basin includes berms and outlet structures that control the volume stored and the flow and velocity of the discharge.

Green infrastructure/Low-impact development (LID). This BMP category describes a broad range of development elements that aim to manage and treat stormwater as a resource, and minimize the differences between pre- and post-development hydrology. BMP subtypes in this category include:

- ***Bioretention and Biofiltration.*** *Bioretention* areas are shallow, depressed, vegetated basins with permeable soil media and no underdrains. Runoff temporarily ponds on the surface of these basins before filtering through the soil. *Biofiltration* areas are bioretention areas with underdrains. Infiltration is these systems is considered incidental, although substantial infiltration can occur in some unlined systems. Both systems are illustrated below; these examples use planted filter media and an underdrain to remove pollutants from stormwater.


Residential Bioretention


Bioretention in an Alley


Parking Lot Biofiltration

Anticipated Construction Activities: Similar to distributed detention basins, distributed bioretention and biofiltration BMPs would typically require the permanent removal of aboveground infrastructure and/or surface materials such as asphalt and concrete for retrofit type projects and excavation and grading for projects on soil covered sites. Ground disturbance for LID distributed BMPs is typically less than 1 to 2 acres in extent, but may extend in some limited applications up to 5 acres where space is available and where linear projects extend to adjacent parcels. The extent of land disturbance depends on the type of distributed BMP and may be more linear for bioswales and filter strips, compared to larger continuous areas for bioretention cells that store and then filter or infiltrate stormwater. In areas proposed for biofiltration without suitably permeable soils, native soils will have to be excavated, amended, and put back in place, or replaced entirely with biofiltration media (e.g., coarse gravels). The replacement of local soils would likely require that those soils then be hauled off-site. Systems with underdrains may require more extensive excavation and construction so that the underdrain can be connected to the MS4. The depth of excavation for these distributed systems will vary from several feet and up to 10 feet depending on the thickness and number of filter and storage layers. Generally, excavation is limited to 4 to 6 feet below existing grade for these systems.

- ***Permeable Pavement.*** Permeable pavement is a stable load-bearing surface that allows for stormwater infiltration. Beneath the permeable surface is a crushed-rock/ aggregate reservoir that provides structural support while allowing runoff to percolate to the underlying soils. Permeable pavement can be fully infiltrating or can have an underdrain like biofiltration practices. There are multiple types of permeable pavement; three are illustrated below. The mixes for *pervious concrete* and *porous asphalt* exclude fines from the aggregate to create permeable void space. Permeable interlocking *concrete pavers* allow infiltration of stormwater through joints between the blocks.

Pervious Concrete

Permeable Interlocking

Porous Asphalt

Anticipated Construction Activities: Similar to distributed bioretention and biofiltration BMPs, porous pavement BMPs would typically require the permanent removal of aboveground infrastructure and/or surface materials such as asphalt and concrete for retrofit type projects and excavation and grading for projects on soil covered sites. Porous pavement projects are generally retrofit type projects to increase infiltration and/or filtering of stormwater, but may include installation in new development and redevelopment, which may require clearing and grubbing activities prior to installation. Ground disturbance for these systems is typically less than 1 to 2 acres in extent, but may extend in some limited applications up to 5 acres where space is available. The depth of excavation for these distributed systems will vary from several feet and up to 6 feet depending on the thickness and number of structural support, filter, underground stormwater storage, and underdrain transmission layers. Systems with underdrains will require additional excavation. Generally, excavation is limited to 2 to 6 feet below existing grade for these systems. The installation of permeable pavement is frequently associated with the reconstruction of transportation elements such as parking lots, sidewalks, non-motorized paths, and related features.

- ***Green streets.*** Green streets are systems of multiple BMPs arranged in a linear fashion within the street right-of-way (as opposed to a parcel-based implementation). Green streets are designed to reduce runoff and improve water quality of runoff from the roadway and adjacent parcels by replacing impervious surfaces with more porous ones, and directing stormwater to vegetated systems that can filter and infiltrate stormwater. Bioretention, biofiltration, and permeable pavement BMPs are commonly used in conjunction and can be hydraulically connected using subsurface stone reservoirs. The examples below show curb cuts that direct stormwater from the parking areas and roadways to a bioswale designed to collect, filter, and infiltrate stormwater.

Green Street

Green Street

Anticipated Construction Activities: The installation of green street BMPs is similar to the construction activities that are summarized for the porous pavement and the LID-type distributed BMPs provided above as these include elements of both these types. These BMPs would typically require the permanent removal of aboveground infrastructure and/or surface materials such as asphalt and concrete for retrofit type projects and excavation and grading for projects on soil covered sites. Ground disturbance for green streets is typically less than 1 to 2 acres in extent, but may extend in some limited applications up to 5 acres where space is available and where these more linear projects extend to adjacent parcels. In areas proposed for biofiltration without suitably permeable soils, native soils will either have to be excavated, amended, and put back in place, or replaced entirely with biofiltration media (e.g. coarse gravels). The replacement of local soils would likely require that those soils then be hauled off-site. Systems with underdrains may require more extensive excavation and construction so that the underdrain can be connected to the MS4. The depth of excavation for these distributed systems will vary from several feet up to 6 feet depending on the thickness and number of filter and storage layers. Generally, excavation is limited to 4 feet below existing grade for these systems.

- ***Infiltration BMPs.*** Infiltration BMPs capture and infiltrate runoff into unvegetated underlying soils. Runoff is typically stored in subsurface trenches or vaults filled with engineered soil media, gravel, or concrete chambers. There are multiple types of infiltration BMPs, including: *dry/wet wells*, which are gravel-surrounded vaults with perforated walls that receive runoff form a pipe and allow it to infiltrate into the ground, and infiltration trenches, which are media-filled trenches that capture runoff in pore space prior to infiltration. These following pictures illustrate these types of BMPs.


Various Dry-Well Sizes(Source: www.peerlessconcrete.com)


Infiltration Trench

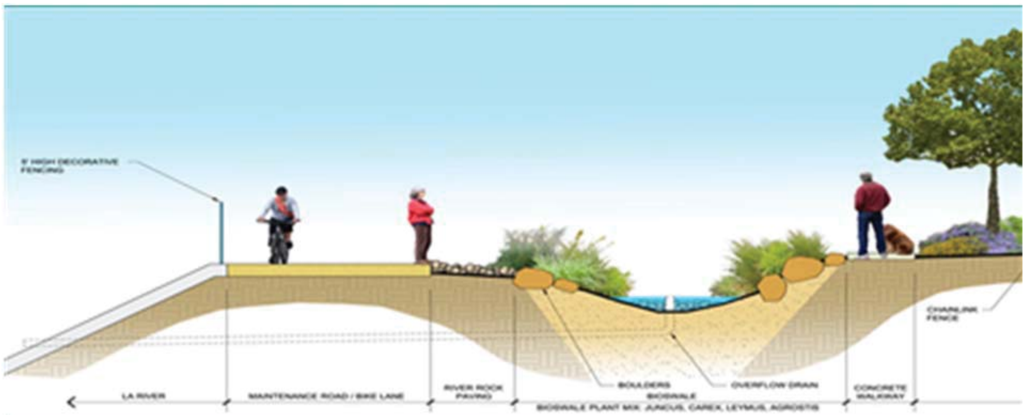

Infiltration Trench

Anticipated Construction Activities: The ground disturbance footprint necessary to install infiltration BMPs can vary depending on the project's size and location. As illustrated above, infiltration trenches tend to be linear features and as such typically have relatively small footprints (less than 1 acre) unless they are very long (e.g., associated with transportation upgrades – roads, rail corridors, etc.). Subsurface excavation is typically required to replace native soils with highly porous infiltration media, vaults or other subsurface storage structures that will retain runoff and allow it to infiltrate into the subsurface. Larger underground storage and infiltration structures will require greater depths and volume of excavation. These types of infiltration BMPs may disturb larger (2 to 3 acres) areas. Larger systems are designed for multi-parcels and are characterized as centralized BMPs rather than distributed BMPs that are for one to two parcels. Depth of excavation of infiltration BMPs will depend on the storage requirements and depth to groundwater. Minimum separation distances of 10 feet to groundwater are typical. Excavation for these distributed type infiltration projects is generally 2 to 4 feet for infiltration trenches and 4 to 8 feet for vault and dry well systems. Dry/wet wells require deeper excavation but are more localized and smaller in footprint.

- ***Bioswales.*** Bioswales are BMPs that convey storm flow through vegetated, shallow depressions to remove sediment-associated pollutants by settling and filtering mechanisms. Infiltration and filtration through soil media are not key components of bioswales; rather, bioswales are typically implemented to act as pretreatment and used to transport runoff to an associated bioretention cell or infiltration type of distributed BMP to provide additional pollutant removal and volume reduction. There are two primary types of bioswales: vegetated swales (which are linear), vegetated channels that convey concentrated flow to another structural BMP (detention, infiltration, storage), and vegetative filter strips (which are more broadly sloped than swales).

Vegetated Swale

Vegetative Filter Strip



Bioswale Integrated with Community Park/Trail

Anticipated Construction Activities: The construction of bioswales typically requires the removal and off-hauling of any impermeable surfaces within the bioswale footprint, and the regrading of site soils to facilitate drainage to the associated storage/infiltration BMP. Bioswales with more landscaping and natural contouring elements may have more complex grading.

- ***Planter Boxes.*** Planter boxes are bioretention systems enclosed in concrete structures. They are most commonly designed to drain runoff from paved areas or roofs. They are typically used in urbanize settings where space constraints limit the implementation of other LID elements such as bioswales and biorentention systems. Planter boxes may be designed to both filter and store runoff using a series of filter media and aggregate layers below the vegetated layers. They can be used in combination with rain barrels and cisterns that store the runoff and then direct it these boxes to filter the runoff.

  Anticipated Construction Activities: Construction activities associated with planter boxes will be in most cases much less than other types of distributed BMPs as the footprint of these BMPs are generally smaller and integrated into the construction and design of existing buildings and structures. The space saving advantages limits construction disturbance. Planter boxes for retrofit projects are generally fabricated off-site and installed after the ground surface is graded and prepared for the planters. Soil, filter media, and aggregate are generally brought to the site and placed in the planter boxes per the design requirements. Some excavation may be performed if portions of the planters

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are set below ground and connected to existing drainage pipes and MS4 through an underdrain system in the planter box.

- ***Rainfall Harvest.*** Rainfall harvesting improves water quality by intercepting rooftop runoff and lowering the overall impervious impact of a developed site. Runoff can be reduced through interception and evapotranspiration on green roofs or used for alternative uses with a cistern or rain barrel. There are multiple kinds of rainfall harvest mechanisms; two of the more common are *green roofs* and *cisterns/rain barrels*. Green roofs are engineered, vegetated roof structures meant to intercept rainfall within a plant growth medium. Cisterns and rain barrels are storage tanks used to intercept and store rooftop runoff for nonpotable use such as landscape irrigation or gradual infiltration.

Green Roof

Cistern

Anticipated Construction Activities: Similar to planter boxes, construction activities associated with green roofs and cisterns will be in most cases much less than other types of distributed BMPs as the footprint of these BMPs are generally smaller and integrated into the construction and design of existing buildings and structures. Construction activities associated with rainfall harvest systems tend to be minimal unless cisterns are placed underground, in which case subsurface excavation would be necessary. The depth and extent of excavation will depend on the size of the cisterns, but for single to several parcel distributed systems, the excavation will generally be limited to 4 to 6 feet and an area of less than an acre.

- ***Flow-Through Treatment BMPs.*** Manufactured flow-through devices are commercial products that aim to provide stormwater treatment using patented, innovative technologies. Typical types of manufactured devices for stormwater management include *cartridge/media filters* and *high-flow biotreatment devices*. Cartridge/media filters are proprietary filtration devices used to remove pollutants; high-flow biotreatment devices are modular, vault-type practices that contain high-flow media and typically incorporate vegetation.

Media/Cartridge Filter

High-Flow Biotreatment(Photo Source: Jonathan Page, NCSU-BAE)

Curb Inlet Biofilter

Anticipated Construction Activities: The construction activities necessary to install flow-through treatment BMPs can vary based on the location, size, and configuration of the BMP. These BMPs are generally installed as part of the MS4 within catch basins and curb inlets. Typically, flow-through BMPs have a relatively small footprint (< 1 ac) because they are designed to provide a higher rate of pollutant removal/transformation than less engineered approaches (e.g. infiltration trenches). Stormwater moves through most flow-through treatment BMPs via gravity flow. This may require expansion of existing catch basins or installation of new catch basin or vaults to intercept and direct storm flows to these treatment units and back into the MS4. This may then require limited subsurface excavation and off-hauling to create the below-grade space for the treatment device. The extent and volume of excavation is much less than LID, retention and Green Street projects.

- ***Source Control BMPs.*** Source control structural BMPs are commercial products designed to treat runoff in highly urbanized environments. Mechanical separation, or more complex physicochemical processes, provides separation of gross solids and other pollutants. Many models feature media or materials designed to sequester hydrocarbons and other pollutants. Two types of source control BMPs are illustrated below: *catch basin inserts*, which use nets, screens, fabric, or similar filtration media to separate sediment and gross solids from stormwater, and *hydrodynamic separators*, which use screens, baffles, or vertical flow to separate the two.

Catch Basin Insert

Hydrodynamic Separator

Connector Pipe Screen

Anticipated Construction Activities: Similar to flow-through devices, the construction activities necessary to construct source control BMPs can vary based on the location, size, and configuration of the BMP, but are generally less than other types of distributed BMPs. Source control measures such as catch basin inserts and connector pipe screens are typically installed as retrofits to the existing MS4 within catch basins and curb inlets, and generally do not result in an increased ground disturbance footprint. Hydrodynamic separators may require expansion of existing catch basins or installation of new catch basins or vaults to intercept and direct storm flows to these treatment units and back into the MS4. This may then require limited subsurface excavation and off-hauling to create the below-grade space for the treatment device. The extent and volume of excavation is much less than LID, retention and Green Street projects, and is usually limited to less than one acre.

Specific examples of distributed BMPs that are in various stages of planning and implementation and part of a possible EWMP are presented in **Table 2-3**. The locations of these examples of planned distributed BMPs are shown in **Figure 2-2**. Table 2-3 presents the locations, project description, and key elements of the distributed BMPs to further illustrate these types of structural BMPs that may be part of an EWMP. Additional information and figures on the location and distribution of potential and priority BMPs, where data is available, are presented in Section 2.5, *EWMP Watershed Characteristics and BMP Implementation Strategies*.

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EXAMPLES OF PLANNED OR INSTALLED DISTRIBUTED BMP PROJECTS

Photo	Status of Project	Project Description	Project: Treatment	Project: Recharge/ Infiltration	Project: Storage	Project: Habitat Restoration	Project: Water conservation/ Reuse
DL Implementation 	Installation of catch basin covers began the summer of 2013.	This project primarily proposes the installation of catch basin (CB) opening screen covers and inserts in those structures found in the Santa Monica Bay, Machado Lake, and Dominguez Channel watersheds of the City of Los Angeles. The CB opening screen covers are coarse screens that are installed in the CB openings and prevent trash from entering the storm drain system. Each CB opening screen cover has a self-opening device activated by a predetermined street gutter flow to disengage its locking mechanism. The CB inserts are perforated screens that are installed inside the CB in front of the outlet pipe of the catch basin.	●				
gation Control System 	Unknown	This project calls for the installation of a smart irrigation control system using evapotranspiration technology. This system would be put into place at all City of Calabasas-owned facilities, street medians, and parkways. This project will reduce irrigation run off and prevents pollutants from reaching the receiving waters. Replacement of irrigation controllers is projected to provide regional benefits by reducing urban runoff that is associated with nutrient loaded recycled water used for irrigation and will reduce discharges of other pollutants to the MS4 system carried by overwatering of landscaped areas. The City uses 66,431 gallons of water on annual basis for landscape irrigation. It's anticipated that with the new system, the City will save between 13,300 to 16,600 gallons of water. It will translate to approximately 5,000 to 7,000 gallon of reduction in run-off.					●

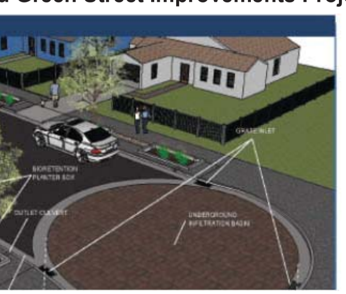
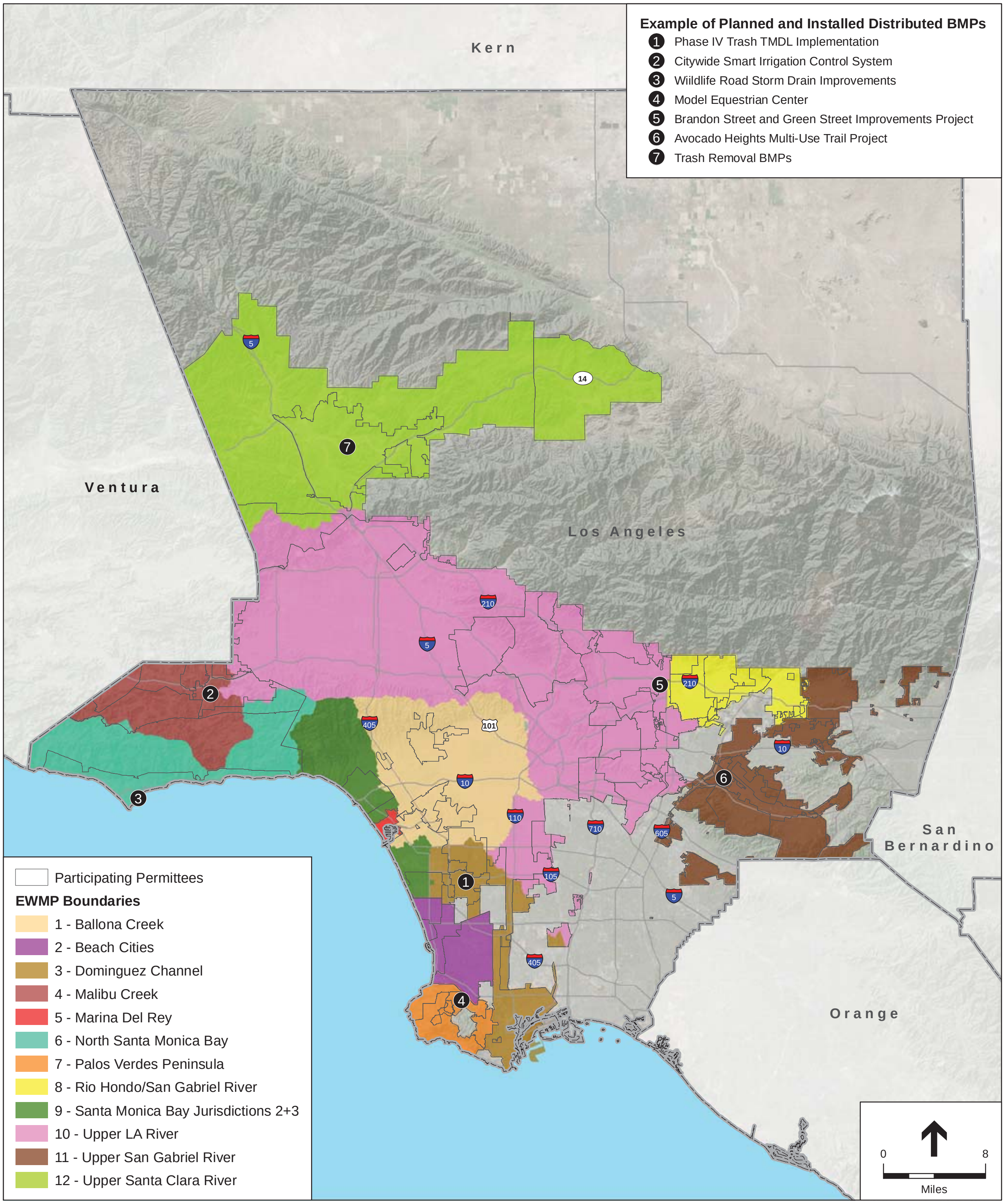
Photo	Status of Project	Project Description	Project				
			Treatment	Recharge/ Infiltration	Storage	Habitat Restoration	Water conservation/ Reuse
m Drain Improvements 	Construction work on the Wildlife Road Storm Drain Improvements project was scheduled to begin March 2014 and continue through August 2014.	This project is located within a developed residential neighborhood. Two existing storm drain inlets, SD-1 and SD-2 are located on Whitesands Place and Wildlife Road in the City of Malibu. The Project consists of the installation of bioretention swales and biofilters within the City Right of Way, treating stormwater and urban runoff prior to the entering of flows into City-owned catch basins. Due to the limited about of space within the City's Right of Way, the project will include a combination of bioretention swales and biofilters.	●				
Center RB-AR 8268 	Completion anticipated June 2015	The Model Equestrian Center project will use the existing municipal Peter Weber Equestrian Center, a 7.5-acre facility that houses 116 horses, to create a public demonstration site for environmentally sustainable horse-keeping practices while improving the quality of stormwater and other runoff. This project will be divided into two parts. Part A of this project will involve retrofits of the existing equestrian facilities to improve drainage and stormwater runoff quality. These retrofits will include downspout redirection, drainage correction from existing horse stalls, bioswale or similar water quality treatment system installation, cover for daily manure storage, and drainage improvements to existing arenas and the overall site. Water quality will be improved by providing a permanent cover for daily manure storage, directing runoff away from areas where horses are kept, and bioswales will provide stormwater treatment by filtering large particles in the swale and removing smaller particles and associated contaminants through the bioretention portion provided by the vegetation. Part B of this project involves new construction. A new 15,000-square-foot barn and associated improvements will be constructed on the 2.5-acre northwest portion of the site. Key water quality features will include a covered horse wash area with wash water captured and reused for subsurface irrigation to maintain appearance of habitat buffers and treatment bioswales, manure management to control vectors, odors and runoff, and a cistern or rain barrels to collect rainfall from the barn roof for use in irrigation. In addition, the facility will use low-impact development (LID) and green building techniques, integrated pest management through structural design, and equine-safe native and drought-proof plant buffers. Interpretive signage will demonstrate and educate the equestrian community on how the BMPs protect and improve stormwater quality. This signage will be installed to educate horse boarders and visitors on the specific BMPs integrated into the facilities and on the site.	●				●
d Green Street Improvements Project 	Construction Spring 2014 to Fall 2014	The project will reconstruct approximately 0.16 miles of roadway on Green Street and 0.39 miles on Brandon Street. The design includes several green street elements including permeable pavers, bio-retention planters, sediment filtration catch basins, and an underground infiltration basin. Much of the runoff from the streets and private properties that would have otherwise drained to the Rio Hondo will be directed to the infiltration area.	●	●			●

Photo	Status of Project	Project Description	Treatment	Recharge/ Infiltration	Storage	Habitat Restoration	Water conservation/ Reuse
s Multiuse Trail Project 	Constructed	The project will construct multiuse trails to provide a safer route to equestrian, bicycle, and pedestrian users away from existing traffic hazards. The majority of the existing roadway width will be reduced from 40 to 36 feet, thereby reducing the amount of impermeable surfaces as well as runoff. Approximately 2,300 feet of the multiuse trail on 5th Avenue will be constructed with decomposed granite to provide 14,000 cubic feet of infiltration capacity. In addition, an infiltration swale will be constructed at the end of 5th Avenue immediately adjacent to San Jose Creek to provide 3,200 cubic feet of capacity. Combined together, up to 115 acre-feet of groundwater will be recharged annually.	●	●	●		
MPs 	Planned Implementation Date July 2015	Trash removal BMPs for 79 storm drains in a commercial/industrial park (County of LA) and 110 storm drain inlets in a commercial/industrial park (City of Santa Clarita).	●				



SOURCE: ESRI.

LA County PEIR EWMP . 140474

Figure 2-2
Location of Example Planned and Installed Distributed BMP Projects

2.4.4 Centralized Structural BMPs

Centralized structural BMPs use similar elements to the LID, infiltration and biofiltration type BMP used in distributed structural BMPs, but collect, store, treat and filter stormwater from multiple parcels and much larger drainage areas. Centralized BMPs also include diversion and treatment type BMPs that use similar technologies for these types of BMPs under distributed BMPs, but can be implemented on a much larger scale collecting, diverting and treating urban runoff (dry-weather flows) or limited stormwater flows from multiple parcels and large drainage areas. Therefore, centralized structural BMPs require greater footprints for construction and implementation, but provide a greater potential for water quality improvement through the filtering, treatment and/or infiltration of greater volume and rates of stormwater and urban runoff. Centralized BMPs that include storage and infiltration or storage and use have similar functions and construction methods to regional BMPs using the same stormwater management elements. However, regional BMPs have the distinct requirement per the Permit to retain on-site the 85th percentile 24-hour storm event for the drainage area served by the BMP (i.e., in the Los Angeles area, the 85th percentile storm is around 0.75 inch of rain in a 24-hour period). Finally, centralized BMPs include two unique BMP types, treatment wetlands and stream/creek restoration projects. Unlike the other structural BMP types described, these BMPs use natural systems to filter and clean the water. Treatment wetlands are typically off-line treatment systems that are not in the receiving waters, but may have habitat benefits through the establishment of more native plants and ecosystems. Creek, river, and estuary restoration projects provide a unique opportunity to restore natural cleansing processes, reestablish habitats and address impacts from hydromodification and urban runoff. These projects are the only BMPs that are implemented within the receiving water. Types of centralized structural BMPs and the definitions for these BMPs (which were taken from Los Angeles Department of Public Works' "Structural Fact Sheets") include the following:

- ***Infiltration BMPs.*** Infiltration facilities are designed to decrease runoff volume through groundwater recharge and improve water quality through filtration and sorption. Facilities can incorporate engineered media to improve percolation into native soils. Infiltration facilities can be *open-surface basins* or *subsurface galleries* (see the following photographs). Surface infiltration basins can be vegetated to encourage evapotranspiration and aesthetics; subsurface infiltration galleries are often used when limited land is available for BMP implementation. An example of a centralized infiltration BMP is the infiltration gallery that was installed as part of the Elmer Avenue Neighborhood Retrofit Project in Los Angeles. The project includes two infiltration galleries capable of infiltrating over 1,300 gallons a minute from a 40-acre drainage area (CWH 2014). Catch basins divert stormwater to the infiltration galleries, while bioswales capture and treat additional urban runoff.

Surface Infiltration Basin

Subsurface Infiltration Gallery

Anticipated Construction Activities: Centralized infiltration facilities are generally larger than distributed BMPs and can vary from 2 to 10 acres in size, depending on the number of parcels (drainage area). Subsurface excavation is typically required to replace native soils with highly porous infiltration media, vaults or other subsurface storage structures that will retain runoff and allow it to infiltrate into the subsurface. Larger underground storage and infiltration structures will require greater depths and volume of excavation. Depth of excavation of infiltration BMPs will depend on the storage requirements and depth to groundwater. Minimum separation distances of 10 feet to groundwater are typical. Excavation for these centralized infiltration project is generally 2 to 6 feet for surface infiltration and 4 to 10 feet for vault or infiltration gallery systems. Excavated soils must also be off-hauled unless the site is of an adequate size to allow balancing of cut and fill on-site. Subsurface infiltration galleries require that subsurface soils be excavated and replaced with highly permeable structures that rapidly infiltrate stormwater. These structures are typically transported to the site on flatbed trucks and then lowered into the ground using specialized cranes and related equipment. Subsurface infiltration galleries also require pretreatment facilities to remove sediment and debris prior to entering the galleries or vaults to reduce the potential for clogging. These systems increase the project footprint and required excavation by 25 to 50 percent of the vault footprint.

- ***Capture and Use BMPs.*** Capture and use BMPs capture stormwater runoff and store it for later use, typically as irrigation water. An example of a centralized capture and use BMP is the cistern at the Tuxford Green Project in Los Angeles. The cistern can hold up to 45,000 gallons of treated stormwater, which is then used to irrigate native landscaping.

  Anticipated Construction Activities: The construction activities for these BMPs are similar to those summarized for the infiltration galleries above with the exception that these galleries and vaults are designed to retain and reuse (not infiltrate) the stormwater. In addition to the anticipated ground surface disturbance and excavation for the installation of the underground storage units, these systems also require a pre- and post-treatment system that generally consist of additional and more sophisticated treatment steps and thereby a larger footprint. In addition, these systems need to be connected to a distribution system for the treated water that can be used for irrigation or for grey water or groundwater recharge systems. This additional infrastructure will require additional construction grading, excavation, and transportation of materials and equipment on--- and off-site.

- ***Bioinfiltration BMPs.*** Centralized bioinfiltration BMPs are a larger-scale version of their distributed counterpart, and typically incorporate elements of both infiltration (using native soils or underdrains) and treatment (using vegetated swales or filter strips).

  Anticipated Construction Activities: Bioretention and biofiltration BMPs typically require the permanent removal of aboveground infrastructure and/or surface materials such as asphalt and concrete for retrofit type projects and excavation and grading for projects on soil covered sites. Ground disturbance for bioinfiltration centralized BMPs is typically 2 to 5 acres in extent, but may extend in some limited applications up to 10 acres where space is available. The extent of land disturbance depends on the type of BMP and may be more linear for bioswales and filter strips, compared to larger continuous areas for bioretention cells that store and then filter or infiltrate stormwater. In areas proposed for biofiltration without suitably permeable soils, native soils will either have to be excavated, amended, and put back in place, or replaced entirely with biofiltration media (e.g., coarse gravels). The replacement of local soils would likely require that those soils then be hauled off-site. Systems with underdrains may require more extensive excavation and construction so that the underdrain can be connected to the MS4. The depth of excavation for these distributed systems will vary from several feet to up to 10 feet depending on the thickness and number of filter and storage layers. Generally, excavation is limited to 4 to 6 feet below existing grade for these systems.

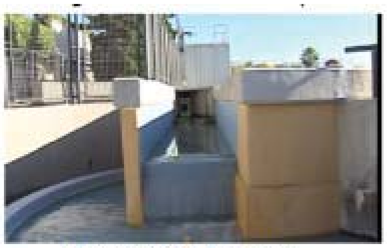
- ***Detention BMPs.*** Centralized detention facilities are designed to detain runoff and improve water quality through pollutant settling. Facilities encourage settling by decreasing runoff flow rates and allowing ponding to occur. Detention facilities can be open-surface practices or subsurface galleries and can be dry during non-rainy seasons or wet year-round. *Surface detention basins* are designed to detain stormwater runoff for a specified amount of time so that particle-bound pollutants can settle. *Subsurface detention galleries* are underground storage systems designed to detain water in areas where limited land is available for BMP implementation.

Surface Detention Basin

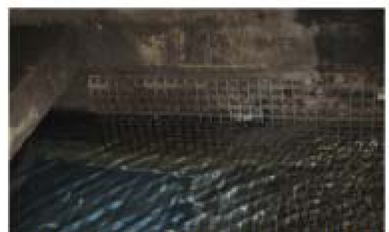
Subsurface Detention Gallery

  Anticipated Construction Activities: Centralized detention facilities can range from between an acre to 5 acres in size, and up to 10 acres. Surface detention basins require the removal and off-hauling of surface armoring and infrastructure, as well as the excavation of adequate soil to create the target storage volume. Excavated soils may either be balanced on-site or hauled off-site; the latter is more likely in most cases due to the larger size of centralized basins. Surface detention basins may in some cases be utilized as recreational facilities during the dry season, allowing for the installation of features such as athletic fields and benches. Subsurface detention galleries require the excavation of native soils and their replacement with engineered structures that detain water underground. The construction and installation of these structures can be complex and require the use of specialized cranes and related construction equipment.

- ***Treatment Facilities and Low-Flow Diversions.*** Other centralized water quality technology falls into the *low-flow diversion* (LFD) and *treatment facilities* subcategories. LFDs reduce stormwater pollution by diverting a design flow rate to a sanitary sewer for treatment. Treatment facilities convey stormwater through a physical, chemical, or radiological treatment system before returning it to the original channel, or diverting it for beneficial reuse. Below are photographs of an example LFD. LFDs may include on-site treatment of the diversion low flows prior to discharge back into the storm drain, or diversion to a local wastewater treatment plant. The LFD that has been installed at Marie Canyon in Malibu, shown in the photographs below, has an on-site treatment facility to reduce indicator bacteria concentrations prior to discharge back into the storm drain. This LFD is designed to filter and treat as much as 100 gallons per minute of dry-weather flows (Los Angeles Department of Public Works, 2007).



Treatment Facility



Low-Flow Diversion Dam and Inlet in a Storm Drain

Marie Canyon Low-Flow Diversion – Flat Gate Diverting flow to treatment unit for bacteria

Anticipated Construction Activities: Low-flow diversions and treatment facilities usually have a relatively small footprint of less than 2 acres. Construction typically requires subsurface excavation and off-haul of excavated soils in order to create adequate room for the subsurface engineered structures. The installation of these BMPs can often be complex due to the need to retrofit existing stormwater infrastructure and, in the case of LFDs, connect to active wastewater treatment infrastructure.

- ***Constructed Wetlands.*** Constructed wetlands are engineered, shallow-marsh systems designed to control and treat stormwater runoff. Particle-bound pollutants are removed through settling, and other pollutants are removed through adsorption and biogeochemical transformation. Constructed wetlands must always maintain a baseflow into the system, which can come from an intersected groundwater or an associated LFD using dry-weather flows. There are two primary types of constructed treatment wetlands: *wetland basins*, which have shallow permanent pools and outlet structures that regulate dewatering, and *flow-through/linear wetlands*, which are typically constructed parallel to existing channels so water can be easily diverted in/out of the wetland. An example of a treatment wetland includes the South LA Wetland Park, which will use an approximately 4.5-acre constructed wetland to treat a portion of the runoff from a 525-acre tributary watershed.

Wetland Basin

Flow-Through/Linear Wetland

Anticipated Construction Activities: Due to their multi-benefit nature and their ability to provide significant habitat benefits (most wetlands within the Los Angeles Basin have been lost to development and urbanization), most constructed wetland projects are greater than 5 acres in size and may be up to 10 acres or larger. Typical constructed wetland projects require extensive grading of site soils, though excavated soils are often balanced on-site to provide material for levees, berms, ecotones, and other flood control/habitat features. Many constructed wetland projects require the construction/installation of water control structures such as screw gates and culverts to manage how water is directed into, out of, and through the wetland. Constructed wetlands are often actively planted to accelerate the establishment of mature wetland vegetation and resultant stormwater treatment.

- ***Creek/River/Floodplain/Estuary Restoration.*** This category includes multi-benefit projects that typically combine elements of habitat restoration for fish and wildlife as well as flood management and water quality improvement. Project components such as setback levees, floodplain bench excavation, levee breaches, and other actions can increase the flood storage capacity of a water body and thereby slow flow rates. An example of a multi-benefit creek restoration project is the Tujunga Wash Greenway and Stream Restoration Project in Los Angeles. This project restored 1.2 miles of natural-bottomed creek habitats, which are capable of infiltrating up to 118 million gallons of stormwater form the wash into the local groundwater aquifer. Plants in the wash also aid the biogeochemical removal of pollutants such as nitrogen.

Before and After – Tujunga Wash Greenway Restoration Project

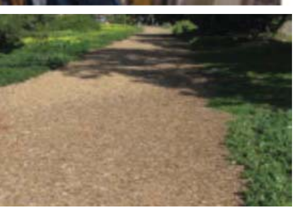
Anticipated Construction Activities: These projects may require ground disturbance and construction to convert lined flood channels into more naturalized creek/river systems. Projects are typically greater than 5 acres in size, and many have footprints of over 10 acres. This category of BMP may require removal and off-hauling of concrete and asphalt, grading/excavation/off-hauling of site soils (particularly if contaminants are present, since they could pose a threat to the health of fish and wildlife), the construction of elements such as setback levees and water control structures, and active revegetation with native plants. Projects that aim to enhance habitats within more naturalized settings (e.g., floodplain expansion along an unarmored/channelized creek) would have to account for the potential for construction to disturb existing natural communities, and incorporate appropriate impact avoidance/minimization/mitigation measures, though most projects are designed to be self-mitigating.

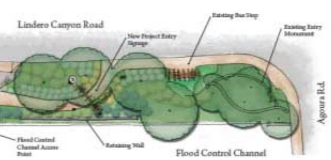
- ***Multi-benefit flood management projects.*** This category includes a broad range of redevelopment, transit, transportation improvement, and related projects that are designed to result in direct or indirect benefits to flood management. For example, greenway projects such as the Tujunga Wash Greenway project that incorporates infiltration and/or detention elements can improve flood management by reducing stormwater flow rates and/or volumes.

  Construction Impacts. Multi-benefit flood management projects are typically expansive projects that range from a few to tens of acres in size. Construction requirements can vary extensively based on the nature of the project. Because of their scale, multi-benefit flood management projects usually require extensive excavation and grading of site soils, off-hauling of soils and related materials, utility relocation, infrastructure construction, and related activities. It is not uncommon for these types of projects to be constructed over multiple construction seasons.

Specific examples of centralized BMPs that are in various stages of planning and implementation and are part of the EWMP are presented in **Table 2-4**. The locations of these examples of planned and implemented centralized BMP are shown in **Figure 2-3**. Table 2-4 presents the location, project description and key elements of the centralized BMPs to further illustrate these types of structural BMPs that are part of the EWMP. Additional information and figures on the location and distribution of potential and priority BMPs, where data is available, are presented in Section 2.5, *EWMP Watershed Characteristics and BMP Implementation Strategies*.

EXAMPLES OF PLANNED CENTRALIZED BMP PROJECTS

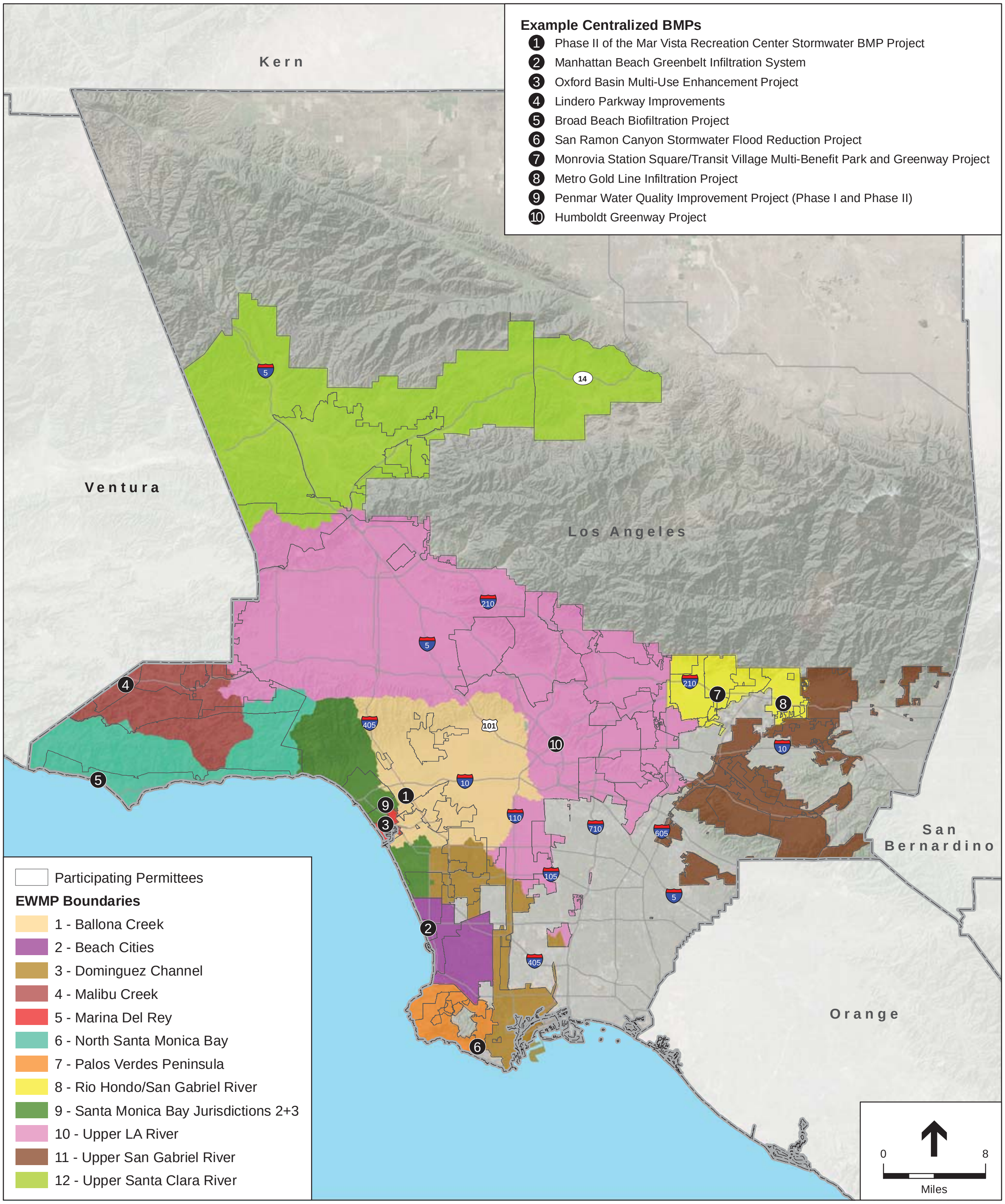
oto	Status of Project	Project Description	Project: Treatment	Recharge/ Infiltration	Storage	Habitat Restoration	Water conservation/ Reuse
sta Recreation Center Stormwater BMP 	Phase II is expected to be completed by December 2014.	The Phase II project components are expected remove 6,000 gallons per day (5.5 acre-ft/year) of stormwater and provide additional storage space for the underground cisterns that were constructed during Phase I. Phase I facilities include : 1) storm drain diversion structure; 2) trash maintenance hole; 3) stormwater lift station; 4) hydrodynamic separator; 5) 270,000-gallon underground detention tank; 6) disinfection facility; 7) overflow/return piping; and 8) pump and control systems. Phase I was completed and is operational at limited capacity. Phase II includes the following stormwater beneficial reuse components: • Stormwater drip irrigation system for 43 shrubs, 86 bushes, and 68 trees • Installation of an irrigation pump station and associated components • Creation of 3,800 square feet of plant community • Installation of back-flow prevention system • Construction of flow containment curbs The objective of Phase II is to include an irrigation system to beneficially use the treated water at the park, to increase the treatment capacity of the facility and associated pollutant load reductions and to conduct a facility optimization project to fine-tune the grey and green infrastructure components of the project and optimize overall performance of the facility.	●		●		●
enbelt Infiltration System  	The project construction was completed February 19, 2013.	The Manhattan Beach Greenbelt Infiltration project was designed to utilize the linear greenbelt parkland which runs through the City of Manhattan Beach to intercept and infiltrate dry-weather and wet-weather low flows from existing storm drains that cross or abut the parkway. Low flows from a 50-acre drainage area are screened to remove trash and gross solids before flowing by gravity to a subsurface infiltration system which also provides limited storage of storm flows for subsequent percolation into the sandy soils below the greenbelt. The Greenbelt Low Flow Infiltration system was designed to effectively divert dry-weather and wet-weather low flows from the storm drain system year round.	●	●	●		

...oto	Status of Project	Project Description	Treatment	Recharge/ Infiltration	Storage	Habitat Restoration	Water conservation/
...se Enhancement Project 	LACFCD anticipates the project to commence construction by the end of this year or early 2015.	The project involves removing approximately 3,000 cubic yards of accumulated contaminated sediment from the bottom of Oxford Basin, constructing a berm in the center of Oxford Basin to enhance water quality through circulation, planting new native or drought-resistant plants, and installing new bioswales. The proposed berm that will be installed to improve circulation, in conjunction with the reprogramming of the operating cycles of the existing tide gates, will maximize the circulation of the water around the berm during the daily tidal cycles. During a rising tide, the water will enter via one of the tide gates on one side of the new berm, circulate around Oxford Basin, and then exit via a second tide gate during a falling tide. This innovative approach to improving water quality through circulation will increase dissolved-oxygen levels in the water within Oxford Basin, which is expected to result in less algae growth, lower bacteria levels, and reduction of unpleasant odors. The proposed project will also implement Low-Impact Development features to reduce the impacts of the existing roads adjacent to Oxford Basin. The project's Low-Impact Development features include a bioswale along the bike path at Washington Boulevard to collect surface runoff and two bioretention systems along Admiralty Way to collect local runoff from the roadway. The project will also enhance recreational opportunities for visitors through the installation of observation areas and decks, interpretive signage, a lighted walking/jogging path, and fencing that will provide enhanced viewing of the improved habitat.	●			●	
...rovements  	Construction of the proposed improvements is expected to commence either Spring 2015 or early Summer 2015.	The project is part of an overall City of Westlake Village streetscape improvement project that creates infiltration and urban pollutant mitigation opportunities along all arterial medians and parkways. This parkway project is 30 foot wide by over a mile long. Half of this parkway was originally a flood control maintenance road and the other half a landscaped area. This project will have a Riparian Zone theme. With the new project, the combined width of the old maintenance road and landscaped area, this area will become a new walking path where there is currently no sidewalk. This project, when completed, will provide a long and meandering walking path with conversation seating areas. This project will also include drainage facilities that will include specific BMP's. The newly renovated area will be drained via bio-swales throughout the entire length of the project. These swales will meander thru the entire length with the main goal of percolation and evaporation of all nuisance flows throughout the year. Stormwater runoff would then be treated in the bio-swale followed by discharge into Westlake Lake. This project will also have educational signage on a riparian zone and the stormwater cleanup objectives of this project.	●			●	

RB-AR 8280

oto	Status of Project	Project Description	Project				
			Treatment	Recharge/ Infiltration	Storage	Habitat Restoration	Water conservation/ Reuse
tion Project 	January 2014 (Commencement of Construction) June 2014 (Completion)	The Project consists of the installation of different types of biofilters at nine catch basins within the City of Malibu Right of Way, treating stormwater and urban runoff prior to the entering of flows into City-owned catch basins, which discharge to privately owned storm drain systems. The Project includes a combination of biofilters, and flow control, with potential to incorporate harvest and use systems for Malibu drains. Three types of biofilters are contemplated; small footprint biofilters, biofilters with volume control, and harvest and use systems.	●				●
Stormwater Flood Reduction Project 	Anticipated to be completed June 2015.	The San Ramon Canyon provides a natural drainage course for areas near Palos Verdes Drive East. Because of the geographical characteristics of the San Ramon Canyon, landslide induced rock and soil deposits in the canyon bottom are transported during heavy rainfall events. This creates flooding of the roadway, overwhelming existing drainage facilities, endangering nearby roadway integrity and threatening downstream residents. The San Ramon Canyon Stormwater Flood Reduction Project, involves significant drainage restoration work to stabilize Palos Verdes Drive East and Palos Verdes Drive South.					
are/Transit Village Multi-Benefit Park and 	Planned Implementation Date Spring 2015.	This project will include design and development of a 2.5-acre multi-benefit green space along the future Metro Gold Line Foothill Extension. The project includes a multi-use trail, native trees and shrubs, runoff storage and infiltration systems prior to discharging into Sawpit Wash and Peck Road Water Conservation Park to the south.	●	●	●		

...oto	Status of Project	Project Description	Treatment	Recharge/ Infiltration	Storage	Habitat Restoration	Water conservation/ Reuse
...ration Project	Planned Implementation Date Spring 2016.	The City of Azusa in coordination with the Foothill Construction Authority for the Gold Line Project has constructed infiltration systems at some of the major crossings in town. Infiltration will occur at the catch basins which are soft bottom. Anticipated tributary areas are approximately 17 acres and will include the rail corridor. The 10 year storm event is to be infiltrated.		●	●		
...y Improvement Project (Phase I and Phase 	Phase II – expected completion by Spring 2015.	Phase II of the Penmar project is expected to supply approximately 34.7 million gallons of treated water per year for irrigation of Penmar Golf Course and the Penmar Park & Recreation Center in the City of Los Angeles and the Marine Park in the City of Santa Monica. Replacing this volume of potable water with treated storm water produced in Phase II provides 34.7 million gallons per year increase to annual runoff diversion capacity of Phase I, resulting in a significant pollutant load reduction into the Santa Monica Bay. Phase II entails the incorporation of the reuse component of the project offering additional water quality benefits as well as multi-regional benefits. By installing the reuse option, the overall project capacity will increase, thereby also increasing the volume of urban runoff that can be retained by the project for use as an alternative source of water to potable water for landscape irrigation.	●				●
...Project 	Under Construction	This project will intercept an existing storm drain system and construct a stormwater greenway with a “stream” eco-system through the corridor on Humboldt Street with a pedestrian path connecting Avenue 18 and Avenue 19. The project is adjacent to the Los Angeles River, just north of Civic Center area of the City of Los Angeles. The bioremediation elements include a pollution reduction/infiltration system and an approximately 175-foot-long graded swale/open-channel, which is surrounded by a vegetated basin. Work also includes a) an overflow structure; b) a pedestrian bridge; c) an irrigation system; d) landscaping and tree planting; and e) solar lighting.	●	●			●



SOURCE: ESRI.

LA County PEIR EWMP . 140474

Figure 2-3
Location of Example Planned and Installed Centralized BMP Projects

2.4.5 Regional Structural BMPs

Regional structural BMPs are those that can capture the volume of water from an 85th percentile, 24-hr storm in a contributing watershed, known as the *design volume (*Generally, the 85th percentile storm is approximately 0.75 inches over 24 hours). The two types of regional BMPs are retention/infiltration and capture and use, though many regional projects would incorporate more than one BMP type. The definitions of these BMPs are the same as for centralized BMPs with the exception that they can capture the design volume. Like centralized BMPs, regional BMPs can be implemented in a broad range of land use types, from high-density urban to open space, and can have multiple benefits (e.g. habitat, recreation, aesthetics). An additional example of a multi-benefit/multi-type regional BMP is the suite of improvements being made to Sun Valley Park in Los Angeles. The project's BMPs improve stormwater quality and alleviate local flooding by collecting runoff from a 21-acre drainage area, routing it through flow-through treatment units (hydrodynamic separators and settling units) to remove suspended solids and heavy metals, and directing it into two underground infiltration galleries buried beneath soccer and baseball fields. Bioswales at the site treat local runoff and are vegetated with native plants.

Sun Valley Park Regional Infiltration Project – (from upper left to lower right) Storm water Pre-Treatment Devices to Remove Trash and Sediment / Bioswale and Bioretention Area / Construction of Underground Storage and Infiltration Vaults

Anticipated Construction Activities: The construction activities for regional BMPs are generally similar to those of their centralized counterparts, with the exception of regional retention BMPs, which must have adequate storage capacity to hold runoff from the design storm. The need for this capacity will generally result in more extensive excavation and off-hauling of site soils. Larger, multi-benefit regional BMPs are similar to centralized multi-benefit regional flood management projects (above) that their scale and complexity often requires an intensive construction effort executed over multiple seasons.

Specific examples of regional BMPs that are in various stages of planning that are part of the EWMP are presented in **Table 2-5.** The locations of these examples of regional BMPs are shown in **Figure 2-5**. Table 2-5 presents the location, project description, and key elements of the regional BMPs to further illustrate these types of structural BMPs that are concepts being developed through the EWMP process. Additional information and figures on the location and distribution of potential and priority BMPs, where data is available, are presented in Section 2.5, *EWMP Watershed Characteristics and BMP Implementation Strategies*.

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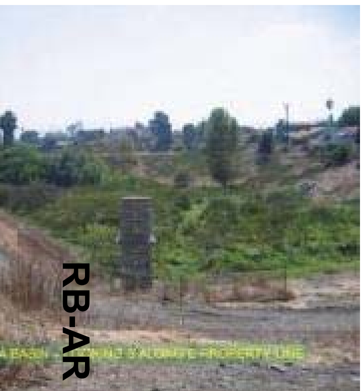
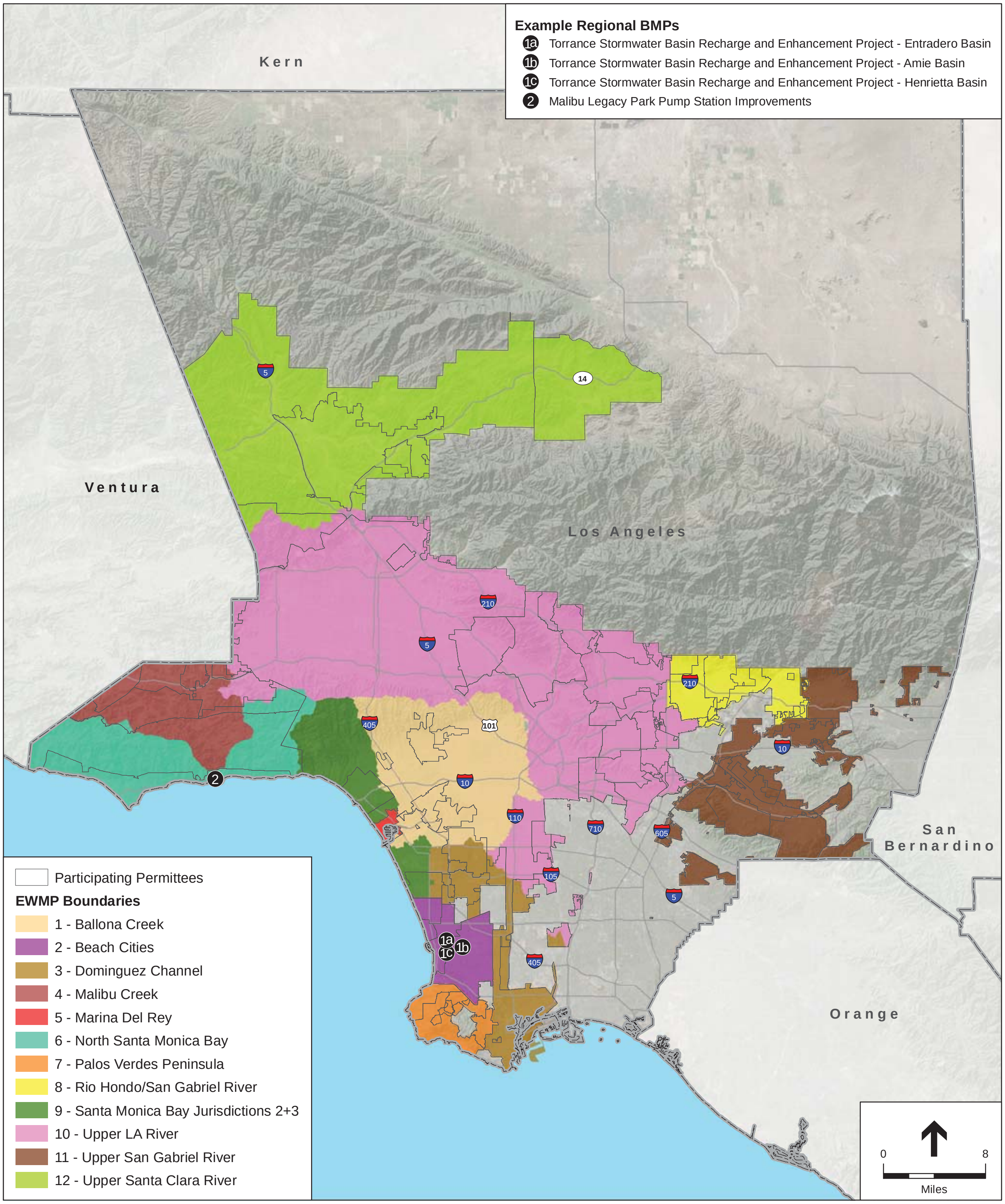
EXAMPLE OF PLANNED REGIONAL PROJECTS

Photo	Status of Project	Project Description	Project F				
			Treatment	Recharge/ Infiltration	Storage	Habitat Restoration	Water conservation/ Reuse
water Basin Recharge and Enhancement 	Construction was scheduled for Spring 2014.	The Torrance Stormwater Basin Recharge and Enhancement Project will retrofit three existing detention basins serving 1,453 acres of drainage area in total within the City of Torrance. The project will use a number of BMPs to conserve water, recharge the aquifer, create critical habitat, and improve stormwater quality that discharges into the Santa Monica Bay, and eliminate non-stormwater discharges to the Dominguez Channel. This Stormwater Basin Recharge and Enhancement project proposes significant advances over the current system by providing wetland treatment of stormwater and non-stormwater runoff at the detention basins, recharging vitally needed groundwater supplies, and sustaining wetland habitat during the dry season in the basins. The Project will eliminate dry-weather runoff and associated load for multiple pollutants. The Project will treat all stormwater from 1,453 acres for multiple pollutants, including priority pollutants such as trash and sediments by a combination of wetland treatment and infiltration. The project will capture and recharge an estimated 20 acre feet per year of runoff that would have otherwise been discharged to the Santa Monica Bay. The project will enable the elimination of all discharges from the drainage area to Dominguez Channel, will eliminate dry-weather discharges to Santa Monica Bay and will reduce the wet-weather discharge to the Santa Monica Bay from this system.	●	●	●	●	●
rk Pump Station Improvements 	Anticipated to be completed June 2015.	Malibu Legacy Park is a regional project that provides water quality and water resources benefits. The project exceeds requirements to put over 300 acres of Malibu (including City Hall) into full compliance with Malibu Creek Bacteria TMDL requirements, providing a capture volume consistent with Los Angeles Standard Urban Stormwater Mitigation Plan requirements (assuming no upstream LID or source control measures). Captured water is managed, disinfected, and used to offset potable water uses for park irrigation.	●	●	●		●

RB-AR 8287



SOURCE: ESRI.

LA County PEIR EWMP . 140474

Figure 2-4
Location of Example Planned and Installed Regional BMP Projects

2.5 EWMP Watershed Characteristics and BMP Implementation Strategies

Summarized below are the general characteristics of the watersheds within the EWMP Groups and the overall strategies for BMP implementation that reflect these characteristics. The twelve EWMPs are consolidated to six watershed areas grouped by similar watershed characteristics. This summary provides additional detail on the distribution and location of potential and priority BMPs, where data is available, based on the overall BMP implementation strategy and maps of BMP distribution. These maps are presented for each EWMP and show the location and distribution of planned and priority regional/centralized BMPs for which data are available at the time of publication of this PEIR. The priority BMPs are a subset of the potential BMPs that have undergone a site review and project evaluation that has identified these BMPs as a priority. These priority projects are shown based upon available data at the time of publication of this PEIR. **Appendix G** provides the location and general description of the priority BMPs shown on the figures referenced in this discussion. Distributed BMPs are planned to be implemented throughout the urbanized areas of each EWMP.

1. **South Santa Monica Bay EWMP Watersheds** (Marina del Rey, Ballona Creek, Beach Cites, South Santa Monica Bay Jurisdictional Group 2 and 3, and Peninsula Cities EWMP groups) – These watershed groups are dominated by urbanized beach communities with high density residential and commercial land uses throughout the watershed. Key BMP strategies in these watersheds are to address dry and wet-weather flows that may impact beach water quality through bacteria loading. Other water quality priorities include trash, marine debris, metals, and toxics. The BMP strategy includes LFDs to comply with dry-weather metals and bacteria Total Maximum Daily Loads (TMDLs). Although large regional and centralized retention and infiltration BMPs will be part of the wet-weather pollutant load reduction strategy, the predominate structural BMP will be smaller distributed BMPs such as bioinfiltration, media filtration, and flow-through BMPs located in street right-of-ways, parking lots, landscaped areas, and as part of green streets and buildings.

   Because of the high ground water near the shore, capture and reuse regional projects or treatment BMP opportunities will be preferred. The receiving waters for the South Santa Monica Bay include the Santa Monica Bay, the Ballona Creek, and the Marina del Rey Harbor.

   Marina del Rey EWMP – Figure 2-5 provides the location and distribution of potential regional/centralized BMPs for the Marina del Rey EWMP. Distributed BMPs will be located throughout the urbanized areas of the EWMP. Because of the tidal influence of the marina to most of the watershed, regional projects will be located near the upstream end of the watershed where ground water depths are favorable. The tidally influenced areas will consist of mostly treatment distributed BMPs, including bioinfiltration or tree wells.

Ballona Creek EWMP – Figure 2-6 provides the locations and distribution of potential regional/centralized BMPs for the Ballona Creek EWMP. Regional infiltration BMPs will be well distributed throughout the watershed and will be incorporated with distributed BMPs consisting mostly of distributed BMPs such as green streets. LFDs may also be pursued to comply with dry-weather TMDL requirements.

Beach Cities EWMP – Figure 2-7 provides the location and distribution of potential regional/centralized BMPs for the Beach Cities EWMP. Distributed BMPs will be located throughout the urbanized areas of the EWMP. The Beach Cities will focus their efforts on regional projects near the outlet on the Beach similar to the Hermosa Beach Infiltration Trench or the Torrance infiltration basins. Where regional projects are infeasible, distributed projects will be implemented such as green streets.

Santa Monica Bay J2/3 – Figure 2-8 provides the location and distribution of potential regional/centralized BMPs for the Santa Monica Bay J2/3 EWMP. Many efforts have already been completed for the Santa Monica Bay J2/J3 Watershed including LFDs and reuse facilities. The group will investigate the possibility of more regional projects that are able to capture and reuse the flow. Remaining areas will be subject to distributed BMPs.

Peninsula Cities – Figure 2-9 provides the location and distribution of potential regional/centralized BMPs for the Peninsula Cities EWMP. Distributed BMPs will be located throughout the urbanized areas of the EWMP. The Santa Monica Bay J7 side of the Peninsula Cities area is mostly comprised of anti-degradation sites so there will not be many control measures in this subwatershed.

2. **Northern Coastal EWMP Watersheds** (Malibu Creek and North Santa Monica Bay Coastal Watersheds EWMP groups) – These watersheds are characterized by lower density development along the coast and the larger creeks with greater open space and park areas inland. There is increased development in the upper areas of the Malibu Creek Watershed. Receiving waters in these watersheds are largely unlined and riparian corridors remain.

   Water quality priorities include bacteria, toxics, trash, and nutrients as well as benthic community impairments. **Figures 2-10 and 2-11** provide the location and distribution of potential regional/centralized BMPs for the Malibu Creek and North Santa Monica Bay Coastal Watersheds EWMP groups, respectively. Smaller distributed BMPs that include biofiltration, media filtration, green streets, and flow-through BMPs will be used in greater percentage than larger centralized BMPs and will be located in developed areas as retrofit BMPs.

3. **Upper San Gabriel Watershed –** This watershed is characterized by higher density development in the lower watershed area and lower density and open space in the upper watershed where the foothills to the San Gabriel Mountains begin. The priority pollutants in these watersheds include selenium in dry-weather flows, and metals in wet weather flows. This watershed is further differentiated by the importance of groundwater recharge basins that are supplied by a series of reservoirs further upstream in the mountains. The San Gabriel

River is unlined in the upper watershed and conveys controlled non-storm and storm flows to recharge basins and downstream sections of the river. **Figure 2-12** provides the location and distribution of potential regional/centralized BMPs for the Upper San Gabriel EWMP. The BMP strategy in this watershed focuses more on regional and centralized retention and infiltration BMPs that take advantage of the favorable groundwater recharge characteristics of this area. These BMPs are located near or adjacent to the river. Distributed smaller BMPs are located in urbanized areas as retrofits in existing developments and streets.

4. **Rio Hondo/San Gabriel and Upper Los Angeles River Watersheds** (Rio Hondo/San Gabriel and Upper Los Angeles EWMPs) – These watersheds traverses a large diverse area of the Los Angeles Basin with characteristics of Upper San Gabriel in the farthest upper reaches near the foothills, but most of this watershed is characterized by greater urbanization similar to Ballona Creek watershed. The greater urbanization also results in additional priority pollutants compared to Upper San Gabriel watershed, and include nutrients, trash, metals, bacteria and sediment impacted by metals and organic compounds (DDT, PCBs, PAHs).

   The Rio Hondo/San Gabriel EWMP is characterized by increasing urbanization south of the foothills and industrial and commercial development along the 210 corridor. **Figure 2-13** provides the location and distribution of potential regional/centralized BMPs for the Rio Hondo/San Gabriel EWMP. The strategy for the locations and types of regional/centralized BMPs is to use remaining available sites for retention and infiltration, which takes advantage of the favorable infiltration rates of this area, including existing groundwater recharge basins near the San Gabriel River. Distributed BMPs will be located in throughout the urbanized areas of the EWMP.

   The Los Angeles River is approximately 51 miles long, and five of six reaches lie within the Upper Los Angeles River EWMP. The natural hydrology of the Los Angeles River watershed has been altered by channelization and the construction of dams and flood control reservoirs. The Los Angeles River and many of its tributaries are lined with concrete for most or all of their length. Soft-bottomed segments of the Los Angeles River occur where groundwater upwelling prevents armoring of the river bottom. **Figure 2-14** provides the location and distribution of potential regional/centralized BMPs for the Upper Los Angeles River EWMP. Because of the greater extent and number of pollutant priorities, the BMP strategy in the Upper Los Angeles River watershed includes well over a hundred planned regional and centralized retention and infiltration BMPs that take advantage of the favorable groundwater recharge characteristics in defined areas of the watershed. Also planned are centralized treatment wetlands and bioinfiltration BMPs in parks and open spaces with favorable subsurface soils that promote higher infiltration rates. The BMP strategy also includes distributed smaller BMPs located throughout the urbanized areas of the watershed as retrofits in existing developments and streets. LFDs to comply with dry-weather bacteria TMDLs may also be included.

5. **Dominguez Channel Watershed** (Dominguez Channel EWMP, Beach Cities, Peninsula Cities) **–** This watershed is differentiated by a larger area of industrial land use, but also includes Beach Cities and Machado Lake. Because of the high density of development and industrial land uses, large regional and centralized infiltration type BMPs will be limited. **Figure 2-15** provides the location and distribution of potential regional/centralized BMPs for the Dominguez Channel EWMP. The structural BMP strategy will be more LFDs, both large (centralized) and small (distributed), located at MS4 outfalls near the channelized Dominguez Chanel. The other BMP strategy are smaller distributed BMPs that include the LID type BMP such as Green Streets and biofiltration BMPs throughout the Beach Cities. These distributed BMPs will be retrofit type BMPs that treat runoff from already developed properties and are located in street right-of-ways, parking lots, and limited open areas on public and private parcels. Distributed flow-through treatment BMPs will also be the other predominant BMP that will be retrofitted to the existing MS4 systems.

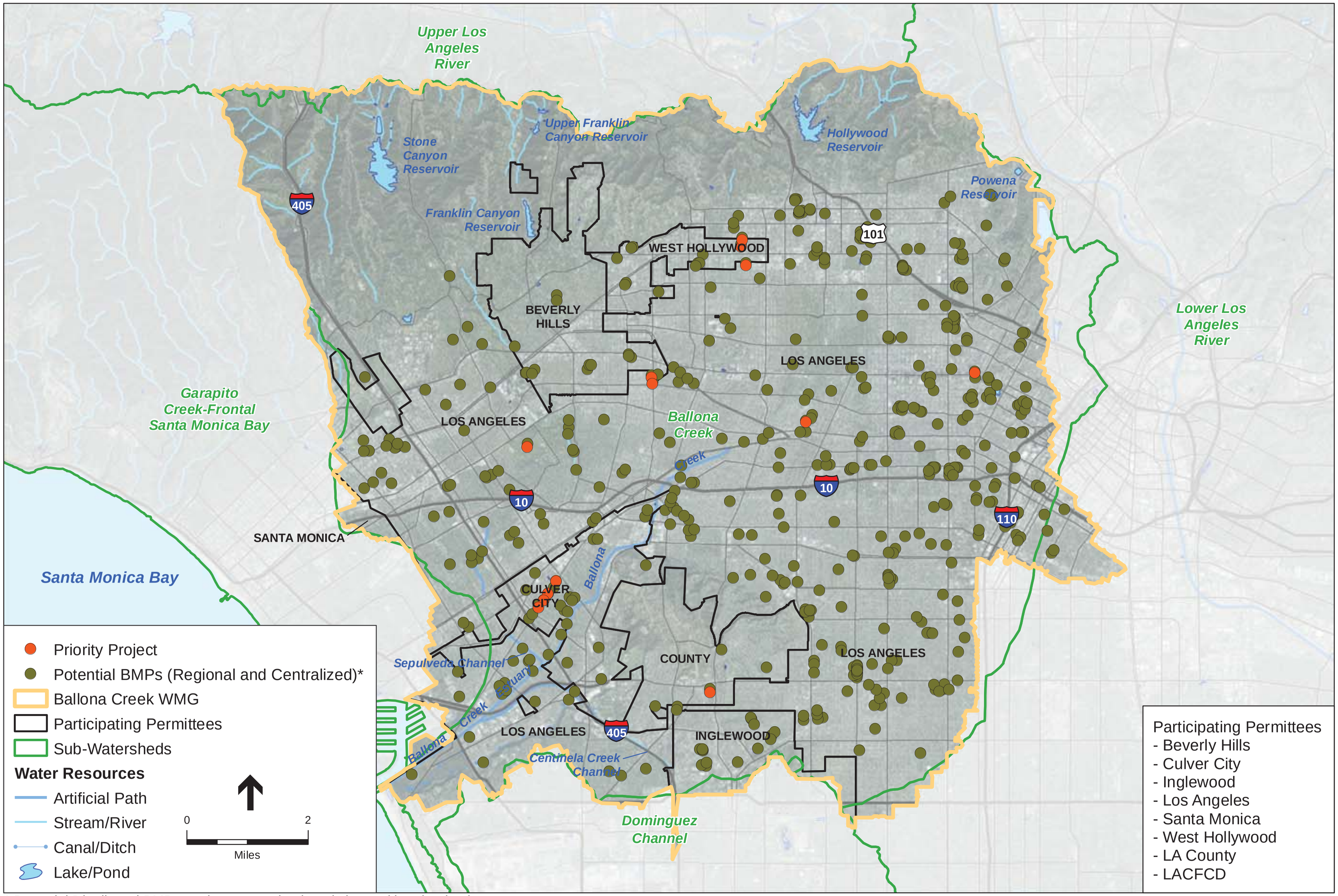
6. **Upper Santa Clara River Watershed –** The Santa Clara River Watershed is distinctive in that it is predominantly open space—nearly ninety percent of the watershed—is open space with approximately 88 percent being undeveloped. The watershed contains one of the last remaining natural rivers in Southern California. In years of significant rainfall, ephemeral springs and year-round flows exist in some tributaries and natural upstream areas. Flows in Santa Clara River reaches that pass through the EWMP area are predominantly stormwater runoff during wet-weather months and water reclamation plant effluent discharges in the drier months. Priority pollutants in the watershed are bacteria, nutrients, and chloride. In the source assessments for the Nutrients TMDL and the Chloride TMDL for the Santa Clara River, the storm drain system is not considered the primary source of these pollutants. Lake Elizabeth is also subject to a trash TMDL. The EWMP will evaluate potential MS4 nutrients and chlorides contributions and serve as the implementation plan for the Bacteria TMDL. BMP strategies for this watershed are likely to include a focus more on regional and centralized retention and infiltration BMPs and less on filtration type BMPs, which are not as effective at addressing bacteria. **Figure 2-16** provides the location and distribution of potential regional/centralized BMPs. Distributed BMPs will be located in the urbanized areas of the EWMP.

As shown in Figures 2-5 through 2-16, each of the EWMPs involves a wide distribution of BMPs to achieve permit compliance. Appendix G provides the locations and general descriptions of the priority BMPs (where data is available), shown in Figures 2-5 through 2-16. Priority Projects are projects that have been identified through the EWMP process as targeted for implementation within the first years following the EWMPs approval by the LARWQCB. Identification of Priority Projects is underway and has not been completed by all EWMPs at this time. The PEIR is being prepared in parallel to the EWMPs. Priority Projects will be defined in all the EWMPs to be submitted for public comment in June 2015. Priority Projects that have been identified at this time through the EWMP process are shown on the following figures. Priority Projects may be regional, centralized or distributed type BMPs. For potential projects that are shown on the following figure, the location of potential regional and centralized BMPS are shown. Distributed BMP will be distributed throughout the urbanized areas and are not shown on the following figures. Because of land availability restrictions, large parcels that can support regional or centralized BMPs are fewer and more difficult to obtain than smaller parcels or easements needed for distributed BMPs. The overall strategy engaged by each of the WMGs is to maximize the benefits of regional and centralized BMPs while relying on distributed and non-structural BMPs to achieve a larger majority of the water quality improvement benefits provided by the EWMP. The distributed BMPs will be scattered throughout the watersheds, predominantly in urbanized areas, resulting in widely distributed implementation impacts as discussed in Chapter 3.

SOURCE: ESRI; National Hydrology Dataset.

LA County PEIR EWMP . 140474

Figure 2-5
Marina del Rey
Watershed Management Group

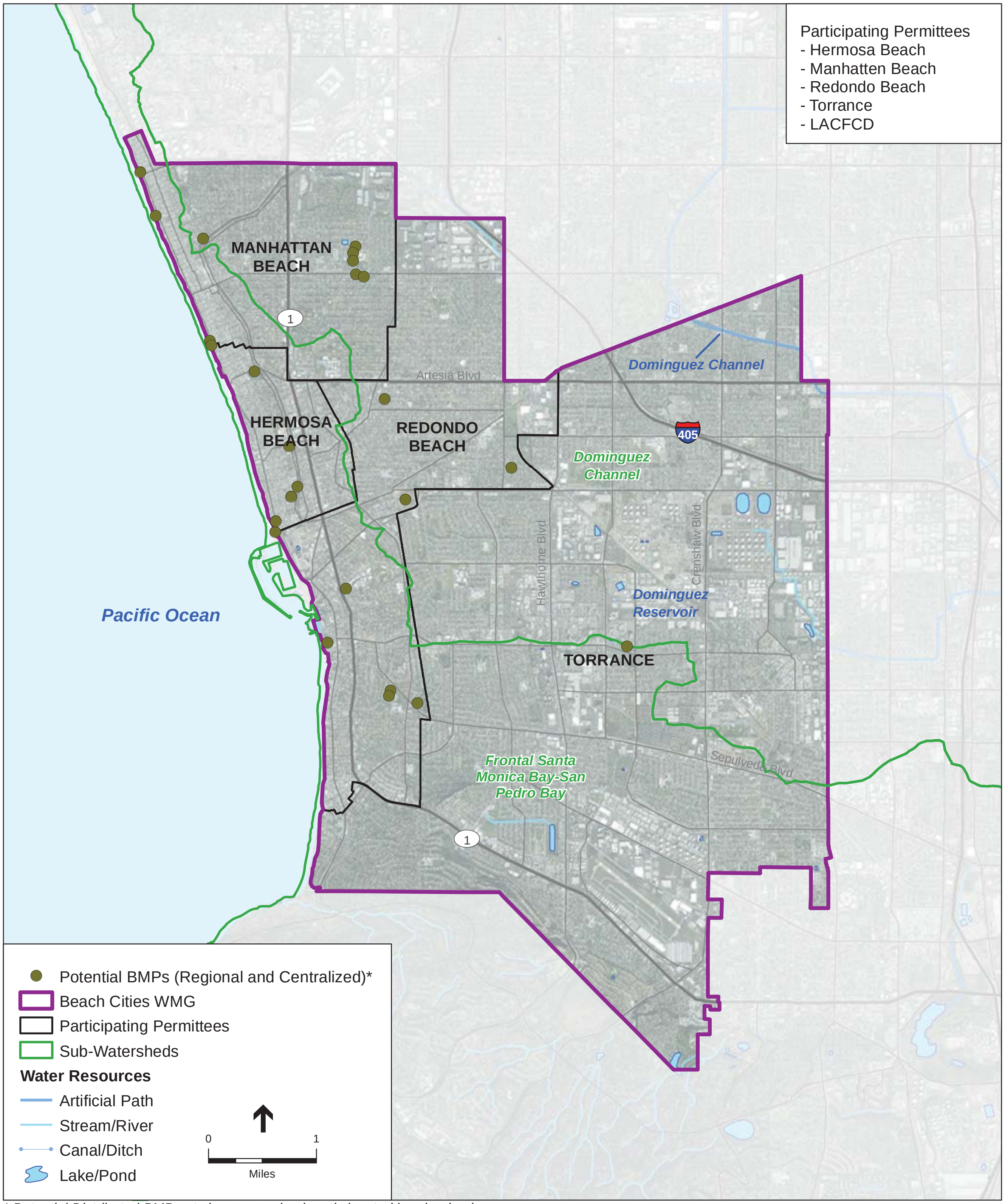


* Potential Distributed BMP not shown - predominantly located in urbanized areas

SOURCE: ESRI; National Hydrology Dataset.

LA County PEIR EWMP . 140474

Figure 2-6
Ballona Creek
Watershed Management Group

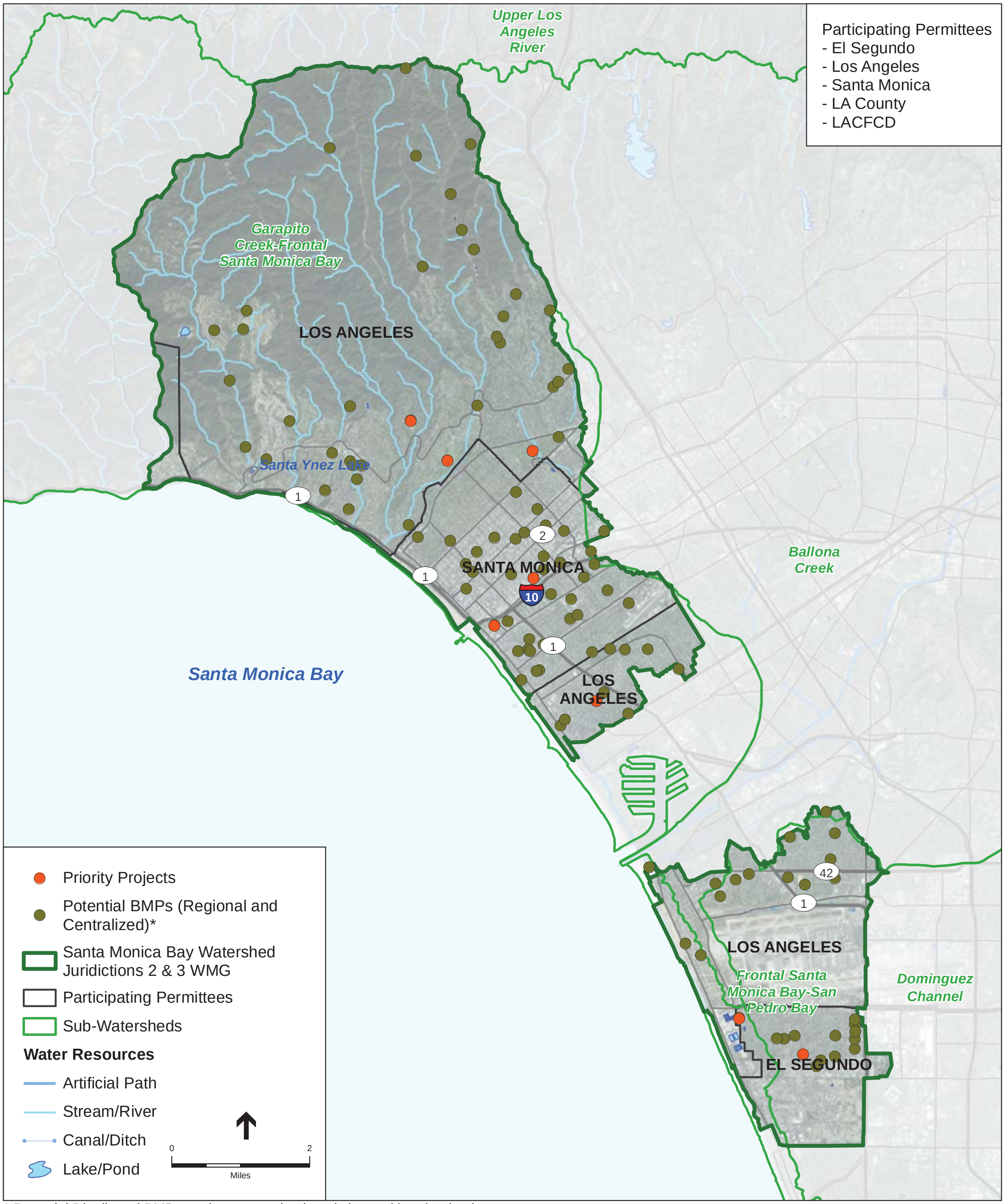


* Potential Distributed BMP not shown - predominantly located in urbanized areas

SOURCE: ESRI; National Hydrology Dataset.

LA County PEIR EWMP . 140474

Figure 2-7
Beach Cities Watershed Management Group

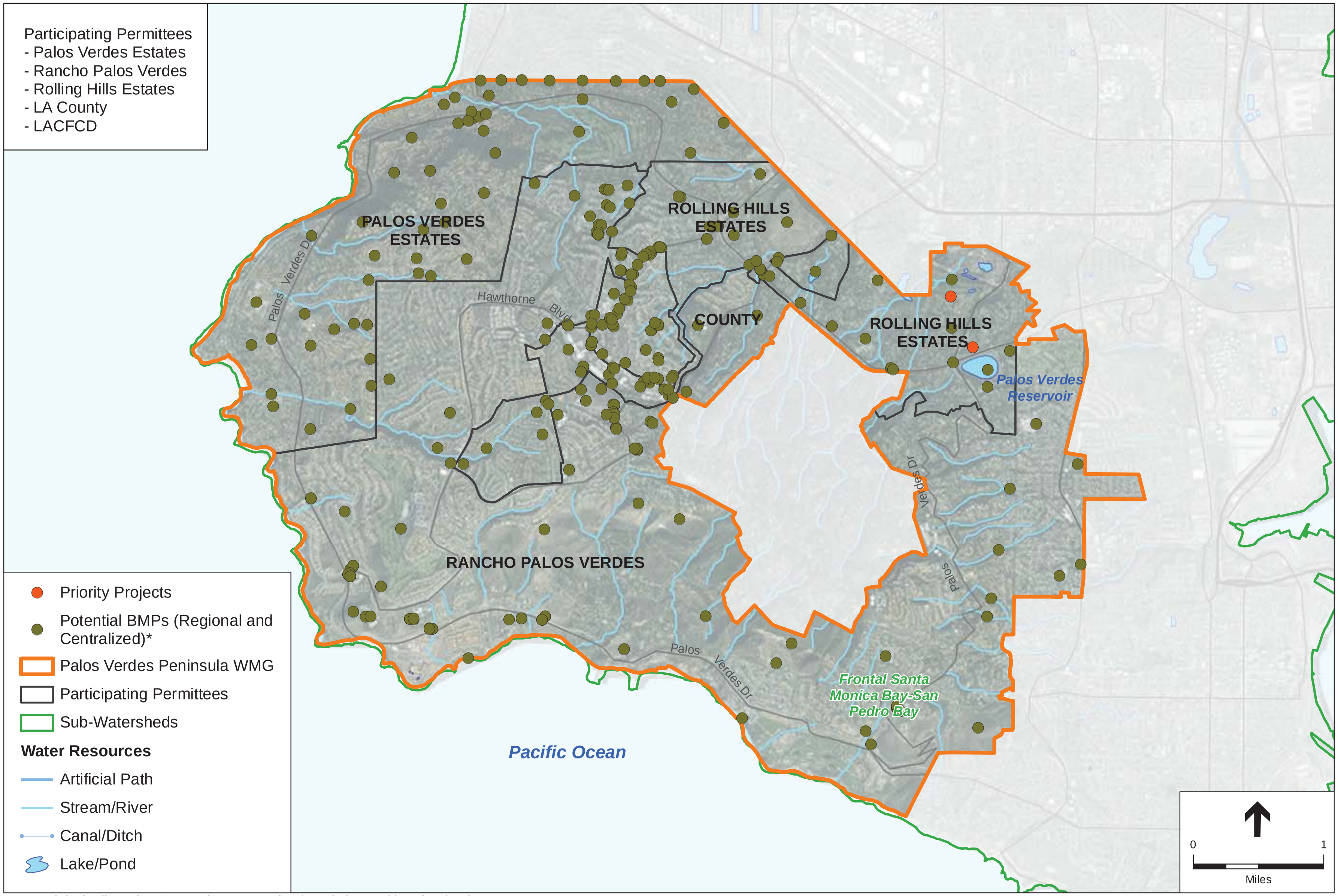


** Potential Distributed BMP not shown - predominantly located in urbanized areas*

SOURCE: ESRI; National Hydrology Dataset.

LA County PEIR EWMP . 140474

Figure 2-8
Santa Monica Bay Watershed Jurisdictions 2 and 3 Watershed Management Groups

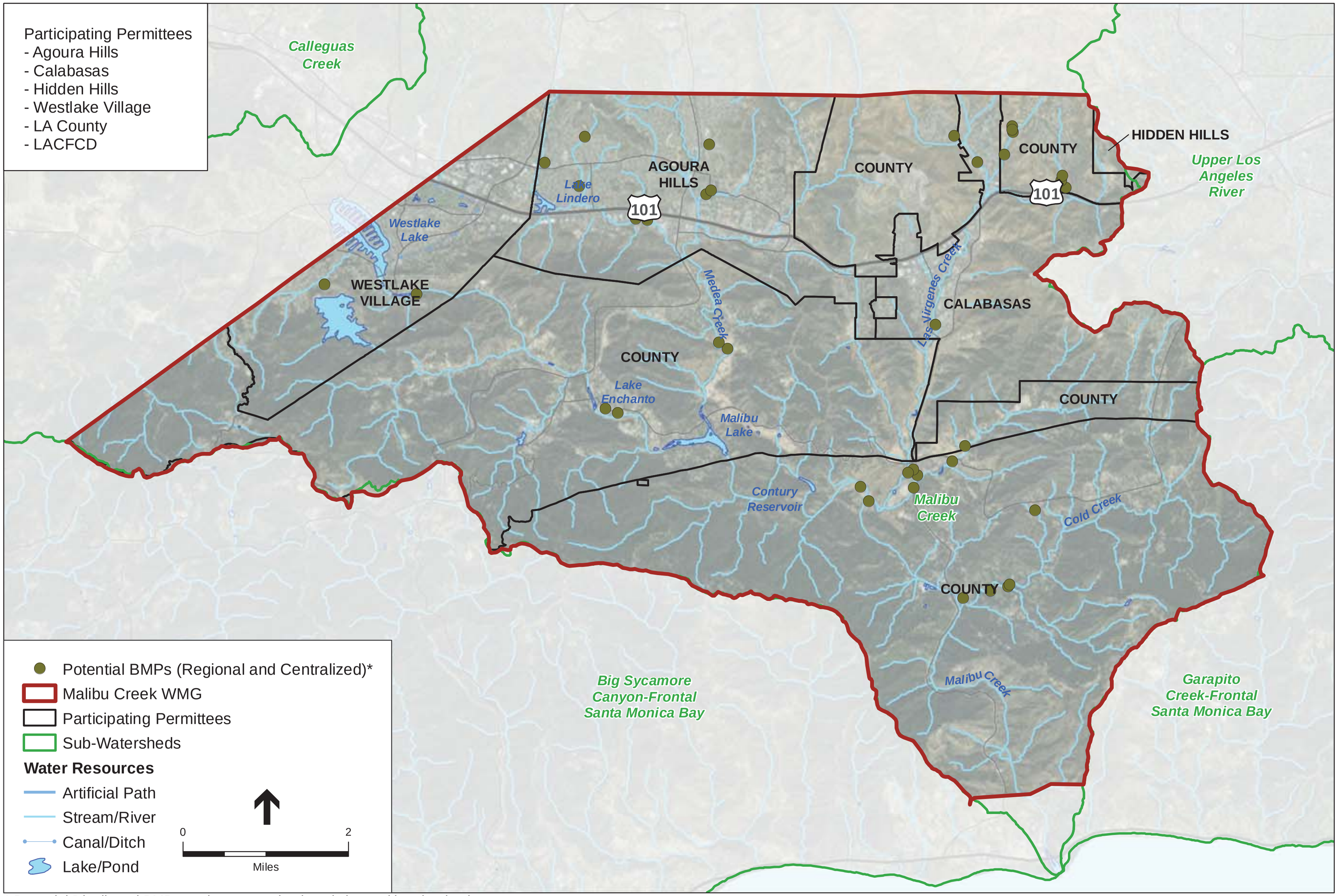


* Potential Distributed BMP not shown - predominantly located in urbanized areas

SOURCE: ESRI; National Hydrology Dataset.

LA County PEIR EWMP . 140474

Figure 2-9
Palos Verdes Peninsula
Watershed Management Group



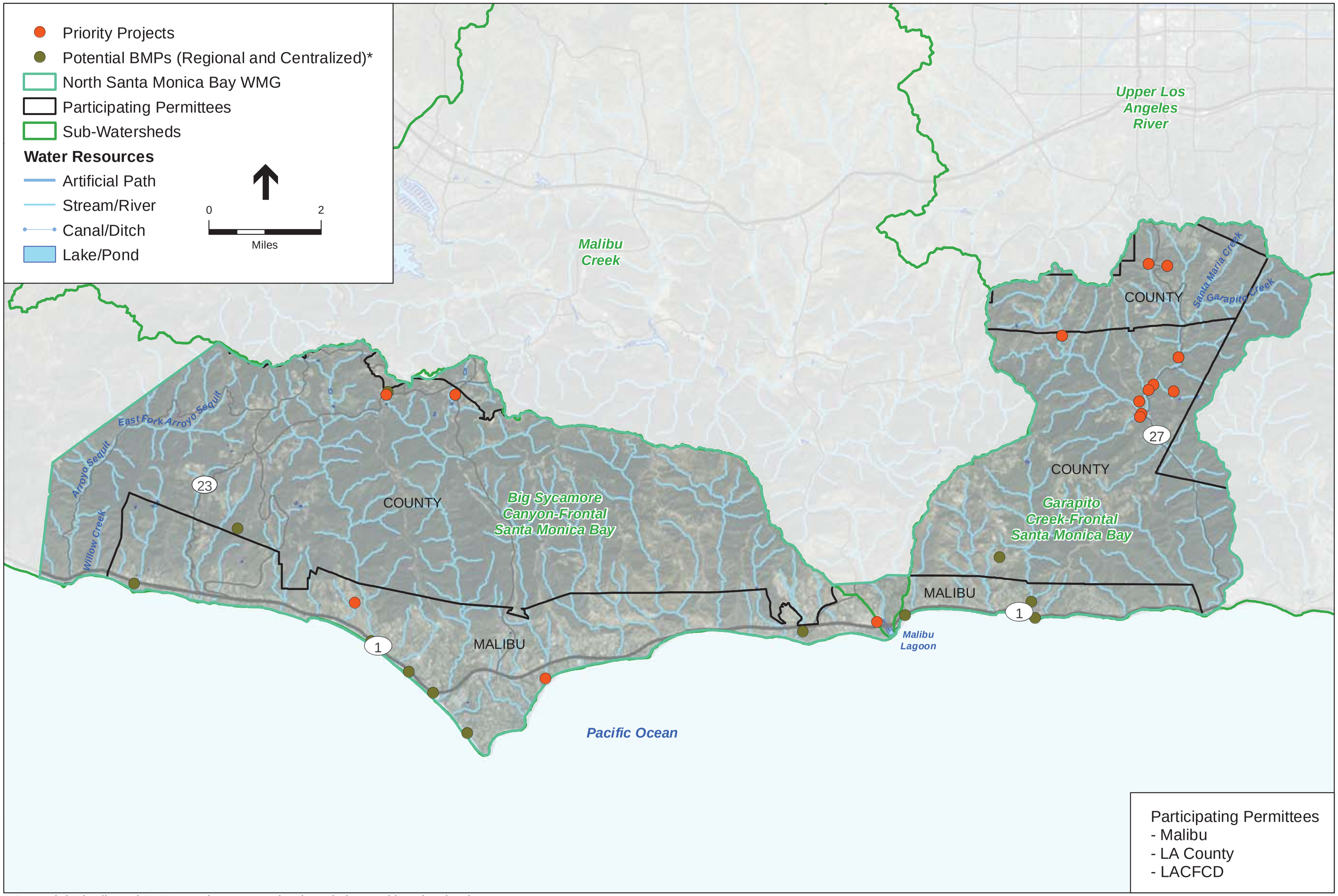
* Potential Distributed BMP not shown - predominantly located in urbanized areas

SOURCE: ESRI; National Hydrology Dataset.

LA County PEIR EWMP . 140474

Figure 2-10
Malibu Creek
Watershed Management Group

RB-AR 8300

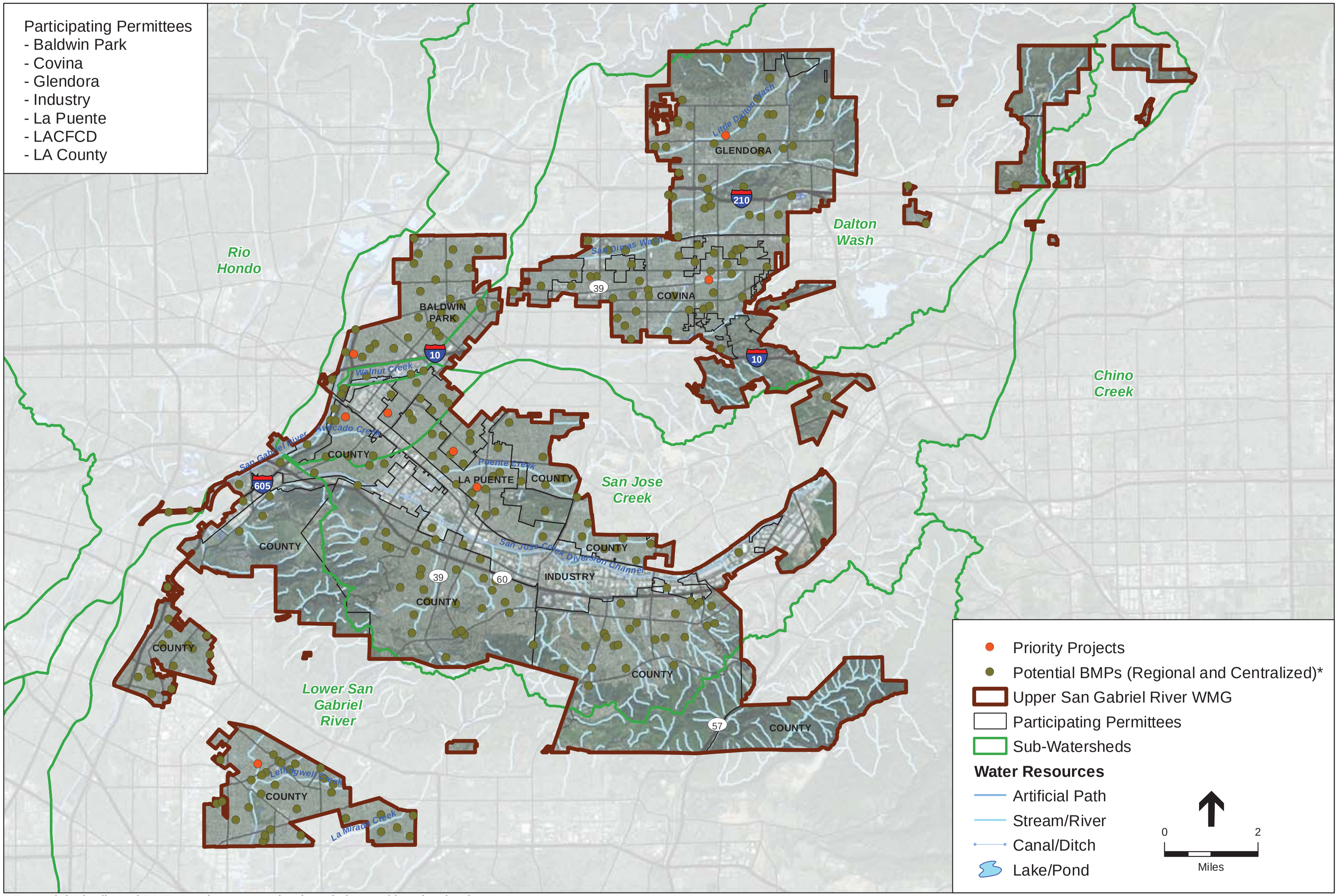


* Potential Distributed BMP not shown - predominantly located in urbanized areas

SOURCE: ESRI; National Hydrology Dataset.

LA County PEIR EWMP . 140474

Figure 2-11
North Santa Monica Bay Coastal Watersheds

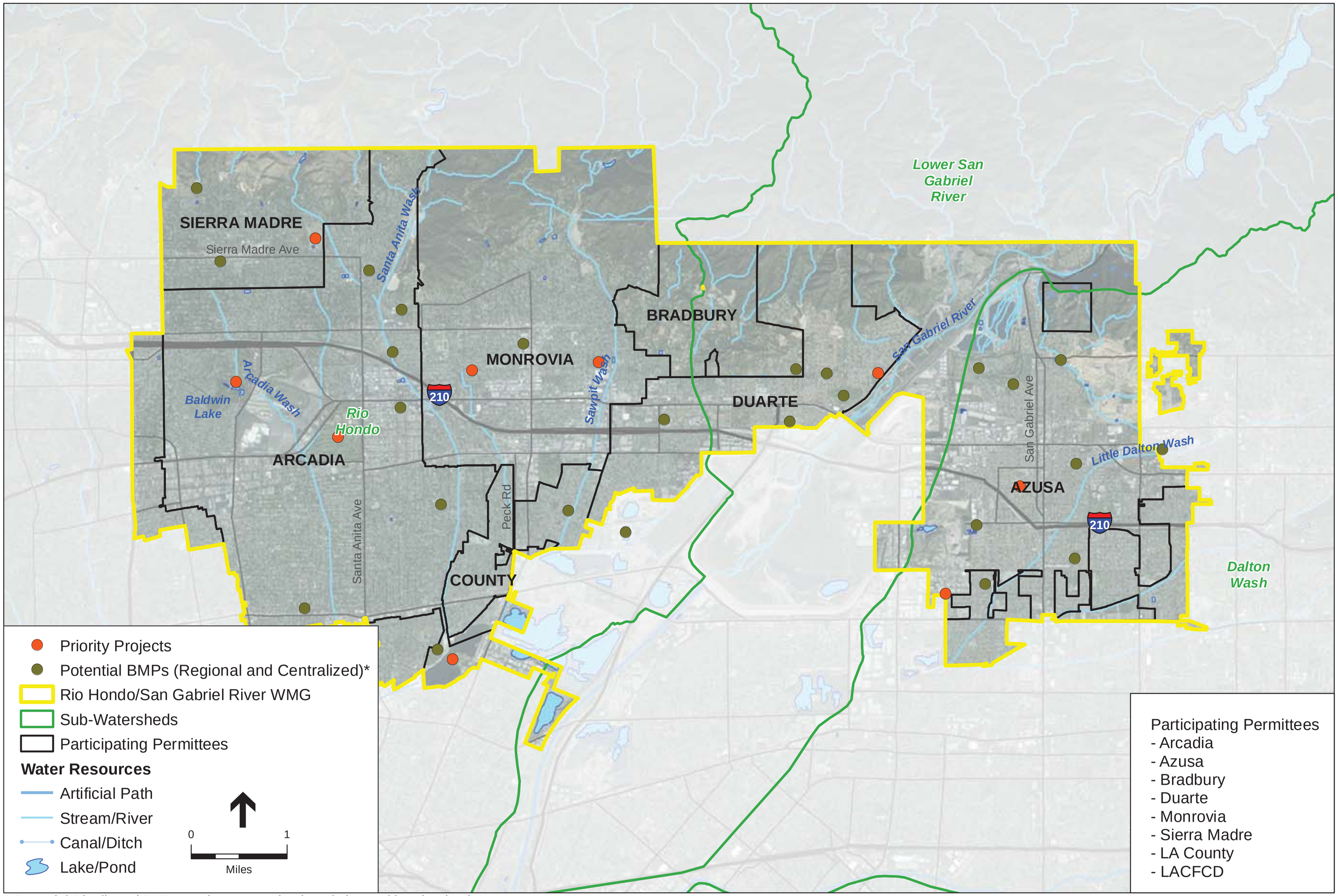


* Potential Distributed BMP not shown - predominantly located in urbanized areas

SOURCE: ESRI; National Hydrology Dataset.

LA County PEIR EWMP . 140474

Figure 2-12
Upper San Gabriel River
Watershed Management Groups

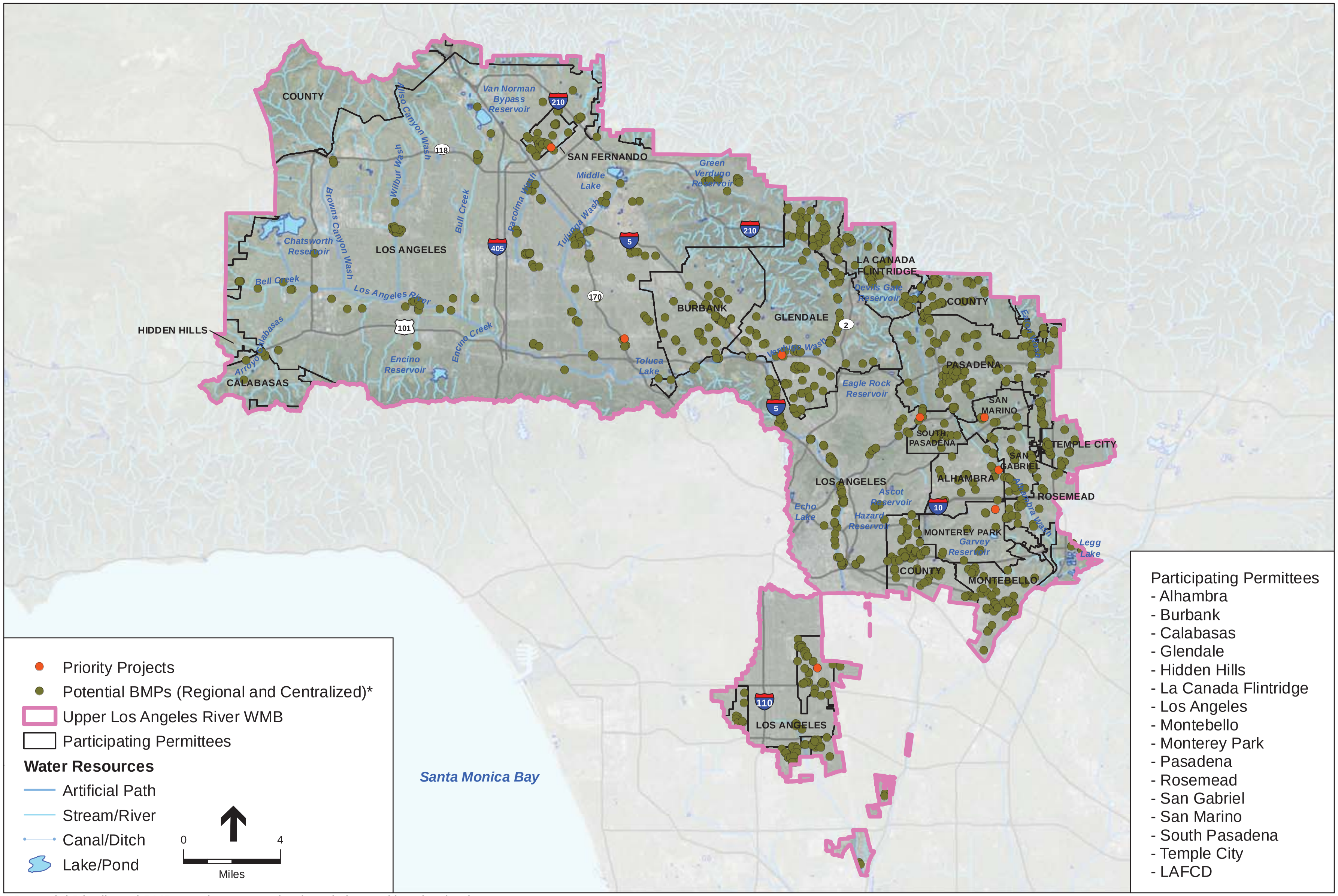


* Potential Distributed BMP not shown - predominantly located in urbanized areas

SOURCE: ESRI; National Hydrology Dataset.

LA County PEIR EWMP . 140474

Figure 2-13
Rio Hondo / San Gabriel River
Watershed Management Group

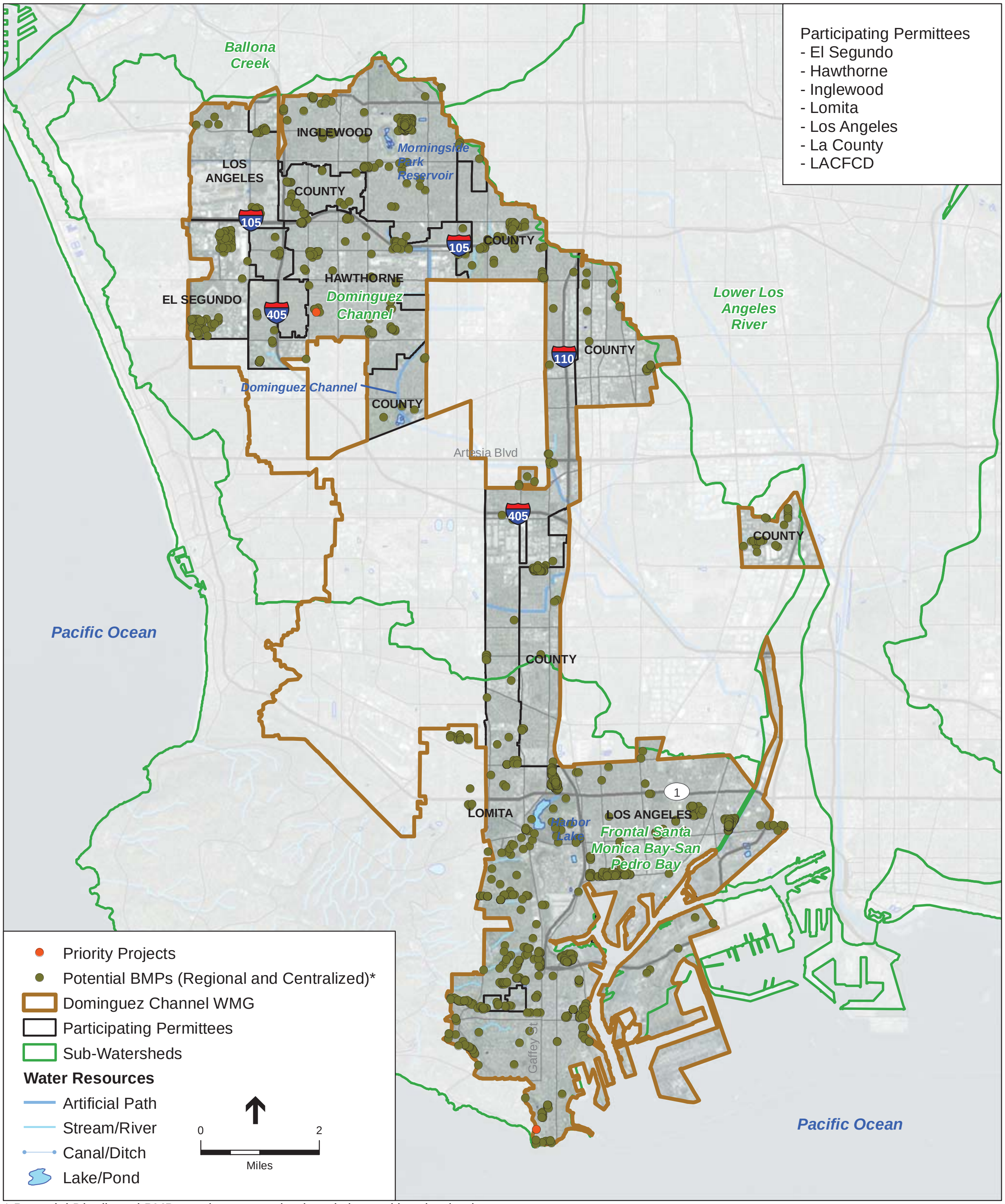


* Potential Distributed BMP not shown - predominantly located in urbanized areas

SOURCE: ESRI; National Hydrology Dataset.

LA County PEIR EWMP . 140474

Figure 2-14
Upper Los Angeles River
Watershed Management Group



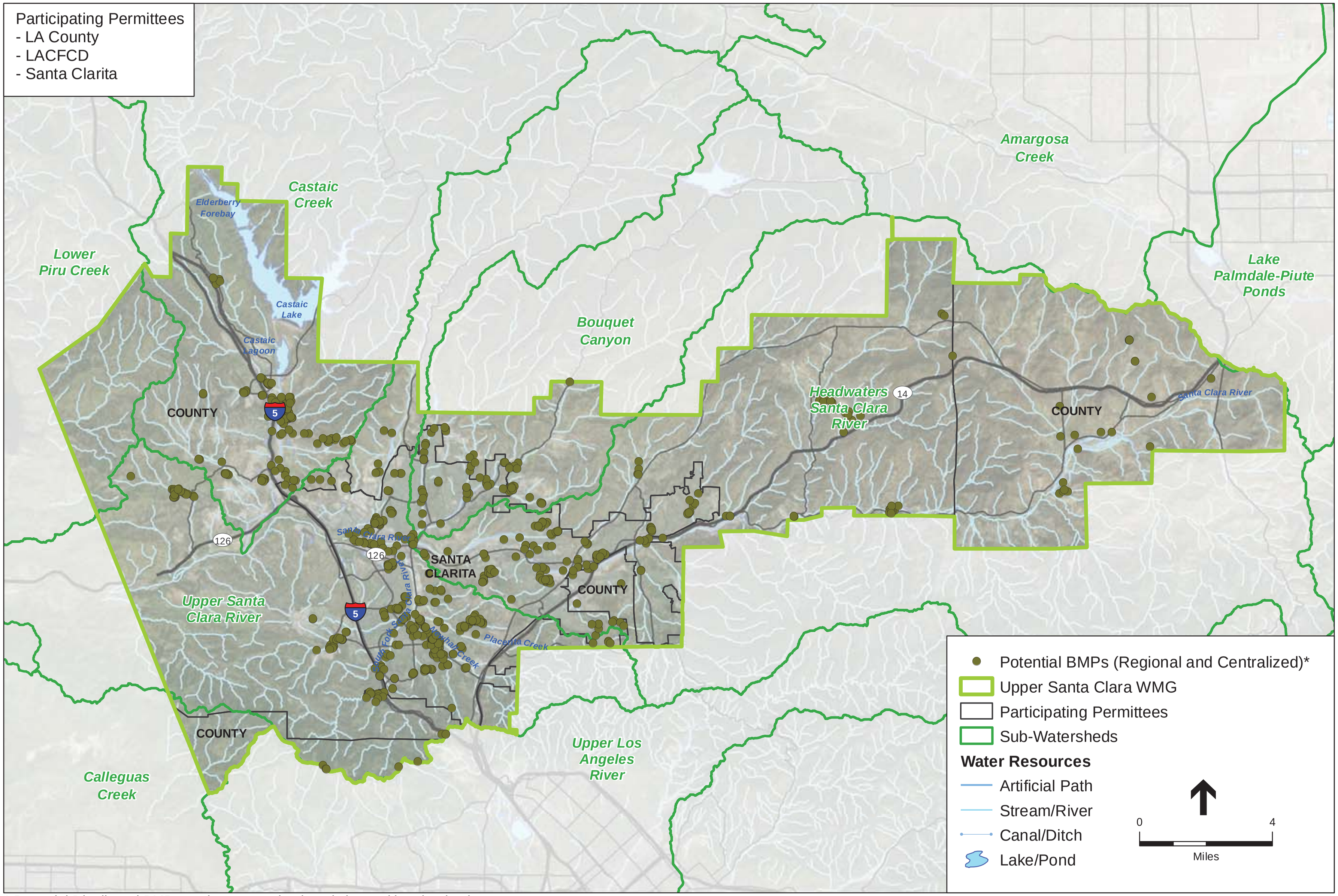
* Potential Distributed BMP not shown - predominantly located in urbanized areas

SOURCE: ESRI; National Hydrology Dataset.

LA County PEIR EWMP . 140474

Figure 2-15

Dominguez Channel Watershed Management Group



* Potential Distributed BMP not shown - predominantly located in urbanized areas

SOURCE: ESRI; National Hydrology Dataset.

LA County PEIR EWMP . 140474

Figure 2-16

Upper Santa Clara River Watershed
Watershed Management Group

RB-AR 8306

2.6 EWMP BMP Implementation Schedule

The EWMPs that are being prepared in parallel to the PEIR will provide a timeline for the implementation of the BMPs. The priority BMPs are a subset of the potential BMPs that have undergone a site review and project evaluation and have been identified as a priority project, based on available data at the time of publication of this PEIR. The EWMPs will be submitted to the LARWQCB in June 2015. Implementation of priority BMPs will begin following approval of the EWMPs by the LARWQCB, which is anticipated in the later part of 2015 or early 2016. Implementation of BMPs will depend on the approval of the EWMPs, further environmental assessment, permitting, and availability of funding sources. The RAA as part of the EWMPs provides a basis for the needed level of BMP implementation to meet water quality goals.

2.7 Operation and Maintenance

Once constructed, structural BMPs will require periodic maintenance. The level and frequency of operation and maintenance (O&M) will depend on the BMP type, size, and complexity. BMPs implemented and under the jurisdiction of the LACFCD would be maintained and operated to meet design performance standards and the efficiencies needed to meet the waste load reductions in accordance with the EWMPs. O&M will also include addressing identified minimum mitigation measures to avoid potential impacts.

Project Costs

Funding for installation and maintenance of the BMPs identified in each EWMP will be the responsibility of the implementing agencies. The EWMPs will include development of cost estimates for proposed watershed control measures. Financial strategies to implement the EWMP will also be developed and included in the EWMP Plan. The financial strategies may include available State grants, recent Water Bond funding, and partners that can benefit from these projects (e.g. Water agencies).

Each EWMP will define priority projects, and installation of these projects will move forward depending on the availability of funding and outcome of further project-specific CEQA review. Funding options for implementing agencies would include obtaining grant funds, low-interest loans, tax-based general funds, or special assessments. Each jurisdiction will be responsible for securing the necessary funds over time to achieve permit compliance.

2.8 Required Approvals

LACFCD intends to use this PEIR to consider implementation of the proposed program. As Lead Agency, LACFCD may use this PEIR to approve the proposed program, make Findings regarding identified impacts, and, if necessary, adopt a Statement of Overriding Considerations regarding these impacts. The LARWQCB has discretionary approval over the EWMPs themselves, while a broad range of responsible agencies have discretionary approval over the BMPs described in the EWMPs. These agencies and their approvals are described in **Table 2-**. The specific approvals necessary for each BMP will vary by BMP; for example, BMPs that do not result in fill of jurisdictional waters of the United States will not need a Clean Water Act Section 404 Permit.

TABLE 2-6
REQUIRED APPROVALS

Approving Agency	Approval
Implementing Agencies	CEQA approval
LA County Flood Control District	CEQA approval, Encroachment Permit
California Department of Transportation	Encroachment Permit
Local Railroad Authorities	Encroachment Permit
Local Cities/Permittees	Encroachment Permits, certification of compliance with local historic/cultural preservation policies
U.S. Army Corps of Engineers	Clean Water Act Section 404 Permit, Rivers and Harbors Act Sections 9 and 10 Permits
California Department of Fish and Wildlife	Lake/Streambed Alteration Agreement (1600 Permit)
U.S. Fish and Wildlife Service and National Marine Fisheries Service	Endangered Species Act consultations for Clean Water Act and Rivers and Harbors Act permits
California Coastal Commission	Coastal Development Permits
Regional Water Quality Control Board	Clean Water Act Section 401 Water Quality Certification
	Waste Discharge Requirements for discharge to waters of the state or to land
	Groundwater Anti-Degradation Analysis
	Water Recycling Requirements
	NPDES permits for discharges to waters of the United States
	Groundwater Recharge Recycled Water Project approval (currently draft regulations)
	General Construction Permit/SWPPP approval

CHAPTER 3

Environmental Setting, Impacts, and Mitigation Measures

3.1 Aesthetic Resources

This section addresses the aesthetic and visual quality of the region and potential impacts associated with the implementation of the Enhanced Watershed Management Program (EWMP). It includes a description of existing visual conditions and an evaluation of potential effects on aesthetic resources.

3.1.1 Environmental Setting

Regional Setting

Visual resources consist of natural landscapes and scenic views, including landforms, vegetation, and water features, as well as unique elements of the built environment. The proposed program would be located in various watershed areas in the County of Los Angeles (County). Although much of the County is densely populated, the region also has a significant amount of scenic resources, from the coastline to the mountain vistas, including hillsides, scenic viewsheds, and ridgelines. The San Gabriel Mountains, Sierra Pelona Mountains, Verduga Hills, Santa Susana Mountains, Simi Hills, Santa Monica Mountains, and Puente Hills help shape the region physically, and also provide aesthetic, environmental, and recreational benefits to residents. The majority of native plants and animals reside in the hillside terrain, which indicates the biological and aesthetic importance of these areas (Los Angeles County Draft General Plan, 2014). Ridgelines or mountain edges with steep drops on either side, located in the Los Angeles region provide dramatic views and are protected and preserved by individual communities. Significant ridgelines are dispersed throughout the County, but are generally located in the Angeles National Forest and the Santa Monica Mountains. The urban landscape varies, and includes low-lying residential, industrial, and commercial buildings along with high-density, high-rise residential and commercial buildings in downtown areas.

Program Area

Each Watershed Management Area, and EWMP group, associated with the proposed program has its own unique aesthetic resources depending on its location within the County. For example, the coastal watersheds will have significantly different aesthetic resources than the inland watersheds near the mountains. Specific locations of projects have not been established at this point; therefore, the discussion remains at a broader watershed-area level. Existing aesthetic resources within each Watershed Management Area group are summarized in this section.

Santa Monica Bay Watershed Management Area

The Santa Monica Bay Watershed Management Area includes the Malibu Creek Watershed EWMP, North Santa Monica Bay EWMP, Santa Monica Bay Jurisdictions 2 and 3 EWMP, Marina del Rey EWMP, Ballona Creek EWMP, and a portion of Beach Cities EWMP and Palos Verdes Peninsula EWMP groups.

The Santa Monica Bay Watershed Management Area, which encompasses an area of 414 square miles, is quite diverse. Its borders reach from the crest of the Santa Monica Mountains on the north and from the Ventura–Los Angeles County line to downtown Los Angeles. From there it extends south and west across the Los Angeles plain to include the area east of Ballona Creek and north of the Baldwin Hills. The Santa Monica Bay Watershed Management Area includes several watersheds, the two largest being Malibu Creek to the north and Ballona Creek to the south. The Malibu Creek area contains mostly undeveloped mountain areas, large-acreage residential properties, and many natural streams, while Ballona Creek is predominantly channelized and highly developed with both residential and commercial properties (LARWQCB, 2011).

There are large industrial centers in El Segundo, Manhattan Beach, Redondo Beach, and Torrance, which serve as a base for aerospace and other high-tech manufacturing. Other concentrated commercial/industrial areas in the watershed include Westchester–Los Angeles Airport (LAX)–Playa del Rey (commercial), Santa Monica–West Los Angeles–Century City (commercial and light industry), Culver City (entertainment industry), Los Angeles Civic Center, and the Highway 101 corridor in Thousand Oaks–Westlake Village (light industry and commercial) (LARWQCB, 2011).

Of the Santa Monica Bay's 414-square-mile watershed, 121 square miles (29 percent) are developed or impervious. The Ballona Creek subwatershed accounts for most of the impervious area, with 72 square miles of impervious surface. The Malibu Creek watershed, with its large expanse of open area, has nearly 14 square miles of impervious surface (LARWQCB, 2011).

The Ballona Creek Wetlands are currently located within the area identified as the Ballona Wetlands Ecological Reserve, which is located at the mouth of Ballona Creek. The Ballona Creek Wetlands encompass approximately 600 acres and is the last remaining major coastal wetland in the Santa Monica Bay. The Ballona Creek Wetlands comprise salt marsh and freshwater wetlands, coastal bluffs, dunes, and upland habitats. The Ballona Creek Wetlands supports several state- and federally-listed species of concern. Developed urban areas surrounding the wetlands, as well as many other human activities, have significantly impacted the wetlands (USEPA, 2012).

Riparian habitat exists along each natural watercourse flowing to the ocean and around the lakes of the watershed. Riparian corridors include those found throughout the Ballona Creek Wetlands, Malibu Creek watershed, in other Santa Monica Mountain watersheds such as Arroyo Sequit and Solstice Creek, and adjacent to lakes such as Westlake Lake, Lake Sherwood, and Malibu Lake. The land in the Santa Monica Mountains to the north by contrast is still mostly open space and remains in a somewhat natural state, mostly free of alteration or development but impacted by invasive species and mostly bacteria- and nutrient-related water quality issues (LARWQCB, 2011).

There are approximately 22 “scenic resources” in the City of Malibu and surrounding areas identified in the Malibu Local Coastal Program. There are numerous vista points in the Malibu area. There are five areas in and adjacent to Malibu that display characteristics which make them suitable as vista points. Significant ridgelines also constitute a scenic resource of the coastal zone because of their high visibility from many vantage points. Ridgelines are typically defined as the line separating drainage basins. Significant ridgelines are those whose ridges silhouette the sky or the ocean, and are clearly visible from scenic roads. These ridgelines are located throughout Malibu and the Santa Monica Mountains (City of Malibu, 1995).

Agoura Hills is known as the “Gateway to the Santa Monica Mountains National Recreation Area.” The hills of the Santa Monica Mountains provide panoramic vistas, majestic oak trees, and dramatic backdrops of picturesque canyons and hillsides. Four road segments are valuable scenic resources in Agoura Hills that provide scenic views of the Santa Monica Mountains. Important scenic resources include Strawberry Hill, Morrison Ranch Hills, Palo Comado Hills, and the higher more distant Simi Hills that border the city on the north (City of Agoura Hills, 2010).

Dominguez Channel Watershed Management Area

The Dominguez Channel Watershed Management Area includes the Dominguez Channel EWMP group and a portion of the Beach Cities EWMP and Palos Verdes Peninsula EWMP groups.

Approximately 81 percent of the watershed or 93 percent of the land is developed. Residential development covers nearly 40 percent of the watershed, and another 41 percent comprises industrial, commercial, and transportation uses. It is estimated that 62 percent of the land is covered with impervious surfaces (e.g., asphalt, concrete), which represents the highest percentage for any watershed area in Los Angeles County. Parkland and open space are in short supply and generally are deficient in meeting the goal ratio of 0.4 hectare (1 acre) of park per each 1,000 population. Vacant land and open space areas account for 16 percent of the entire watershed. The largest “natural” habitat is associated with the Los Angeles and Long Beach Harbors, which cover 3,289 hectares (8,128 acres), or approximately 9.5 percent of the watershed. The Dominguez Watershed has an extensive transportation system consisting of streets, major highways, and freeways; rail service; three airports; and commercial shipping (Los Angeles County, 2004).

The cities with the largest amount of land in the watershed are Los Angeles (22 percent), Carson (14 percent), and Torrance (13 percent). These communities are dominated by high density and multi-family residential land use types, with a fair amount of active redevelopment. The watershed is also home to several smaller, upscale communities, including Palos Verdes Estates, Rancho Palos Verdes, Rolling Hills, and Rolling Hills Estates, which are characterized by low density residential and equestrian land uses (Los Angeles County, 2004).

Approximately 50.6 square kilometers (19.5 square miles) of the Dominguez watershed, including Lomita and portions of Rolling Hills, Rolling Hills Estates, Torrance, and the City of

Los Angeles, drains to Machado Lake near the intersection of Vermont Avenue and Anaheim Street in the City of Los Angeles. Much of the Machado Lake subwatershed consists of the hilly regions of Rolling Hills and Rolling Hills Estates. This portion of the watershed is unique for Dominguez by consisting of relatively steep hills with drainage ways in canyons. These drainage ways flow generally northwest from the hills toward Machado Lake (Los Angeles County, 2004). Machado Lake (16 hectares, 40 acres) and the Machado Lake wetlands (25 hectares, 64 acres) are located within the Ken Malloy Harbor Regional Park, in the southeastern corner of the Machado Lake subwatershed. Both Machado Lake and the Machado Lake wetlands serve as flood retention basins for the Machado Lake subwatershed. Machado Lake receives urban and stormwater runoff from a complex network of storm drain systems. Machado Lake discharges at the southern end by overflowing a concrete dam into the Machado Lake wetlands. Water discharges from the wetland through the Harbor Outflow structure and into the West Basin of the Los Angeles Harbor (Los Angeles County, 2004).

Several types of habitats occur within the Dominguez watershed; the largest is urban land that supports few natural resources. To a lesser extent, biological resources use several small, disturbed pocket wetlands scattered throughout the watershed and retention and detention basins located in the City of Torrance. These biological resources within the Dominguez watershed are highly fragmented and are impacted by a variety of problems directly related to the surrounding urban environment. Several stresses also affect habitats within the Dominguez Channel. The most notable impact to biological resources is the channelization of drainages throughout the system, many of which are concrete-lined (Los Angeles County, 2004).

Los Angeles River Watershed Management Area

The Los Angeles River Watershed Management Area includes the Upper Los Angeles River EWMP and a portion of the Rio Hondo/San Gabriel River Quality Group EWMP.

The Los Angeles River Watershed is one of the largest in the region. It is also one of the most diverse in terms of land use patterns. Approximately 324 square miles of the watershed are covered by forest or open space land, including the area near the headwaters that originate in the Santa Monica, Santa Susana, and San Gabriel Mountains. The rest of the watershed is highly developed (LARWQCB, 2006).

The river flows through the San Fernando Valley past heavily developed residential and commercial areas. From the Arroyo Seco, north of downtown Los Angeles, to the confluence with the Rio Hondo, the river flows through industrial and commercial areas and is bordered by rail yards, freeways, and major commercial and government buildings. From the Rio Hondo to the Pacific Ocean, the river flows through industrial, residential, and commercial areas, including major refineries and petroleum products storage facilities, major freeways, rail lines, and rail yards serving the Ports of Los Angeles and Long Beach (LARWQCB, 2006).

Also in various parks in the watershed are a number of lakes, including Peck Road Park, Belvedere Park, Hollenbeck Park, Lincoln Park, and Echo Park Lakes as well as Lake Calabasas. These lakes are heavily used for recreational purposes (LARWQCB, 2006).

San Gabriel River Watershed Management Area

The San Gabriel River Watershed Management Area includes a portion of the Rio Hondo/San Gabriel River Quality Group EWMP and the Upper San Gabriel River EWMP.

The entire San Gabriel River watershed covers more than 640 square miles and includes portions of 37 cities in Los Angeles and Orange Counties, as well as communities in unincorporated Los Angeles County. More than one-third of the upper watershed falls within the Angeles National Forest, including significant portions of the San Gabriel Mountains. The watershed also contains the Merced and San Jose Hills, and the Puente-Chino Hills, as well as the major urban populations of the San Gabriel and Pomona Valleys and the coastal plain of the Los Angeles Basin (Los Angeles County, 2006).

About 26 percent of the watershed's total area is developed with urban and related land uses. The San Gabriel River consists of 22 creeks, washes, and streams, including four major tributaries or subwatersheds, which join to form the overall watershed (Los Angeles County, 2006).

The river environment changes dramatically during the 58-mile course. The river is divided into seven reaches; each reach is defined by distinct landscape, cultural, geological, and hydrological features, which naturally change as the river flows from the mountains through the valley, into the coastal plain, and eventually out to sea (Los Angeles County, 2006).

Santa Clara River Watershed Management Area

The Santa Clara River Watershed Management Area includes the Upper Santa Clara River EMWP.

The Santa Clara River watershed encompasses approximately 1,030 square miles. The Upper Santa Clara River Watershed is approximately 786 square miles within County of Los Angeles limits with approximately 243 square miles within Ventura County and 1 square mile within Kern County. The Santa Clara River Watershed Management Area is dominated by vacant land, which comprises 88 percent of the total land use. Much of the watershed is in mountainous terrain within either the Angeles or Los Padres National Forests (LARWQCB, 2006). Only small portions of agriculture (4 percent) and urban land (6 percent) exist. Much of the residential area (3 percent) is located near the City of Santa Clarita in the center of the watershed. The Santa Clara River Watershed Management Area is the least developed and urbanized of the watershed management areas in Los Angeles County (Weston, 2005).

The Santa Clara River watershed's impervious area is estimated to be 7 percent based on assumptions on impervious areas in each land use type. This is the lowest ratio of impervious land area in the Watershed Management Areas of Los Angeles County (Weston, 2005). The Santa Clara River is the largest river system in Southern California remaining in a relatively natural state (LARWQCB, 2006). Extensive patches of high-quality riparian habitat are present along the length of the river and its tributaries (LARWQCB, 2006).

One of the largest of the Santa Clara River's tributaries, Sespe Creek, is designated a wild trout stream by the State of California and supports significant spawning and rearing habitat. The Sespe Creek is also designated a wild and scenic river (LARWQCB, 2006).

State Scenic Highways

There are several Designated State Scenic Highways, Eligible State Scenic Highways, and Historic Parkways with the EWMP areas. Refer to **Figure 3.1-1**, Scenic Highways. Santa Monica Bay, Los Angeles River, and San Gabriel River watersheds contain both officially designated County scenic highways and Eligible State Scenic Highways not officially designated (State Route 1 and Highway 101) (see Figure 4.1-1). In addition, the Los Angeles River watershed also includes historic parkways and the Santa Clara River watershed includes Eligible State Scenic Highways. Many roads in Malibu are considered scenic, but only the Pacific Coast Highway has been officially designated as an eligible scenic highway by the California Department of Transportation (Caltrans) (City of Malibu, 1996).

Light and Glare

There are two types of light intrusion: the first source emanates from the interior of structures and passes through windows, while the second type emanates from exterior sources such as parking lot lighting and street lamp lighting. Glare is the result of sunlight or an artificial light source being reflected on a flat surface or reflective exterior coatings. Light and glare can disturb wildlife in natural habitat areas and act as a nuisance to adjacent residential areas and motorists.

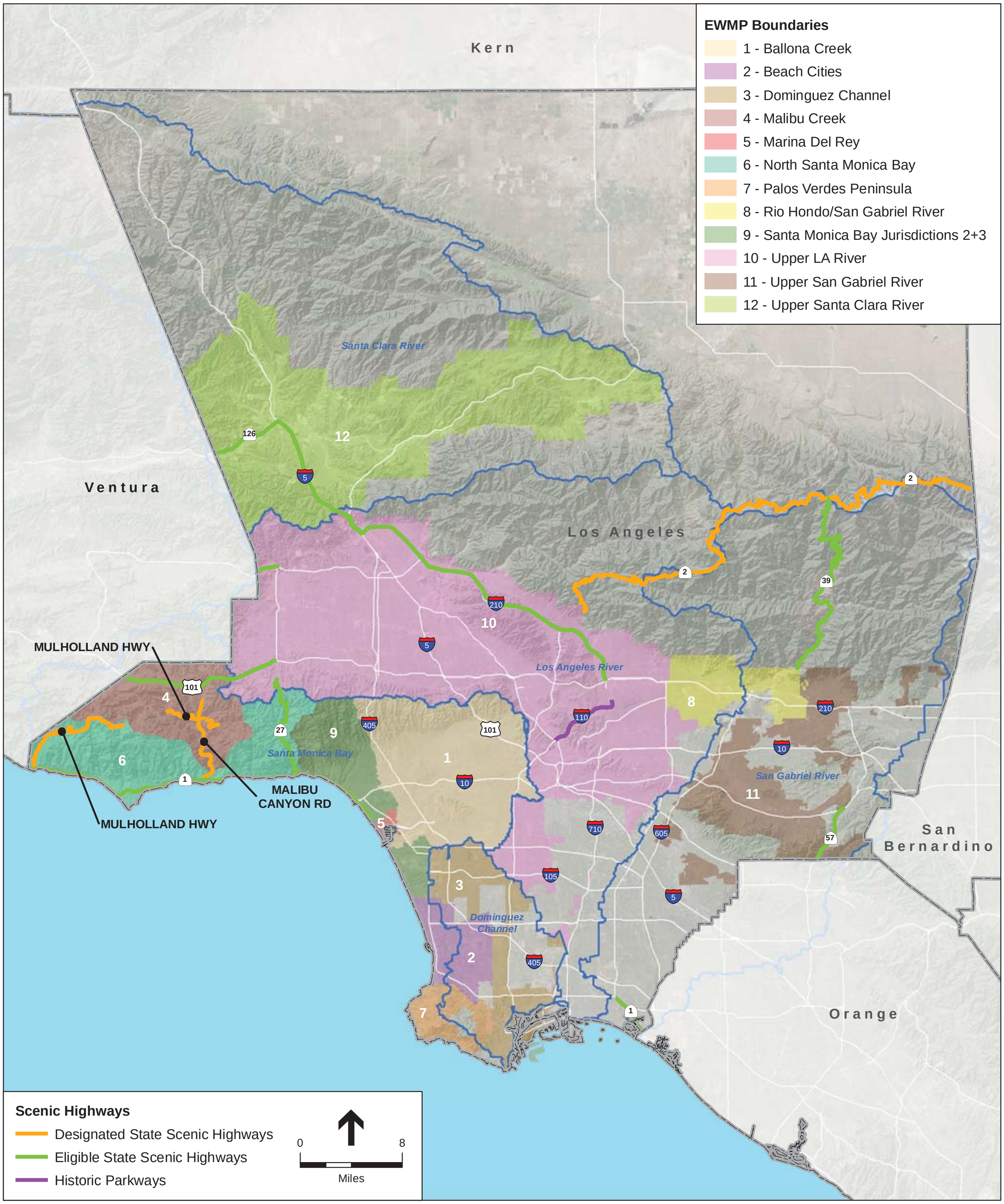
Light and glare are typical features of urbanized settings, such as the EWMP project areas. The primary sources of light within the project areas are associated with transportation, including car headlights associated with vehicular traffic and commercial and residential land uses.

3.1.2 Regulatory Setting

State

State Scenic Highway Program

In 1963, the California legislature created the Scenic Highway Program to protect scenic highway corridors from changes that would diminish the aesthetic value of lands adjacent to the highways. The state regulations and guidelines governing the Scenic Highway Program are found in the Streets and Highways Code, Section 260 et seq. A highway is designated under this program when a local jurisdiction adopts a scenic corridor protection program, applies to Caltrans for scenic highway approval, and receives notification from Caltrans that the highway has been designated as a Scenic Highway. When a city or county nominates an eligible scenic highway for official designation, it defines the scenic corridor, which is land generally adjacent to and visible to a motorist on the highway.



SOURCE: ESRI; Los Angeles County GIS, 2014.

LA County PEIR EWMP . 140474

Figure 3.1-1

Scenic Highways

RB-AR 8315

Local

Los Angeles County Existing General Plan, Adopted 1980

The following policy from the Conservation and Open Space Element of the Existing General Plan is relevant to the proposed program:

Policy C/OS 16: Protect the visual quality of scenic areas including ridge-lines and scenic views from public roads, trails and key vantage points.

Los Angeles County 2014 Draft General Plan 2035

The following policies from the Conservation and Natural Resources Element of the Draft General Plan are relevant to the proposed program:

Goal C/NR 13: Protected visual and scenic resources

Policy C/NR 13.1: Protect scenic resources through land use regulations that mitigate development impacts.

Policy C/NR 13.2: Protect ridgelines from incompatible development that diminishes their scenic value.

Policy C/NR 13.3: Reduce light trespass, light pollution and other threats to scenic resources.

City Land Use Regulations and Ordinances

Local regulations and ordinances vary widely in the EWMP project areas. Aesthetic-related policies included in General Plans typically concern protecting valuable scenic resources. Some local jurisdictions incorporate restrictions to their General Plans that pertain to protection of scenic resources and trees in their jurisdictional areas.

3.1.3 Impact Assessment

Thresholds of Significance

For the purposes of this Project Environmental Impact Report (PEIR) and consistency with Appendix G of the CEQA Guidelines, the project would have a significant impact on aesthetic resources if it would:

- Create a substantial adverse effect on a scenic vista.
- Substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.
- Substantially degrade the existing visual character or quality of the site and its surroundings.
- Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

Program Impact Discussion

Scenic Vistas

Impact 3.1-1: The proposed program could create a substantial adverse effect on a scenic vista.

Structural (Regional, Centralized, and Distributed) BMPs

A scenic vista can be described as an expansive view of a highly valued landscape for the benefit of the general public. There are portions of the EWMP project areas that could be characterized as having scenic vistas, including undeveloped hillsides, ridgelines, and open space areas that provide a unifying visual backdrop to the urban environment of the Los Angeles Basin. Impacts to scenic vistas can occur when the visible scenic landscape itself is altered or when a new contrasting object is introduced that blocks or obstructs a scenic vista from a particular public vantage point.

The construction of structural Best Management Practices (BMPs) for the proposed program would require temporary ground disturbance, primarily on existing sidewalks, streets, parks, and city-owned lands. The presence of construction equipment and materials would be visible from public vantage points but would not affect any scenic views or vistas for longer than the temporary construction periods. Construction of aboveground structures, such as pump stations, would involve excavation, pump station construction, pump and motor installation, and final site completion. Similar to structural BMPs construction, site disturbance and the presence of construction equipment and materials during construction of pump stations could temporarily introduce contrasting elements into scenic views and vistas. However, given the predominantly urban character of potential pump station sites and the temporary nature of construction, impacts would be considered less than significant.

It is anticipated that the majority of structural BMPs would be located underground and not visible once construction is complete. Therefore, construction and operation of the majority of structural BMP improvements would not permanently affect views or scenic vistas. Although the exact locations of pump stations have not been determined, based on their proposed function and exterior design, they would not significantly affect views or scenic vistas from publically accessible vantage points. Aboveground structures such as pump station components of projects associated with structural BMPs typically would be single-story buildings; the project areas where pump stations may be located are generally characterized by urban development. As such, aboveground structures would be designed to be similar to and compatible with surrounding architecture and neighborhood character. However, impacts to scenic vistas from individual projects could be significant if inappropriately designed or located. With implementation of **Mitigation Measure AES-1**, aboveground structures would be designed to avoid obstructing scenic vistas or views from public vantage points. Impacts would be less than significant with mitigation.

Mitigation Measure:

AES-1: Aboveground structures shall be designed to be consistent with local zoning codes and applicable design guidelines and to minimize features that contrast with neighboring development.

Significance Determination: Less than significant with mitigation. (The application of these mitigation measures to specific BMP types and categories are identified in Table 3.1-1.)

Non-Structural (Institutional) BMPs

Non-structural BMPs consist of policies, actions, and activities aimed at preventing pollutants from entering stormwater runoff; there would not be a physical impact to the environment. The non-structural BMPs associated with the proposed program would not create a substantial adverse effect on a scenic vista.

Mitigation Measures: None

Significance Determination: No impact

State Scenic Highway

Impact 3.1-2: The proposed program could substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.

Structural (Regional, Centralized, and Distributed) BMPs

State scenic highways within the EWMP areas include portions of State Route 1 or Pacific Coast Highway, State Route 101, State Route 27, State Route 57, State Route 39, State Route 2, State Route 126, and portions of Interstate 5, Interstate 110, and Interstate 210, as shown in Figure 3.1-1. In addition, there are designated scenic roadways, including Mulholland Highway and Malibu Canyon Roadway. Some of the proposed program could be visible from any of these designated scenic highways or other locally designated scenic roadways. The proposed program would not likely involve damage to rock outcroppings or historic buildings because it is anticipated that the majority of structural BMPs would be located underground and would not be visible once construction is complete. Construction of the proposed program would involve the removal of vegetation, including possibly the removal of native and non-native trees from the individual project sites. Aboveground structures may be constructed as part of the structural BMPs. Small aboveground pump stations and supporting ancillary facilities would not substantially damage scenic resources of the area. Larger structures, such as single-story housing for pump stations and treatment facilities, would be compatible with existing visual character with implementation of **Mitigation Measure AES-1**. Therefore, construction and operation of the majority of structural BMPs would not permanently affect scenic resources within a state scenic highway with implementation of **Mitigation Measure AES-1**.

Mitigation Measure: Implementation of **Mitigation Measure AES-1**

Significance Determination: Less than significant with mitigation. (The application of these mitigation measures to specific BMP types and categories are identified in Table 3.1-1.)

Non-Structural (Institutional) BMPs

Non-structural BMPs consist of policies, actions, and activities aimed at preventing pollutants from entering stormwater runoff; there would not be a physical impact to the environment. The non-structural BMPs associated with the proposed program would not substantially damage scenic resources, including but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway.

Mitigation Measures: None

Significance Determination: No impact

Visual Character

Impact 3.1-3: The proposed program could substantially degrade the existing visual character or quality of the site and its surroundings.

Structural (Regional, Centralized, and Distributed) BMPs

Construction activities associated with all structural BMP projects would require the use of construction equipment and storage of materials on-site, thus introducing contrasting features into the visual landscape that would affect the visual quality of project sites and/or their surroundings. Contrasting features would include demolition materials, excavated areas, stockpiled soils, and other materials generated and stored on-site during construction. However, adverse effects to visual character associated with project construction would be temporary and are considered less than significant.

The purpose of the EWMPs is to improve upon the Permittee's structural BMPs and it includes the following elements, or BMPs: replacing existing impervious surfaces with pervious surfaces such as bioinfiltration cells, bioswales, porous pavement, and filter strips. Centralized BMPs also include diversion- and treatment-type BMPs that use similar technologies for these types of BMPs under distributed BMPs, but they can be implemented on a much larger scale for collecting, diverting, and treating urban runoff (dry weather flows) or limited stormwater flows from multiple parcels and large drainage areas. Therefore, centralized structural BMPs require greater footprints for construction and implementation. Centralized BMPs include two unique BMP types, treatment wetlands and stream/creek restoration projects. Unlike the other structural BMP types described, these BMPs use natural systems to filter and clean the water. Treatment wetlands are typically off-line treatment systems that are not in the receiving waters, but may have habitat benefits through the establishment of more native plants and ecosystems. Creek, river, and estuary restoration projects provide a unique opportunity to restore natural cleansing processes, reestablish habitats, and address impacts from hydromodification and urban runoff.

Once constructed, the proposed EWMP facilities would be located predominantly in urban areas. Underground facilities, such as storm drains, are not expected to have a permanent effect on visual character of an area. Implementation of the structural BMPs is anticipated to have an overall positive impact on the aesthetic environment. For example, there is anticipated to be more green space areas and less impermeable surfaces from pavement and concrete, thereby enhancing the level of greenness in the watersheds. Greenness includes “green spaces” that have well-defined boundaries that do not contain residential, commercial, or industrial structures or vehicular access or “green areas,” which are within the street grid and are landscape design features such as street trees, bioswales, green or vegetated roofs, or other vegetated small areas integrated into the built environment. These BMPs contribute to the natural open space character compared to the more built environment that it is replacing.

Aboveground structures within urban areas would be constructed on or adjacent to existing developed and built-up landscapes. Small aboveground pump stations and supporting ancillary facilities would have no significant effect on the visual character of the area. Larger structures, such as single-story housing for pump stations and treatment facilities, would be compatible with existing visual character with implementation of **Mitigation Measure AES-1**.

BMP maintenance is also important when considering long-term impacts on aesthetics. Poorly maintained BMPs, such as wet ponds or constructed wetlands, may be unsightly as a result of excess algal growth or public littering. Wet ponds and constructed wetlands can also become mosquito-breeding grounds. However, mosquito problems can usually be reduced or eliminated through proper design and/or organic controls such as mosquito-eating fish. Successful design avoids shallow or stagnant water and reduces large areas of periodic drying, which can occur in a dry detention basin. In addition, all BMPs need to have trash and debris removed periodically to prevent odor and preserve aesthetic values. With proper maintenance of all implemented BMPs as required in **Mitigation Measure AES-2**, impacts would be less than significant.

Mitigation Measures: Implementation of **Mitigation Measure AES-1**

AES-2: Implementing agencies shall develop BMP maintenance plans that are approved concurrently with each structural BMP approval. The maintenance plans must include measures to ensure functionality of the structural BMPs for the life of the BMP. These plans may include general maintenance guidelines that apply to a number of smaller distributed BMPs.

Significance Determination: Less than significant with mitigation. (The application of these mitigation measures to specific BMP types and categories are identified in Table 3.1-1.)

Non-Structural (Institutional) BMPs

Non-structural BMPs consist of policies, actions, and activities aimed at preventing pollutants from entering stormwater runoff; there would not be a physical impact to the environment. The non-structural BMPs associated with the proposed program would not degrade the existing visual character or quality of the site and its surroundings.

Mitigation Measures: None

Significance Determination: No Impact

Light and Glare

Impact 3.1-4: The proposed program could create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

Structural (Regional, Centralized, and Distributed) BMPs

Security lighting used during the construction of all structural BMP projects, if necessary, may introduce new sources of light and glare to the immediate project areas; however, nighttime construction is not anticipated. If security lighting is needed, it can be shielded and directed away from surrounding light-sensitive land uses, consistent with implementing agency design standards. Temporary impacts associated with light and glare during construction activities would be less than significant.

It is not anticipated that the structural BMP projects would involve the installation of permanent new outdoor lighting for the distributed, centralized, and regional structural watershed control measures. The goal of the BMPs in the EWMP projects is to reduce the impact of stormwater and non-stormwater on receiving water quality. Whether distributed, centralized, or regional, the major structural BMP functions are infiltration, treatment, and storage; these may be used individually or in combination. Distributed BMPs are most likely to be implemented in high-density urban, commercial, industrial, and transportation areas where currently there are no BMPs. These types of BMPs are generally “retrofit”-type projects that replace existing impervious surfaces with pervious surfaces such as bioinfiltration cells, bioswales, porous pavement, and filter strips that tie into existing stormwater management systems as part of the MS4. These projects may also augment the existing MS4 with additional inlet screens, filter media systems, sediment removal systems, and diversions to sanitary sewer lines. In addition, many of the proposed EWMP programs would include underground storm drain facilities. Because these types of BMPs would not require lighting, they would not create a new source of light or glare that would adversely affect day or nighttime views in the area.

Aboveground pump stations and treatment facilities associated with potential structural BMP projects may require new exterior daytime and nighttime lighting for operational and security purposes. If security lighting is needed for these facilities, they would be shielded to avoid glare impacts to local areas, consistent with implementing agency design standards. Operational impacts associated with light and glare would be less than significant.

Mitigation Measures: None required

Significance Determination: Less than significant

Non-Structural (Institutional) BMPs

Non-structural BMPs consist of policies, actions, and activities aimed at preventing pollutants from entering stormwater runoff; there would not be a physical impact to the environment. The non-structural BMPs associated with the proposed program would not create a new source of light or glare which would adversely affect day or nighttime views in the area.

Mitigation Measures: None

Significance Determination: No impact

Cumulative Impact Discussion

Structural (Regional, Centralized, and Distributed) BMPs

Cumulative projects located in the Los Angeles County region would have the potential to result in a cumulative impact to aesthetic resources if in combination they would result in the removal or substantial adverse change of one or more features that contribute to the valued visual character or image of a neighborhood, community, state scenic highway, or localized area, such as a landmark (designated), historic resource, trees, or rock outcropping. Changes in land use are not included in the proposed program and the structural BMPs are generally limited to portions of the EWMP areas that feature existing urban development. The introduction of structural BMPs in these areas would result in minor changes to the community character and visual appearance of the applicable EWMP areas. In addition, many of the structural BMPs are anticipated to result in more open space areas and less pavement and concrete, thereby enhancing the level of greenness in the watersheds. These BMPs contribute to the natural open space character compared to the more built environment that these BMPs are replacing. Overall, implementation of the structural BMPs is anticipated to have a positive impact on the aesthetic environment. Implementation of **Mitigation Measures AES-1** and **AES-2** would minimize cumulative impacts to aesthetic resources.

Mitigation Measures: Implementation of **Mitigation Measure AES-1** and **AES-2**

Significance Determination: Less than significant with mitigation. (The application of these mitigation measures to specific BMP types and categories are identified in Table 3.1-1.)

Non-Structural (Institutional) BMPs

Non-structural BMPs consist of policies, actions, and activities aimed at preventing pollutants from entering stormwater runoff; there would not be physical impact to the environment. Non-structural BMPs would not include any direct impacts to aesthetic resources; therefore, there would be no cumulative impacts to aesthetic resources.

Mitigation Measures: None required

Significance Determination: No impact

3.1.3 Summary of Impact Assessment

Table 3.1-1 shows a summary of the structural BMPs requiring mitigation.

TABLE 3.1-1
SUMMARY OF AESTHETICS IMPACTS REQUIRING MITIGATION MEASURES

	Thresholds of Significance				
Structural BMPs	**Scenic Vistas**	**Scenic Highways**	**Visual Character**	**Light and Glare**	**Cumulative Impacts**
Applicable Mitigation Measures:	**AES-1**	**AES-1**	**AES-1; AES-2**	**None Required**	**AES-1; AES-2**
Regional BMPs					
Regional Retention and Infiltration	Yes	No	Yes	No	Yes
Regional Capture, Detention, and Use	Yes	No	Yes	No	Yes
Centralized BMP					
Biofiltration	Yes	No	Yes	No	Yes
Constructed Wetlands	No	No	Yes	No	Yes
Treatment/Low-Flow Diversions	Yes	No	Yes	No	Yes
Creek, River, Estuary Restoration	No	No	Yes	No	Yes
Distributed BMPs					
Site Scale Detention	Yes	No	Yes	No	Yes
LID – Infiltration/Filtration BMPs – Porous Pavement, Green Streets, Bioswale/Filter Strips, Downspout Disconnects	Yes	No	Yes	No	Yes
LID – Green Infrastructure – Capture and Use – Cisterns, Rain Barrels, Green roofs, Planter Boxes	Yes	No	Yes	No	Yes
Flow-through Treatment BMPs	Yes	No	Yes	No	Yes
Source Control Treatment BMPs (catch basin inserts/screens, hydrodynamic separators, gross solids removal devices)	Yes	No	Yes	No	Yes
Low-Flow Diversions	Yes	Yes	Yes	No	Yes

NOTE: These conclusions are based on typical size and function of BMPs.

3.2 Air Quality

This section of the Program Environmental Impact Report (PEIR) addresses potential air quality impacts associated with implementation of the proposed program. The environmental setting provides a description of the general air quality and meteorological conditions in the South Coast Air Basin (Basin). The regulatory setting provides a description of applicable federal, state, and local regulatory policies. The impact assessment section evaluates the potential for short-term and long-term air quality impacts to result from implementation of the proposed program. Mitigation measures are recommended as necessary to reduce significant air quality impacts.

3.2.1 Environmental Setting

Regional Setting

The proposed program is located in Los Angeles County (County), which covers an area of about 4,083 square miles and comprises 88 cities and approximately 2,650 square miles of unincorporated areas. The majority of the County is highly urbanized and consists of several cities, communities, and unincorporated areas. The proposed program is located in multiple jurisdictions of Los Angeles County, which include the Los Angeles County Flood Control District (LACFCD), County of Los Angeles, and the following 46 cities: Los Angeles, Beverly Hills, Culver City, Inglewood, Santa Monica, West Hollywood, Hawthorne, El Segundo, Lomita, Baldwin Park, Covina, Glendora, Industry, La Puente, Malibu, Calabasas, Agoura Hills, Westlake Village, Hidden Hills, Santa Clarita, Rancho Palos Verdes, Palos Verdes Estates, Rolling Hills Estates, Redondo Beach, Hermosa Beach, Torrance, Manhattan Beach, Arcadia, Azusa, Bradbury, Duarte, Monrovia, Sierra Madre, Alhambra, Burbank, Glendale, Hidden Hills, La Cañada Flintridge, Montebello, Monterey Park, Pasadena, Rosemead, San Gabriel, San Marino, South Pasadena, and Temple City (refer to Figure 1-1). Each of these jurisdictions have independent planning documents that guide the development of urban, agricultural and other land uses within their jurisdictional boundaries.

Climate and Meteorology

The program is located in the portion of Los Angeles County that lies within the Basin. The program area is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). The Basin is an approximately 6,600-square-mile coastal plain bounded by the Pacific Ocean to the southwest and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. The Basin includes the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties, and all of Orange County.

The ambient concentrations of air pollutants are determined by the amount of emissions released by sources and the atmosphere's ability to transport and dilute such emissions. Natural factors that affect transport and dilution include terrain, wind, atmospheric stability, and sunlight. Therefore, existing air quality conditions in the program area are determined by such natural factors as topography, meteorology, and climate, in addition to the amount of emissions released by existing air pollutant sources.

Atmospheric conditions such as wind speed, wind direction, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants. The topography and climate of Southern California combine to make the Basin an area of high air pollution potential. The Basin is a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean to the west and high mountains around the rest of the perimeter. The general region lies in the semi-permanent high-pressure zone of the eastern Pacific, resulting in a mild climate tempered by cool sea breezes with light average wind speeds. The usually mild climatological pattern is disrupted occasionally by periods of extremely hot weather, winter storms, or Santa Ana winds. During the summer months, a warm air mass frequently descends over the cool, moist marine layer produced by the interaction between the ocean's surface and the lowest layer of the atmosphere. The warm upper layer forms a cap over the cool marine layer and inhibits the pollutants in the marine layer from dispersing upward. In addition, light winds during the summer further limit ventilation. Furthermore, sunlight triggers the photochemical reactions that produce ozone. The region experiences more days of sunlight than any other major urban area in the nation except Phoenix (SCAQMD, 2012).

Criteria Pollutants

The California Air Resources Board (CARB) and the United States Environmental Protection Agency (USEPA) currently focus on the following air pollutants as indicators of ambient air quality: ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable or breathable particulate matter with an aerodynamic diameter of 10 micrometers or less (PM_{10}), fine particulate matter with an aerodynamic diameter of 2.5 micrometers or less ($PM_{2.5}$), and lead. The pollutants are referred to as "criteria air pollutants" since they are the most prevalent air pollutants known to be harmful to human health, and extensive health-effects criteria documents are available about their effects on human health and welfare. Standards have been established for each criteria pollutant to meet specific public health and welfare criteria set forth in the federal Clean Air Act (CAA). California has generally adopted more stringent ambient air quality standards for the criteria air pollutants (referred to as State Ambient Air Quality Standards, or state standards) and has adopted air quality standards for some pollutants for which there is no corresponding national standard.

Ozone

Ozone, the main component of photochemical smog, is primarily a summer and fall pollution problem. Ozone is not emitted directly into the air, but is formed through a complex series of chemical reactions involving other compounds that are directly emitted. These directly emitted pollutants (also known as ozone precursors) include reactive organic gases (ROGs) or volatile organic compounds (VOCs), and oxides of nitrogen (NO_X). While both ROGs and VOCs refer to compounds of carbon, ROG is a term used by CARB and is based on a list of exempted carbon compounds determined by CARB. VOC is a term used by the USEPA and is based on USEPA's own exempt list. The time period required for ozone formation allows the reacting compounds to spread over a large area, producing regional pollution problems. Ozone concentrations are the cumulative result of regional development patterns rather than the result of a few significant emission sources.

Once ozone is formed, it remains in the atmosphere for 1 or 2 days. Ozone is then eliminated through reaction with chemicals on the leaves of plants, attachment to water droplets as they fall to earth (rainout), or absorption by water molecules in clouds that later fall to earth with rain (washout).

Short-term exposure to ozone can irritate the eyes and cause constriction of the airways. In addition to causing shortness of breath, ozone can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema.

Carbon Monoxide

CO, a colorless and odorless gas, is a relatively nonreactive pollutant that is a product of incomplete combustion and is mostly associated with motor vehicles. When inhaled at high concentrations, CO combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease, or anemia. CO measurements and modeling were important in the early 1980s, when CO levels were regularly exceeded throughout California. In more recent years, CO measurements and modeling have not been a priority in most California air districts because of the retirement of older polluting vehicles, lower emissions from new vehicles, and improvements in fuels.

Nitrogen Dioxide

NO_2 is a reddish-brown gas that is a by-product of combustion processes. Automobiles and industrial operations are the main sources of NO_2. Combustion devices emit primarily nitric oxide (NO), which reacts through oxidation in the atmosphere to form NO_2. The combined emissions of NO and NO_2 are referred to as NO_X, which are reported as equivalent NO_2. Aside from its contribution to ozone formation, NO_2 can increase the risk of acute and chronic respiratory disease and reduce visibility. NO_2 may be visible as a coloring component of a brown cloud on high-pollution days, especially in conjunction with high ozone levels.

Sulfur Dioxide

SO_2 is a colorless, extremely irritating gas or liquid. It enters the atmosphere as a pollutant, mainly as a result of burning high-sulfur-content fuel oils and coal, and from chemical processes occurring at chemical plants and refineries. When SO_2 oxidizes in the atmosphere, it forms sulfur trioxide (SO_3). Collectively, these pollutants are referred to as sulfur oxides (SO_X).

Major sources of SO_2 include power plants, large industrial facilities, diesel vehicles, and oil-burning residential heaters. Emissions of SO_2 aggravate lung diseases, especially bronchitis. It also constricts the breathing passages, especially in people with asthma and people involved in moderate to heavy exercise. SO_2 potentially causes wheezing, shortness of breath, and coughing. Long-term SO_2 exposure has been associated with increased risk of mortality from respiratory or cardiovascular disease.

Particulate Matter

PM_{10} and $PM_{2.5}$ consist of particulate matter that is 10 microns or less in diameter and 2.5 microns or less in diameter, respectively (a micron is one-millionth of a meter). PM_{10} and $PM_{2.5}$ represent fractions of particulate matter that can be inhaled into the air passages and the lungs and can cause adverse health effects. Acute and chronic health effects associated with high particulate levels include the aggravation of chronic respiratory diseases, heart and lung disease, and coughing, bronchitis, and respiratory illnesses in children. Recent mortality studies have shown an association between morbidity and mortality and daily concentrations of particulate matter in the air. CARB has estimated that achieving the ambient air quality standards for PM_{10} could reduce premature mortality rates by 6,500 cases per year (CARB, 2002). Particulate matter can also damage materials and reduce visibility. One common source of $PM_{2.5}$ is diesel exhaust emissions.

PM_{10} consists of particulate matter emitted directly into the air (e.g., fugitive dust, soot, and smoke from mobile and stationary sources, construction operations, fires, and natural windblown dust) and particulate matter formed in the atmosphere by condensation and/or transformation of SO_2 and ROGs. Traffic generates particulate matter emissions through entrainment of dust and dirt particles that settle onto roadways and parking lots. PM_{10} and $PM_{2.5}$ are also emitted by wood burning in residential wood stoves and fireplaces and open agricultural burning. $PM_{2.5}$ can also be formed through secondary processes such as airborne reactions with certain pollutant precursors, including ROGs, ammonia (NH_3), NOx, and SOx.

Lead

Lead is a metal found naturally in the environment and present in some manufactured products. There are a variety of activities that can contribute to lead emissions, which are grouped into two general categories, stationary and mobile sources. On-road mobile sources include light-duty automobiles; light-, medium-, and heavy-duty trucks as well as motorcycles.

Emissions of lead have dropped substantially over the past 40 years. The reduction before 1990 was largely due to the phase-out of lead as an anti-knock agent in gasoline for on-road automobiles. Substantial emission reductions have also been achieved through enhanced controls in the metals-processing industry. In the Basin, atmospheric lead is generated almost entirely by the combustion of leaded gasoline and contributes less than one percent of the material collected as total suspended particulates.

Toxic Air Contaminants

Concentrations of toxic air contaminants (TACs), or in federal parlance, hazardous air pollutants (HAPs), are also used as indicators of ambient air quality conditions. A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or in serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations.

According to The California Almanac of Emissions and Air Quality (CARB, 2009), the majority of the estimated health risk from TACs can be attributed to relatively few compounds, the most important being particulate matter from diesel-fueled engines (diesel particulate matter). Diesel particulate matter differs from other TACs in that it is not a single substance, but rather a complex mixture of hundreds of substances. Although diesel particulate matter is emitted by diesel-fueled internal combustion engines, the composition of the emissions varies depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emission control system is present.

Unlike the other TACs, no ambient monitoring data are available for diesel particulate matter because no routine measurement method currently exists. However, CARB has made preliminary concentration estimates based on a particulate matter exposure method. This method uses the CARB emissions inventory's PM_{10} database, ambient PM_{10} monitoring data, and the results from several studies to estimate concentrations of diesel particulate matter. In addition to diesel particulate matter, the TACs for which data are available that pose the greatest existing ambient risk in California are benzene, 1,3-butadiene, acetaldehyde, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene.

Odorous Emissions

Odors are generally regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache). Offensive odors are unpleasant and can lead to public distress, generating citizen complaints to local governments. Although unpleasant, offensive odors rarely cause physical harm. The occurrence and severity of odor impacts depend on the nature, frequency, and intensity of the source, wind speed, direction, and the sensitivity of receptors.

Program Area Air Quality Setting

Existing Air Quality

SCAQMD maintains monitoring stations within district boundaries that monitor air quality and compliance with associated ambient standards. The Enhanced Watershed Management Program (EWMP) areas associated with the proposed program are located in multiple jurisdictions within the County of Los Angeles, all of which are located within in the Basin. Given the large geographic region of the EWMP areas, an extensive listing of the air quality monitoring data collected by each SCAQMD monitoring station located within the EWMP areas is not provided in this PEIR. As individual EWMP projects are not assessed separately in this PEIR, the presentation of the air quality data collected by the monitoring stations relevant to each EWMP project is more applicable for inclusion in the environmental documents for future individual EWMP projects.

Both CARB and USEPA use the data measured at air quality monitoring stations to designate areas according to their attainment status for criteria air pollutants. The purpose of these designations is to identify the areas with air quality problems and thereby initiate planning efforts for improvement. The three basic designation categories are nonattainment, attainment, and unclassified. Unclassified is used in an area that cannot be classified on the basis of available information as meeting or not meeting the standards. In addition, the California designations include a subcategory of nonattainment-transitional, which is given to nonattainment areas that are progressing and nearing attainment. The current attainment status for the Basin is provided in **Table 3.2-1**.

TABLE 3.2-1
SOUTH COAST AIR BASIN ATTAINMENT STATUS

	Attainment Status	
Pollutant	**California Standards**	**Federal Standards**
Ozone	Extreme Nonattainment	Severe Nonattainment
CO	Attainment	Unclassified/ Attainment
NO_2	Attainment	Unclassified/ Attainment
SO_2	Attainment	Attainment
PM_{10}	Nonattainment	Attainment
$PM_{2.5}$	Nonattainment	Nonattainment

SOURCE: CARB, 2013b; USEPA, 2013.

Sensitive Land Uses

Land uses such as schools, children's daycare centers, hospitals, and convalescent homes are considered to be more sensitive to poor air quality than the general public because the population groups associated with these uses have increased susceptibility to respiratory distress. In addition, residential uses are considered more sensitive to air quality conditions than commercial and industrial uses, because people generally spend longer periods of time at their residences, resulting in greater exposure to ambient air quality conditions. Recreational land uses are considered moderately sensitive to air pollution. Exercise places a high demand on respiratory functions, which can be impaired by air pollution, even though exposure periods during exercise are generally short. In addition, noticeable air pollution can detract from the enjoyment of recreation. Given that the majority of the County is highly urbanized with a variety of land use types (e.g., open space, residential, commercial, mixed-use, public and semi-public, and industrial uses), and that the proposed program would be located in various watersheds across the County that span multiple jurisdictions, existing sensitive uses such as residences, schools, hospitals, daycare centers, etc., would be located within and in proximity to the EWMP areas. As described in Section 3.9, *Land Use and Agriculture,* of this PEIR, many of the EWMP areas, including Ballona Creek, Beach Cities, Dominguez Channel, and Marina del Rey, have residential uses as the predominant land use.

3.2.2 Regulatory Setting

The EWMP areas associated with the proposed program are located in Los Angeles County within the Basin. Air quality in the County is regulated by USEPA, CARB, and SCAQMD. The

County of Los Angeles General Plan also contains an Air Quality Element in their 2014 draft document. This element summarizes air quality issues and outlines the goals and policies in the General Plan that will improve air quality and reduce greenhouse gas emissions (Los Angeles County, 2014). Los Angeles County's adopted General Plan has not yet been updated to include this element.

USEPA

Criteria Air Pollutants

At the federal level, USEPA has been charged with implementing national air quality programs. USEPA's air quality mandates are drawn primarily from the federal CAA, which was enacted in 1970. The most recent major amendments to the CAA were made by Congress in 1990.

The CAA requires USEPA to establish National Ambient Air Quality Standards (NAAQS). USEPA has established primary and secondary NAAQS for the following "criteria air pollutants": ozone, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead. **Table 3.2-2** shows the NAAQS for these pollutants.

The CAA also requires each state to prepare an air quality control plan, referred to as a state implementation plan (SIP). The CAA Amendments of 1990 (CAAA) added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIPs are modified periodically to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins, as reported by their jurisdictional agencies. USEPA is responsible for reviewing all SIPs to determine whether they conform to the mandates of the CAA and its amendments, and to determine whether implementing the SIPs will achieve air quality goals. If USEPA determines a SIP to be inadequate, a federal implementation plan that imposes additional control measures may be prepared for the nonattainment area. If an approvable SIP is not submitted or implemented within the mandated time frame, sanctions may be applied to transportation funding and stationary sources of air pollution in the air basin.

USEPA also has regulatory and enforcement jurisdiction over emission sources beyond state waters (outer continental shelf), and those that are under the exclusive authority of the federal government, such as aircraft, locomotives, and interstate trucking. USEPA's primary role at the state level is to oversee state air quality programs. USEPA sets federal vehicle and stationary source emissions standards and provides research and guidance in air pollution programs.

In June 2004, USEPA finalized the adoption of a comprehensive national program/rule to reduce emissions from off-road diesel engines used primarily in construction, agricultural, and industrial applications by integrating engine and fuel controls as a system to gain the greatest emission reductions. Specifically, USEPA adopted new emission standards for off-road diesel engines and sulfur reductions in off-road diesel fuel aimed at dramatically reducing harmful emissions and helping states and local areas that have been designated as 8-hour ozone nonattainment areas to improve their air quality. The new engine standards, which are based on the use of advanced exhaust emission control devices, began to take effect in 2008 and would continue to be phased in until 2015. USEPA estimates particulate matter reductions of 95 percent, NOx reductions of 90

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TABLE 3.2-2
AMBIENT AIR QUALITY STANDARDS FOR CRITERIA POLLUTANTS

Pollutant	Averaging Time[a]	State Standard	National Standard	Pollutant Health and Atmospheric Effects	Major Pollutant Sources
Ozone	1 hour 8 hours	0.09 ppm 0.070 ppm[b]	--- 0.075 ppm	High concentrations can directly affect lungs, causing irritation. Long-term exposure may cause damage to lung tissue.	Formed when ROG and NO_X react in the presence of sunlight. Major sources include on-road motor vehicles, solvent evaporation, and commercial/industrial mobile equipment.
Carbon Monoxide (CO)	1 hour 8 hours	20 ppm 9.0 ppm	35 ppm 9 ppm	Classified as a chemical asphyxiant, carbon monoxide interferes with the transfer of fresh oxygen to the blood and deprives sensitive tissues of oxygen.	Internal combustion engines, primarily gasoline-powered motor vehicles.
Nitrogen Dioxide (NO_2)	1 hour Annual Arithmetic Mean	0.18 ppm 0.030 ppm	0.100 ppm 0.053 ppm	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown.	Motor vehicles, petroleum refining operations, industrial sources, aircraft, ships, and railroads.
Sulfur Dioxide (SO_2)	1 hour 3 hours 24 hours Annual Arithmetic Mean	0.25 ppm --- 0.04 ppm ---	75 ppb 0.5 ppm 0.14 ppm 0.030 ppm	Irritates upper respiratory tract; injurious to lung tissue. Can yellow the leaves of plants; destructive to marble, iron, and steel. Limits visibility and reduces sunlight.	Fuel combustion, chemical plants, sulfur recovery plants, and metal processing.
Respirable Particulate Matter (PM_{10})	24 hours Annual Arithmetic Mean	50 µg/m^3 20 µg/m^3	150 µg/m^3 ---	May irritate eyes and respiratory tract, decreases in lung capacity, increases cancer and mortality. Produces haze and limits visibility.	Dust and fume-producing industrial and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
Fine Particulate Matter ($PM_{2.5}$)	24 hours Annual Arithmetic Mean	--- 12 µg/m^3	35 µg/m^3 12.0 µg/m^3	Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and results in surface soiling.	Fuel combustion in motor vehicles, equipment, and industrial sources; residential and agricultural burning; Also formed from photochemical reactions of other pollutants, including NO_X, sulfur oxides, and organics.
Lead (Pb)	30 Day Average Calendar Quarter Rolling 3-Month Average	1.5 µg/m^3 --- ---	--- 1.5 µg/m^3 0.15 µg/m^3	Disturbs gastrointestinal system, and causes anemia, kidney disease, and neuromuscular and neurological dysfunction (in severe cases).	*Present source:* lead smelters, battery manufacturing, and recycling facilities. Past source: combustion of leaded gasoline.
Hydrogen Sulfide	1 hour	0.03 ppm	No National Standard	Nuisance odor (rotten egg smell), headache, and breathing difficulties (higher concentrations)	Geothermal power plants, petroleum production and refining
Sulfates (SO_4)	24 hours	25 µg/m^3	No National Standard	Decrease in ventilatory functions; aggravation of asthmatic symptoms; aggravation of cardio-pulmonary disease; vegetation damage; degradation of visibility; property damage.	Industrial processes.
Visibility-Reducing Particles	8 hours	Extinction of 0.23/km; visibility of 10 miles or more	No National Standard	Reduces visibility, reduced airport safety, lower real estate value, and discourages tourism.	See $PM_{2.5}$.
Vinyl Chloride	24 hours	0.01 ppm	No National Standard	Short-term exposure to high levels of vinyl chloride in the air can cause dizziness, drowsiness, and headaches. Long-term exposure through inhalation and oral exposure can cause liver damage. Cancer is a major concern from exposure to vinyl chloride via inhalation. Vinyl chloride exposure has been shown to increase the risk of angiosarcoma, a rare form of liver cancer in humans.	Polyvinyl chloride (PVC) plastic and vinyl products.

NOTE: ppm = parts per million; ppb = parts per billion; µg/m^3 = micrograms per cubic meter.
[a] The averaging time is the interval of time over which the sample results are reported.
[b] This concentration was approved by CARB on April 28, 2005, and became effective May 17, 2006.

SOURCE: CARB, 2013c.

percent, and the virtual elimination of SO_X from off-road engines that meet the new standards. Because the emission control devices in the off-road diesel engines could potentially be damaged by sulfur, USEPA also targeted the reduction of sulfur levels in off-road diesel fuel as part of its rule. The rule aimed to reduce off-road diesel fuel sulfur levels by 99 percent, resulting in an Ultra Low Sulfur Diesel (ULSD) fuel that has a maximum sulfur concentration of 15 parts per million (ppm). The phase-in of fuel controls to reduce the sulfur levels in off-road diesel fuel began in 2007.

With respect to on-road diesel engines, USEPA promulgated the Heavy-Duty Highway Rule in 2007, which aims to reduce emissions from on-road, heavy-duty diesel trucks by establishing a series of increasingly strict emission standards for new engines. Manufacturers are required to produce new diesel vehicles that meet particulate matter and NO_X emission standards beginning with model year 2007.

Hazardous Air Pollutants

USEPA has programs for identifying and regulating HAPs. The first National Emission Standards for Hazardous Air Pollutants (NESHAPs) were originally required by the CAA in 1970, which were developed for sources and source categories of HAPs that were determined to pose adverse risk to human health. The USEPA Administrator was directed to set risk-based NESHAPs at a level that provided an ample margin of safety to protect the public health from HAPs. Subsequently, in Section 112(d) of the 1990 CAAA, Congress directed USEPA to develop technology-based standards to further regulate HAPs. As opposed to the original conception of NESHAPs as a risk-based standard, the technology-based NESHAPS were established according to Maximum Achievable Control Technology (MACT) requirements. The MACT NESHAP standards were different for major sources than for area sources of HAPs. Major sources are defined as stationary sources with potential to emit more than 10 tons per year (tpy) of a single HAP or more than 25 tpy of any combination of HAPs; all other sources are considered area sources. Section 112(f) of the 1990 CAAA also specified that USEPA determine whether or not to promulgate additional NESHAP standards beyond the MACT within 8 years after promulgation of the MACT standard (but within 9 years after promulgation of the 2-year MACT source categories). Thus, USEPA is required to evaluate the NESHAPs developed according to the MACT standards for any “residual risk” with 8 years of promulgation. If the “residual risk” for a source category does not protect public health with “an ample margin of safety,” then USEPA must promulgate health-based standards for that source category to further reduce HAP emissions.

The CAAA also required USEPA to promulgate vehicle or fuel standards containing reasonable requirements that control toxic emissions of, at a minimum, benzene and formaldehyde. Performance criteria were established to limit mobile-source emissions of toxics, including benzene, formaldehyde, and 1,3-butadiene. In addition, Section 219 required the use of reformulated gasoline in selected areas with the most severe ozone nonattainment conditions to further reduce mobile-source emissions.

CARB

Criteria Air Pollutants

CARB, a department of the California Environmental Protection Agency, oversees air quality planning and control throughout California. CARB is responsible for coordination and oversight of state and local air pollution control programs in California and for implementation of the California Clean Air Act (CCAA). The CCAA, which was adopted in 1988, requires CARB to establish the California Ambient Air Quality Standards (CAAQS). CARB has established CAAQS for sulfates, hydrogen sulfide, vinyl chloride, visibility-reducing particulate matter, and the above-mentioned criteria air pollutants. Applicable CAAQS are shown in Table 3.2-2.

The CCAA requires all local air districts in the state to endeavor to achieve and maintain the CAAQS by the earliest practical date. The act specifies that local air districts shall focus particular attention on reducing the emissions from transportation and area-wide emission sources, and provides districts with the authority to regulate indirect sources.

Among CARB's other responsibilities are overseeing compliance by local air districts with California and federal laws; approving local air quality plans; submitting SIPs to USEPA; monitoring air quality; determining and updating area designations and maps; and setting emissions standards for new mobile sources, consumer products, small utility engines, off-road vehicles, and fuels.

Toxic Air Contaminants

Air quality regulations also focus on TACs. In general, for those TACs that may cause cancer, there is no concentration that does not present some risk. In other words, there is no safe level of exposure. This contrasts with the criteria air pollutants, for which acceptable levels of exposure can be determined and for which the ambient standards have been established. Instead, USEPA and CARB regulate HAPs and TACs, respectively, through statutes and regulations that generally require the use of the MACT or best available control technology (BACT) for toxics and to limit emissions. These statutes and regulations, in conjunction with additional rules set forth by the districts, establish the regulatory framework for TACs.

TACs in California are regulated primarily through the Tanner Air Toxics Act (Assembly Bill [AB] 1807 [Chapter 1047, Statutes of 1983]) and the Air Toxics Hot Spots Information and Assessment Act (Hot Spots Act) (AB 2588 [Chapter 1252, Statutes of 1987]). AB 1807 sets forth a formal procedure for CARB to designate substances as TACs. This includes research, public participation, and scientific peer review before CARB can designate a substance as a TAC. To date, CARB has identified more than 21 TACs and adopted USEPA's list of HAPs as TACs. Most recently, diesel particulate matter was added to the CARB list of TACs. Once a TAC is identified, CARB then adopts an airborne toxics control measure (ATCM) for sources that emit that particular TAC. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure below that threshold. If there is no safe threshold, the measure must incorporate BACT to minimize emissions.

The Air Toxics Hot Spots Information and Assessment Act requires existing facilities emitting toxic substances above a specified level to prepare a toxic-emission inventory, prepare a risk assessment if emissions are significant, notify the public of significant risk levels, and prepare and implement risk-reduction measures.

CARB published the *Air Quality and Land Use Handbook: A Community Health Perspective* (Handbook), which provides guidance concerning land use compatibility with TAC sources (CARB, 2005). Although it is not a law or adopted policy, the Handbook offers advisory recommendations for the siting of sensitive receptors near uses associated with TACs, such as freeways and high-traffic roads, commercial distribution centers, rail yards, ports, refineries, dry cleaners, gasoline stations, and industrial facilities, to help keep children and other sensitive populations out of harm's way.

SCAQMD

Criteria Air Pollutants

SCAQMD attains and maintains air quality conditions in the Basin through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. The clean air strategy of SCAQMD includes preparation of plans for attainment of ambient air quality standards, adoption and enforcement of rules and regulations concerning sources of air pollution, and issuance of permits for stationary sources of air pollution. SCAQMD also inspects stationary sources of air pollution and responds to citizen complaints; monitors ambient air quality and meteorological conditions; and implements programs and regulations required by the CAA, CAAA, and CCAA. Air quality plans applicable to the proposed program are discussed below.

Air Quality Management Plan

SCAQMD and the Southern California Association of Governments (SCAG) are responsible for preparing the air quality management plan (AQMP), which addresses federal and state CAA requirements. The AQMP details goals, policies, and programs for improving air quality in the Basin.

The 2012 AQMP was adopted by the SCAQMD Governing Board on December 12, 2012. The purpose of the 2012 AQMP for SCAG is to set forth a comprehensive and integrated program that will lead the Basin into compliance with the federal 24-hour $PM_{2.5}$ air quality standard, and to provide an update to the Basin's commitments toward meeting the federal 8-hour ozone standards. The AQMP also serves to satisfy recent USEPA requirements for a new attainment demonstration of the revoked 1-hour ozone standard, as well as a vehicle miles traveled (VMT) emissions offset demonstration.[1] Specifically, once approved by CARB, the AQMP would serve as the official SIP submittal for the federal 2006 24-hour $PM_{2.5}$ standard, for which USEPA has

1 Although the federal 1-hour ozone standard was revoked in 2005, the USEPA has proposed to require a new 1-hour ozone attainment demonstration in the South Coast extreme ozone nonattainment area as a result of a recent court decision. Although USEPA has replaced the 1-hour ozone standard with a more health protective 8-hour standard, the CAA anti-backsliding provisions require that California have approved plans for attaining the 1-hour standard.

established a due date of December 14, 2012.[2] In addition, the AQMP updates specific new control measures and commitments for emissions reductions to implement the attainment strategy for the 8-hour ozone SIP. The 2012 AQMP sets forth programs which require integrated planning efforts and the cooperation of all levels of government: local, regional, state, and federal. Currently, SCAQMD staff has already begun initiating an early development process for the 2015 AQMP.

SCAQMD Rules and Regulations

All projects are subject to SCAQMD rules and regulations in effect at the time of construction. Specific rules applicable to the construction anticipated under the proposed program would include the following:

Rule 401 – Visible Emissions. This rule is intended to prevent the discharge of pollutant emissions from an emissions source that results in visible emissions. Specifically, the rule prohibits the discharge of any air contaminant into the atmosphere by a person from any single source of emission for a period or periods aggregating more than 3 minutes in any 1 hour that is as dark or darker in shade than that designated No. 1 on the Ringelmann Chart, as published by the United States Bureau of Mines.

Rule 402 – Nuisance. This rule is intended to prevent the discharge of pollutant emissions from an emissions source that results in a public nuisance. Specifically, this rule prohibits any person from discharging quantities of air contaminants or other material from any source such that it would result in an injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public. Additionally, the discharge of air contaminants would also be prohibited where it would endanger the comfort, repose, health, or safety of any number of persons or the public, or that cause, or have a natural tendency to cause, injury or damage to business or property. This rule does not apply to odors emanating from agricultural operations necessary for the growing of crops or the raising of fowl or animals.

Rule 403 – Fugitive Dust. This rule is intended to reduce the amount of particulate matter entrained in the ambient air as a result of anthropogenic (human-made) fugitive dust sources by requiring actions to prevent, reduce, or mitigate fugitive dust emissions. Rule 403 applies to any activity or human-made condition capable of generating fugitive dust, and requires best available control measures to be applied to earthmoving and grading activities.

Toxic Air Contaminants

At the local level, air pollution control or management districts may adopt and enforce CARB control measures. Under SCAQMD Regulation XIV (Toxics and Other Non-Criteria Pollutants), and in particular Rule 1401 (New Source Review), all sources that possess the potential to emit TACs are required to obtain permits from SCAQMD. Permits may be granted to these operations

2 Although the 2012 AQMP was approved by the SCAQMD Board on December 7, 2012, the plan did not get submitted to the USEPA by December 14, 2012 as it first required approval from CARB. The 2012 AQMP was subsequently approved by CARB on January 25, 2013, and as of February 13, 2013 the plan has been submitted by CARB to the USEPA.

if they are constructed and operated in accordance with applicable regulations, including new source review standards and air toxics control measures. SCAQMD limits emissions and public exposure to TACs through a number of programs. SCAQMD prioritizes TAC-emitting stationary sources based on the quantity and toxicity of the TAC emissions and the proximity of the facilities to sensitive receptors. As none of the proposed Best Management Practices (BMP) projects in the County would involve TAC-emitting stationary sources, no permits from SCAQMD would be required for operation of the proposed BMP projects.

The Air Toxics Control Plan (March 2000, revised March 26, 2004) is a planning document designed to examine the overall direction of SCAQMD's air toxics control program. It includes development and implementation of strategic initiatives to monitor and control air toxics emissions. Control strategies that are deemed viable and are within SCAQMD's jurisdiction will each be brought to the SCAQMD Board for further consideration through the normal public review process. Strategies that are to be implemented by other agencies will be developed in a cooperative effort, and the progress will be reported back to the Board periodically.

In September 2008, the SCAQMD completed the Multiple Air Toxics Exposure Study III (MATES III). MATES III is a monitoring and evaluation study conducted in the Basin and is a follow-up to previous air toxics studies. The study consists of several elements, including a monitoring program, an updated emissions inventory of toxic air contaminants, and a modeling effort to characterize risk across the Basin. The study focuses on the carcinogenic risk from exposure to air toxics. However, it does not estimate mortality or other health effects from particulate exposures. MATES III shows that areas within the County have an estimated carcinogenic risk ranging from 1,173 to 1,449 in a million. These model estimates were based on monitoring data collected at 10 fixed sites within the Basin. As of June 2012, SCAQMD began conducting the MATES IV.

County of Los Angeles

General Plan

The Conservation and Open Space Element of the 1980 County of Los Angeles General Plan sets the policy direction for management of the County's natural resources, including air quality. The specific policies in the County General Plan related to improving air quality include:

Policy 1: Actively support strict air quality regulations for mobile and stationary sources, and continued research to improve air quality. Promote vanpooling, carpooling and improved public transportation.

Policy 2: Support the conservation of energy and encourage the development and utilization of new energy sources including geothermal, thermal waste, solar, wind and ocean-related sources.

Policy 3: Promote the use of solar energy to the maximum extent possible.

The Air Quality Element of the Draft 2014 County of Los Angeles General Plan summarizes air quality issues and outlines goals and policies that will improve air quality and reduce greenhouse gas emissions. These specific policies include:

Policy AQ 1.1: Minimize health risks to people from industrial toxic or hazardous air pollutant emissions, with an emphasis on local hot spots, such as existing point sources affecting immediate sensitive receptors.

Policy AQ 1.2: Encourage the use of low or no volatile organic compound (VOC) emitting materials.

Policy AQ 1.3: Reduce particulate inorganic and biological emissions from construction, grading, excavation, and demolition to the maximum extent feasible.

Policy AQ 1.4: Work with local air quality management districts to publicize air quality warnings, and to track potential sources of airborne toxics from identified mobile and stationary sources.

Policy AQ 2.1: Encourage the application of design and other appropriate measures when siting sensitive uses, such as residences, schools, senior centers, daycare centers, medical facilities, or parks with active recreational facilities within proximity to major sources of air pollution, such as freeways.

Policy AQ 2.2: Participate in, and effectively coordinate the development and implementation of community and regional air quality programs.

Policy AQ 3.1: Facilitate the implementation and maintenance of the Community Climate Action Plan to ensure that the County reaches its climate change and greenhouse gas emission reduction goals.

Policy AQ 3.2: Reduce energy consumption in County operations by 20 percent by 2015.

Policy AQ 3.3: Reduce water consumption in County operations.

Policy AQ 3.4: Participate in local, regional and state programs to reduce greenhouse gas emissions.

Policy AQ 3.5: Encourage maximum amounts of energy conservation in new development and municipal operations.

Policy AQ 3.6: Support and expand urban forest programs within the unincorporated areas.

City General Plans

The numerous cities encompassed by the EWMP project area all have their own respective city General Plans, some of which may contain policies that address air quality. As implementation of the individual structural BMP projects proceed, specific policies and objectives pertaining to air quality from applicable city General Plans will be identified and evaluated on a project-by-project basis during subsequent California Environmental Quality Act (CEQA) environmental processes.

3.2.3 Impact Assessment

Thresholds of Significance

Based on Appendix G of the CEQA Guidelines, impacts related to air quality may be considered significant if the proposed program would:

- Conflict with or obstruct implementation of the applicable air quality plan.
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation.
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).
- Expose sensitive receptors to substantial pollutant concentrations.
- Create objectionable odors affecting a substantial number of people.

As guided by Appendix G of the CEQA Guidelines, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the above determinations. As such, the significance thresholds and analysis methodologies in SCAQMD's *CEQA Air Quality Handbook* are used in evaluating project impacts. The SCAQMD has established daily mass emissions thresholds for criteria pollutants and ozone precursors, which are shown in **Table 3.2-3**

Program Impact Discussion

Air Quality Plan

Impact 3.2-1: The project could conflict with or obstruct implementation of the applicable air quality plan.

Structural (Regional, Centralized, and Distributed) BMPs

In preparation of the AQMP, SCAQMD and SCAG use land use designations contained in General Plan documents to forecast, inventory, and allocate regional emissions from land use and development-related sources. For purposes of analyzing consistency with the AQMP, projects that are consistent with the regional population, housing, and employment forecasts identified by SCAG are considered to be consistent with the AQMP growth projections, since the forecast assumptions by SCAG forms the basis of the land use and transportation control portions of the AQMP.

TABLE 3.2-3
SCAQMD REGIONAL AIR QUALITY SIGNIFICANCE THRESHOLDS

	Mass Daily Thresholds (lbs/day)	
Pollutant	**Construction**	**Operations**
Oxides of Nitrogen (NO_X)	100	55
Reactive Organic Gases (ROG)	75	55
Respirable Particulate Matter (PM_{10})	150	150
Fine Particulate Matter ($PM_{2.5}$)	55	55
Oxides of Sulfur (SO_X)	150	150
Carbon Monoxide (CO)	550	550
Lead[a]	3	3
TACs (including carcinogens and non-carcinogens	Maximum Incremental Cancer Risk ≥ 10 in 1 million Cancer Burden > 0.5 excess cancer cases (in areas ≥ 1 in 1 million) Chronic & Acute Hazard Index ≥ 1.0 (project increment)	

[a] As the proposed program would not involve the development of any major lead emissions sources, lead emissions are not analyzed further in the PEIR.

SOURCE: SCAQMD, 2011.

Additionally, since SCAG's regional growth forecasts are based upon, among other things, land uses designated in General Plans, a project that is consistent with the land use designated in a city's General Plan would also be consistent with the SCAG's regional forecast projections, and thus also with the AQMP growth projections.

Implementation of the proposed program would involve the installation of structural control measures that would be constructed as BMPs to reduce the impact of stormwater and non-stormwater on receiving water quality within the EWMP areas. As such, the proposed program is not a land use project and its implementation would not induce any additional growth within the EWMP areas in the County. Therefore, the proposed program would not conflict with, or obstruct, implementation of the AQMP. Overall, this impact would be less than significant.

Mitigation Measures: None required

Significance Determination: Less than significant

Non-Structural (Institutional) BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the construction of new facilities. Consequently, no impacts associated with implementation of the SCAQMD's AQMP would result.

Mitigation Measures: None required

Significance Determination: No impact

Air Quality Standards

Impact 3.2-2: The project could violate any air quality standard or contribute substantially to an existing or projected air quality violation.

Structural (Regional, Centralized, and Distributed) BMPs

Construction

Development of the proposed structural BMPs would generally involve construction phases such as site preparation, grading and excavation, and construction of the structural control measure. Construction activities associated with each structural BMP (regional, centralized, and distributed) would generate pollutant emissions from the following general activities: (1) site preparation, grading, and excavation; (2) construction workers traveling to and from a BMP site; (3) delivery and hauling of construction supplies to and soil and debris from the structural BMP site; (4) fuel combustion by on-site construction equipment; and (5) construction of the structural BMP. These construction activities would temporarily create emissions of dust, fumes, equipment exhaust, and other air contaminants. Construction activities involving site preparation and grading would primarily generate PM_{10} emissions. Mobile source emissions (use of diesel-fueled equipment on-site, and traveling to and from a BMP site) would primarily generate NO_X emissions. The amount of emissions generated on a daily basis would vary, depending on the intensity and types of construction activities occurring at the same time.

The timing and sequencing of the development of the proposed structural BMPs within the EWMP areas are currently unknown. Thus, the amount of program-related construction that would occur on a daily or annual basis cannot be determined with any certainty at this time. As such, it is expected that the construction activities for the structural BMPs in the EWMP areas would occur intermittently throughout the course of the program implementation period Construction impacts associated with each structural BMP development would be short-term in nature and limited to the period of time when construction activity is taking place for that particular development. Although it is beyond the scope of this PEIR to assess the construction emissions for each individual BMP project, for the purpose of this analysis an emissions estimate for a representative "worst-case" construction scenario of each structural BMP type (i.e., distributed, centralized, and regional) is provided to demonstrate the magnitude of the daily emissions that can be generated by each structural BMP type. As such, a worst-case construction scenario was defined for a small-, medium-, and large-scale structural BMP project, which corresponds to a distributed, centralized, and regional structural BMP project, respectively. In addition, the year 2015 was used as the construction analysis year to provide a conservative analysis, since construction equipment used in future years beyond 2015 would likely emit pollutants at a lower rate because of more stringent emission standards, advances in technologies and fuels, and equipment turnover.

The maximum daily construction emissions for the three structural BMP project types were estimated using the California Emissions Estimator Model (CalEEMod), which is designed to model construction emissions for land use development projects based on building size, land use and type, and disturbed acreage, and allows for the input of project-specific information. The construction-related emissions of criteria air pollutants for the three structural BMP types were modeled based on general information provided in the project description and CalEEMod default settings along with reasonable assumptions based on other similar types of projects. The specific modeling parameters pertaining to the types and amount of construction equipment used during each construction phase for a representative distributed, centralized, and regional structural BMP project that was used to generate construction emissions are shown in **Tables 3.2-4**, **3.2-5**, and **3.2-6**, respectively.

TABLE 3.2-4
MODELING PARAMETERS FOR WORST-CASE CONSTRUCTION SCENARIO FOR A DISTRIBUTED BMP PROJECT

Construction Phase	Construction Equipment Type	Construction Equipment Quantity	Construction Equipment Daily Usage Hours
Site Preparation	Excavator	1	8
	Tractors/Loaders/Backhoes	1	6
	Other General Industrial Equipment	1	8
Grading	Graders	1	4
	Rubber Tired Dozers	1	4
	Tractors/Loaders/Backhoes	1	8
Building Construction	Forklifts	1	8
	Generator Sets	1	8
	Tractors/Loaders/Backhoes	2	8
	Welders	1	8
Acres of Grading:	2		

TABLE 3.2-5
MODELING PARAMETERS FOR WORST-CASE CONSTRUCTION SCENARIO FOR A CENTRALIZED BMP PROJECT

Construction Phase	Construction Equipment Type	Construction Equipment Quantity	Construction Equipment Daily Usage Hours
Site Preparation	Excavator	2	6
	Tractors/Loaders/Backhoes	3	8
	Other General Industrial Equipment	1	8
Grading	Graders	2	8
	Rubber Tired Dozers	2	8
	Tractors/Loaders/Backhoes	2	8
Building Construction	Forklifts	2	8
	Generator Sets	2	8
	Tractors/Loaders/Backhoes	3	8
	Welders	1	8
Acres of Grading:	10		

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TABLE 3.2-6
MODELING PARAMETERS FOR WORST-CASE CONSTRUCTION SCENARIO FOR A REGIONAL BMP PROJECT

Construction Phase	Construction Equipment Type	Construction Equipment Quantity	Construction Equipment Daily Usage Hours
Site Preparation	Excavator	3	8
	Tractors/Loaders/Backhoes	4	8
	Other General Industrial Equipment	3	8
	Rubber Tired Dozers	2	8
Grading	Graders	2	8
	Rubber Tired Dozers	3	8
	Tractors/Loaders/Backhoes	4	8
Building Construction	Forklifts	3	8
	Generator Sets	4	8
	Tractors/Loaders/Backhoes	4	7
	Welders	1	8
Acres of Grading:	40		

Tables 3.2-7, **3.2-8**, and **3.2-9** summarize the modeled worst-case daily emissions that are estimated to occur on peak construction days for a representative distributed, centralized, and regional structural BMP project, respectively. The CalEEMod modeling for each representative structural BMP project type assumes that appropriate dust control measures would be implemented during each phase of development as required by SCAQMD Rule 403—Fugitive Dust. These dust control measures generally include, but are not limited to, the following:

- All haul trucks shall be covered when loaded with fill.
- Paved streets shall be swept at least once per day where there is evidence of dirt that has been carried on to the roadway.
- Watering trucks shall be used to minimize dust. Watering should be sufficient to confine dust plumes to the project work areas.
- Active disturbed areas shall have water applied to them three times daily.
- Inactive disturbed areas shall be revegetated as soon as feasible to prevent soil erosion.
- For disturbed surfaces to be left inactive for four or more days and that will not be revegetated, a chemical stabilizer shall be applied per manufacturer's instruction.
- For unpaved roads, chemical stabilizers shall be applied or the roads shall be watered once per hour during active operation.
- Vehicle speed on unpaved roads shall be limited to 15 miles per hour.
- For open storage piles that will remain on-site for two or more days, water shall be applied once per hour, or coverings shall be installed.

- For paved road track-out, all haul vehicles shall be covered and shall maintain a freeboard height of 12 inches.
- During high wind conditions (wind speeds in excess of 25 miles per hour), all earthmoving activities shall cease or water shall be applied to soil not more than 15 minutes prior to disturbing such soil.
- Install wheel washers where vehicles enter and exit unpaved roads onto paved roads, or wash off trucks and any equipment leaving the construction site each trip on a gravel surface to prevent dirt and dust from impacting the surrounding areas.

TABLE 3.2-7
ESTIMATED PEAK DAILY EMISSIONS FOR PROJECT CONSTRUCTION ACTIVITIES FOR A DISTRIBUTED BMP PROJECT

	Estimated Maximum Daily Emissions (lbs/day)					
Construction Activity	**ROG**	**NO_X**	**CO**	**SO_x**	**PM_{10}[a]**	**$PM_{2.5}$[a]**
Site Preparation: *On-Site*	1.08	10.83	7.38	0.01	0.73	0.67
Off-Site	0.04	0.05	0.53	1.06	7.90	7.20
Total Emissions:	**1.12**	**10.88**	**7.91**	**1.07**	**8.63**	**7.87**
Grading: *On-Site*	2.24	16.06	15.02	0.20	1.30	1.20
Off-Site	5.87	80.41	67.88	0.21	1.52	1.39
Total Emissions:	**8.11**	**96.47**	**82.90**	**0.41**	**2.82**	**2.59**
Building: *On-Site*	2.30	16.03	12.00	.02	1.24	1.19
Off-Site	0.17	0.23	2.45	4.91	3.64	3.34
Total Emissions:	**2.47**	**16.26**	**14.45**	**4.93**	**4.88**	**4.53**
Maximum Regional Daily Emissions	**8.11**	**96. 47**	**82.90**	**0.41**	**2.82**	**2.59**
Regional Significance Threshold	*75*	*100*	*550*	*150*	*150*	*55*
Significant Impact?	No	No	No	No	No	No

NOTE: See Appendix C for CalEEMod model outputs.

[a] PM_{10} and $PM_{2.5}$ emission estimates are based on compliance with SCAQMD Rule 403 requirements for fugitive dust suppression.

TABLE 3.2-8
ESTIMATED PEAK DAILY EMISSIONS FOR PROJECT CONSTRUCTION ACTIVITIES FOR A CENTRALIZED BMP PROJECT

	Estimated Maximum Daily Emissions (lbs/day)					
Construction Activity	**ROG**	**NO_X**	**CO**	**SO_x**	**PM_{10}[a]**	**$PM_{2.5}$[a]**
Site Preparation: *On-Site*	2.10	20.98	14.56	0.02	1.45	1.34
Off-Site	0.07	0.09	0.99	1.99	1.48	1.35
Total Emissions:	**2.17**	**21.07**	**15.55**	**2.01**	**2.93**	**2.69**
Grading: *On-Site*	5.39	57.37	36.76	0.04	3.10	2.85
Off-Site	6.93	108.06	80.26	0.25	1.79	1.64
Total Emissions:	**12.32**	**165.43**	**117.02**	**0.29**	**4.89**	**4.49**
Building: *On-Site*	3.48	25.48	18.62	0.03	1.97	1.88
Off-Site	1.60	8.32	21.25	0.04	0.14	0.13
Total Emissions:	**5.08**	**33.80**	**39.87**	**0.07**	**2.11**	**2.01**
Maximum Regional Daily Emissions	**12.32**	**165.43**	**117.02**	**0.29**	**4.89**	**4.49**
Regional Significance Threshold	*75*	*100*	*550*	*150*	*150*	*55*
Significant Impact?	No	**Yes**	No	No	No	No

NOTE: See Appendix C for CalEEMod model outputs.
[a] PM_{10} and $PM_{2.5}$ emission estimates are based on compliance with SCAQMD Rule 403 requirements for fugitive dust suppression.

TABLE 3.2-9
ESTIMATED PEAK DAILY EMISSIONS FOR PROJECT CONSTRUCTION ACTIVITIES FOR A REGIONAL BMP PROJECT

	Estimated Maximum Daily Emissions (lbs/day)					
Construction Activity	**ROG**	**NO_X**	**CO**	**SO_x**	**PM_{10}[a]**	**$PM_{2.5}$[a]**
Site Preparation: *On-Site*	6.43	67.27	48.36	0.05	4.00	3.68
Off-Site	0.14	0.19	1.98	3.98	2.95	2.71
Total Emissions:	**6.57**	**67.46**	**50.34**	**4.03**	**6.95**	**6.39**
Grading: *On-Site*	6.75	72.62	48.35	0.05	3.84	3.53
Off-Site	11.76	183.65	136.01	0.41	3.04	2.79
Total Emissions:	**18.51**	**256.27**	**184.36**	**0.46**	**6.88**	**6.32**
Building: *On-Site*	5.46	41.01	29.69	0.04	3.14	3.02
Off-Site	6.43	33.48	85.27	0.16	0.56	0.52
Total Emissions:	**11.89**	**74.58**	**114.96**	**.20**	**3.70**	**3.54**
Maximum Regional Daily Emissions	**18.51**	**256.27**	**184.36**	**0.46**	**6.88**	**6.32**
Regional Significance Threshold	*75*	*100*	*550*	*150*	*150*	*55*
Significant Impact?	No	**Yes**	No	No	No	No

NOTE: See Appendix C for CalEEMod model outputs.
[a] PM_{10} and $PM_{2.5}$ emission estimates are based on compliance with SCAQMD Rule 403 requirements for fugitive dust suppression.

As shown in Table 3.2-7, implementation of distributed BMPs would not result in significant air emissions when assuming worst-case construction methods. However, as shown in Tables 3.2-8 and 3.2-9, for some of the larger regional and centralized BMPs, the maximum daily level of construction-generated emissions of NO_X would exceed the applicable SCAQMD-recommended thresholds under the worst-case construction scenario. The remaining criteria pollutants (i.e., ROG, CO, SOx, PM_{10}, and $PM_{2.5}$) would not exceed the applicable SCAQMD-recommended thresholds. The exceedance of SCAQMD's threshold for NO_X emissions for larger BMPs would be generated primarily during the grading phase, when emissions associated with off-road construction equipment and on-road soil hauling activities would occur. Thus, impacts associated with NOx emissions during construction activities of centralized and regional structural BMPs are considered significant.

It should be noted that the sample construction scenarios provided in this analysis for a single distributed, centralized, and regional structural BMP project represent an estimation of construction methods and emissions. It is likely that the actual emissions associated with each structural BMP type would be less than those presented in this PEIR.

As discussed previously, it is anticipated that future structural BMP developments associated with the proposed program would be reviewed on a case-by-case basis to ascertain whether an individual development would generate potentially significant air quality impacts during construction, and, where it is necessary, will require the implementation of mitigation measures to minimize air emissions and reduce potentially significant impacts. As such, the identification of a significant program-level impact from construction in this PEIR for the proposed program does not preclude the finding of less-than-significant impacts from construction for future individual structural BMP projects within the EWMP areas.

For BMPs that may result in significant air emissions as determined by implementing agencies, **Mitigation Measures AIR-1** and **AIR-2** would need to be implemented to reduce construction emissions to less than significant levels. For smaller BMPs including distributed BMPs, air emissions would not be significant and would not require mitigation measures. Table 3.2-10 summarizes which BMPs would require mitigation measures.

While implementation of Mitigation Measures AIR-1 and AIR-2 would reduce construction-related emissions, they may not reduce these emissions to levels below the SCAQMD thresholds for every structural BMP project, as the amount of emissions generated for each structural BMP project would vary depending on its size, the land area that would need to be disturbed during construction, and the length of the construction schedule. Implementation of large regional or centralized BMPs could result in temporary significant and unavoidable air emissions during peak periods of construction.

Operation

Implementation of the proposed program would not result in substantial long-term regional emissions of criteria air pollutants. The proposed structural BMPs are not land use projects and, therefore, would not generate daily vehicle-exhaust emissions by the motor vehicles traveling to and from the individual project areas. While it is anticipated that implementing agencies would conduct visits to the structural BMP sites for inspection and maintenance activities, these visits would occur only periodically throughout the year and would result in minimal emissions. Additionally, while some of the centralized and regional structural BMPs may require the installation of pump stations and ancillary components, this equipment would be electrically powered and would not generate emissions at the BMP sites.

Some Regional BMPs may involve grading large areas to be used as percolation basins. Some of these areas may be unvegetated, which may result in dust erosion. Implementing agencies would be required to prepare a Dust Control Plan to be in compliance with Rule 403. Stabilizing soils with binders, gravel, or vegetation would reduce dust emissions from large graded areas and prevent significant PM_{10} emissions. Compliance with existing dust emission regulations, specifically Rule 403, would ensure that operational impacts would be less than significant.

Mitigation Measures:

AIR-1: Implementing agencies shall require for large regional or centralized BMPs the use of low-emission equipment meeting Tier II emissions standards at a minimum and Tier III and IV emissions standards where available as CARB-required emissions technologies become readily available to contractors in the region.

AIR-2: For large construction efforts that may result in significant air emissions, implementing agencies shall encourage contractors to use lower-emission equipment through the bidding process where appropriate.

Significance Determination: Impacts from construction emissions would remain significant and unavoidable for some of the larger projects as there are no other feasible mitigation measures available to reduce these impacts at this program level; impacts from operational emissions would be less than significant. (The application of these mitigation measures to specific BMP types and categories are identified in Table 3.2-10.)

Non-Structural (Institutional) BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the construction of new facilities. Consequently, no air quality impacts associated with construction or operational activities would result.

Mitigation Measures: None required

Significance Determination: No impact

Cumulative Impacts

Impact 3.2-3: The program could result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).

Structural (Regional, Centralized, and Distributed) BMPs

As the Basin is currently in nonattainment for ozone, PM_{10}, and $PM_{2.5}$, cumulative development consisting of the proposed program along with other reasonably foreseeable future projects in the Basin as a whole could violate an air quality standard or contribute to an existing or projected air quality violation. However, based on SCAQMD's cumulative air quality impact methodology, SCAQMD recommends that if an individual project results in air emissions of criteria pollutants (ROG, CO, NOx, SOx, PM_{10}, and $PM_{2.5}$) that exceed the SCAQMD's recommended daily thresholds for project-specific impacts, then it would also result in a cumulatively considerable net increase of these criteria pollutants for which the proposed program region is in nonattainment under an applicable federal or state ambient air quality standard.

As discussed previously under Impact 3.2-2, under conditions where multiple structural BMPs would be constructed concurrently in the EWMP areas, it is anticipated that the total aggregate construction emissions generated from these multiple structural BMP projects on a daily basis would exceed the SCAQMD's significance thresholds for criteria pollutants. Even with implementation of **Mitigation Measures AIR-1** and **AIR-2**, the resulting aggregate daily emissions may not be reduced to levels below the SCAQMD thresholds should multiple structural BMP projects be constructed concurrently. Thus, construction-related air quality impacts associated with the proposed program would be considered significant and unavoidable. Therefore, as pollutants for which the Basin is in nonattainment (i.e., ozone, PM_{10}, and $PM_{2.5}$) associated with the proposed program could exceed SCAQMD's respective thresholds for construction, these pollutant emissions would, in conjunction with other past, current, and probable future projects, be cumulatively considerable, and cumulative impacts would be significant and unavoidable.

With respect to operational emissions, program implementation would not result in substantial long-term regional emissions of criteria air pollutants and would not exceed the SCAQMD thresholds of significance for criteria pollutants. As such, the proposed program's operational emissions would not be cumulatively considerable and cumulative air quality impacts would be less than significant.

Mitigation Measures: Implement **Mitigation Measures AIR-1** through **AIR-2**

Significance After Mitigation: Significant and unavoidable for construction; less-than-significant for operations. (The application of these mitigation measures to specific BMP types and categories are identified in Table 3.2-10.)

Non-Structural (Institutional) BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the construction of new facilities. Consequently, no cumulative air quality impacts in the Basin would result.

Mitigation Measures: None required

Significance Determination: No impact

Sensitive Receptors

Impact 3.2-4: The project could expose sensitive receptors to substantial pollutant concentrations.

Structural (Regional, Centralized, and Distributed) BMPs

Construction and operation of new developments that would occur under the proposed program could potentially expose sensitive receptors in the EWMP areas of the County to localized air quality impacts from criteria pollutants and TACs. Separate discussions are provided below analyzing the potential for sensitive receptors to be exposed to these pollutant sources.

Carbon Monoxide Hotspots

A CO hotspot is an area of localized CO pollution that is caused by severe vehicle congestion on major roadways, typically near intersections. Projects may worsen air quality if they increase the percentage of vehicles in cold start modes by two percent or more; significantly increase traffic volumes (by five percent or more) over existing volumes; or worsen traffic flow, defined for signalized intersections as increasing average delay at intersections operating at Level of Service (LOS) E or F or causing an intersection that would operate at LOS D or better without the project, to operate at LOS E or F.

While construction-related traffic on the local roadways would occur during construction of each structural BMP project, the net increase of construction worker vehicle trips to the existing traffic volumes on the local roadways would be relatively small and would not result in CO hotspots. Additionally, the construction-related vehicle trips would only occur in the short-term, and would cease once construction activities for a structural BMP project has been completed. Thus, because trip-generating land uses are not associated with the proposed program and the amount of maintenance visits to the structural BMP sites would be minimal, impacts associated with CO hotspots would be less than significant and no mitigation is required.

Mitigation Measures: None required

Significance Determination: Less than significant

Localized Construction Air Quality Impacts – Criteria Air Pollutants

The EWMP areas associated with the proposed program are located in multiple jurisdictions within the County of Los Angeles, all of which are located within in the Basin. Given that the majority of the County is highly urbanized with a variety of land use types and that the proposed program would be located in various watersheds across the County that span multiple jurisdictions, existing sensitive uses such as residences, schools, hospitals, daycare centers, etc., would be located within and in proximity to the EWMP areas. During construction of the individual structural BMP projects in the EWMP areas, existing sensitive receptors that happen to be located adjacent to or near these structural BMP construction sites could be exposed to significant adverse localized air quality impacts. According to SCAQMD's localized significance threshold (LST) methodology, projects greater than 5 acres in size should perform air quality dispersion modeling to determine whether construction activities would cause or contribute to adverse localized air quality impacts. Where projects would be less than 5 acres in size, the SCAQMD provides screening tables that can be used to determine the maximum allowable daily emissions that would satisfy the LSTs without project-specific dispersion modeling. LSTs represent the maximum emissions from a project that will not cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard. According to SCAQMD's LST methodology, LSTs are only applicable to the on-site construction emissions that are generated by a project and do not apply to emissions generated off-site such as mobile emissions on roadways from worker, vendor, and haul truck trips.

SCAQMD has indicated, in its 2003 *Final Localized Significance Threshold Methodology* document, that LSTs are applicable to projects at the project-specific level and are not intended for regional projects.[3] Given the large geographic area associated with the project, an LST analysis would not be applicable to this PEIR. Depending on the size and scale of a particular structural BMP project and the intensity of the construction effort that would be required, the construction emissions generated by a new structural BMP project could potentially cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standards at the existing sensitive uses located in the vicinity of that project. For individual structural BMP projects that would fit this scenario, **Mitigation Measure AIR-3** would be implemented, which requires a project-level LST analysis to be prepared to demonstrate that the construction emissions of a structural BMP project would not exceed SCAQMD's LSTs or result in pollutant emissions that would cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standards.[4] With implementation of Mitigation Measures AIR-3, this impact would be reduced to less than significant. For smaller BMPs, including distributed BMPs, air emissions would not be significant and would not require mitigation measures.

Mitigation Measures:

AIR-3: For large construction efforts associated with regional or centralized BMPs, implementing agencies shall conduct a project-specific LST analysis where necessary to determine local health impacts to neighboring land uses. Where it is determined that construction emissions would exceed the applicable LSTs or the most stringent applicable federal or state ambient air quality standards, the structural BMP project shall reduce its daily construction intensity (e.g., reducing the amount of equipment used daily, reducing the amount of soil graded/excavated daily) to a level where the structural BMP project's construction emissions would no longer exceed SCAQMD's LSTs or result in pollutant

3 Page 1-1 of SCAQMD's 2003 *Final Localized Significance Threshold Methodology* document.

4 As discussed previously, the LSTs for NO_X, CO, PM_{10}, and $PM_{2.5}$ provided in SCAQMD's screening tables represent the maximum emissions from a project that will not cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard for those respective pollutants. For projects that are less than 5 acres, the SCAQMD's LST screening tables can be used to determine whether construction-related emissions would result in a potential significant air quality impact. For projects that exceed 5 acres in size, dispersion modeling should be conducted, per SCAQMD's LST methodology, to determine whether the most stringent applicable federal or state ambient air quality standards for pollutants would be exceeded, which would result in a significant air quality impact.

emissions that would cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standards.

Significance Determination: Less than significant with mitigation. (The application of these mitigation measures to specific BMP types and categories are identified in Table 3.2-10.)

Localized Construction Air Quality Impacts – Toxic Air Contaminants

Intermittent construction activities occurring throughout the program area over the implementation period of the individual structural BMPs would result in short-term emissions of diesel particulate matter, which is a TAC. During construction of each individual structural BMP project within the EWMP areas, the exhaust of off-road heavy-duty diesel equipment would emit diesel particulate matter during general construction activities, such as site preparation (e.g., excavation, grading, and clearing); materials transport and handling; structural BMP construction; and other miscellaneous activities. Similar to the localized criteria pollutant emissions during construction, the short-term emissions of diesel particulate matter associated with each structural BMP development would only affect its own remote group of existing sensitive receptors that are located nearby. SCAQMD has not adopted a methodology for analyzing such impacts and has not recommended that health risk assessments be completed for construction-related emissions of TACs.

The dose to which receptors are exposed is the primary factor used to determine health risk (i.e., the potential exposure to TACs to be compared to applicable standards). Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for the maximally exposed individual. Thus, the risks estimated for a maximally exposed individual are higher if a fixed exposure occurs over a longer period of time. According to the Office of Environmental Health Hazard Assessment (OEHHA), health risk assessments, which determine the exposure of sensitive receptors to TAC emissions, should be based on a 70-year exposure period; however, such assessments should be limited to the period or duration of activities associated with each of the future individual structural BMP development occurring in the EWMP areas under the proposed program.

The construction period for any individual structural BMP that would occur in the EWMP areas under the proposed program would be finite and much less than the 70-year period used for risk determination. Because off-road heavy-duty diesel equipment would be used only temporarily at each individual structural BMP site, the construction activities associated with each structural BMP project in the EWMP areas would not expose sensitive receptors to substantial emissions of TACs. This impact would be less than significant.

Mitigation Measures: None required

Significance Determination: Less than significant

Operational Sources of Toxic Air Contaminants

Implementation of the program, which would involve the installation of structural control measures that would be constructed as BMPs to reduce the impact of stormwater and non-stormwater on receiving water quality, would not result in new land uses in the EWMP areas.

Operation of the structural BMPs would not involve TAC-emitting equipment, as the majority of the structural BMPs would operate passively without the use of mechanized equipment. While some of the centralized and regional structural BMPs may require the use of pump stations and associated components, such equipment would be electrically driven and would not result in direct emissions at the individual structural BMP sites. Therefore health risks from TAC emissions associated with project operations would not occur.

Mitigation Measures: None required

Significance Determination: No impact

Non-Structural (Institutional) BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the construction of new facilities. Consequently, no impacts associated with exposure of sensitive receptors to substantial pollutant emissions would result.

Mitigation Measures: None required

Significance Determination: No impact

Objectionable Odors

Impact 3.2-5: The proposed program could create objectionable odors affecting a substantial number of people.

Structural (Regional, Centralized, and Distributed) BMPs

According to the SCAQMD *CEQA Air Quality Handbook*, land uses associated with odor complaints typically include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. The project does not include any uses identified by the SCAQMD as being associated with odors.

During the construction phases for each of the new structural BMP projects that would occur in the EWMP areas over the course of the implementation period, exhaust from construction equipment may produce discernible odors typical of most construction sites. Such odors would be a temporary source of nuisance to adjacent uses, but because they are temporary and intermittent in nature, would not be considered a significant environmental impact. Therefore, impacts associated with objectionable odors during construction would be less than significant.

Although rainfall in Southern California is limited to certain times of year, and most drainage channels are dry for most of the year, some structural BMPs may involve retaining intermittent stormwater or dry weather flows on a site that may result in organic odors as water levels fluctuate and decomposition occurs in saturated mud. Restored creeks and estuaries may be permanently wet, resulting in odors from saturated mud or algal blooms. Standing water may emit odors if algal blooms occur for periods of time before the water dries or percolates. If these facilities are near sensitive receptors such as residential areas, these odors may result in a severe nuisance, particularly during night time hours. Regular maintenance may be sufficient to reduce odors in some situations. **Mitigation Measure AES-2** requires implementing agencies to prepare and implement maintenance plans for all BMPs installed. Implementation of **Mitigation Measure AIR-4** promotes the consideration of odors when siting BMP locations and types.

Mitigation Measure: Implement **Mitigation Measure AES-2**

AIR-4: During planning of structural BMPs, implementing agencies shall assess the potential for nuisance odors to affect a substantial number of people. BMPs that minimize odors shall be considered the priority when in close proximity to sensitive receptors.

Significance Determination: Less than significant. (The application of these mitigation measures to specific BMP types and categories are identified in Table 3.2-10.)

Non-Structural (Institutional) BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the construction of new facilities. Consequently, no impacts associated with objectionable odors would result.

Mitigation Measures: None required

Significance Determination: No impact

3.2.4 Summary of Impact Assessment

Table 3.2-10 shows a summary of the structural BMPs requiring mitigation.

TABLE 3.2-10
SUMMARY OF AIR QUALITY IMPACTS REQUIRING MITIGATION MEASURES

	Thresholds of Significance				
Structural BMPs	**Air Quality Plan**	**Air Quality Standards**	**Nonattainment Criteria Pollutants**	**Sensitive Receptors**	**Objectionable Odors**
Applicable Mitigation Measures:	**None Required**	**AIR-1; AIR-2**	**AIR-1; AIR-2**	**AIR-3**	**AES-2; AIR-4**
Regional BMPs					
Regional Detention and Infiltration	No	Yes	Yes	Yes	Yes
Regional Capture, Detention and Use	No	Yes	Yes	Yes	Yes
Centralized BMP					
Bioinfiltration	No	Yes	Yes	Yes	Yes
Constructed Wetlands	No	Yes	Yes	Yes	Yes
Treatment/Low-Flow Diversions	No	Yes	Yes	Yes	Yes
Creek, River, Estuary Restoration	No	Yes	Yes	Yes	Yes
Distributed BMPs					
Site-Scale Detention	No	No	No	No	Yes
LID – Infiltration/Filtration BMPs – Porous Pavement, Green Streets, Bioswale/Filter Strips, Downspout Disconnects	No	No	No	No	Yes
LID – Green Infrastructure – Capture and Use – Cisterns, Rain Barrels, Green roofs, Planter Boxes	No	No	No	No	Yes
Flow-through Treatment BMPs	No	No	No	No	Yes
Source-Control Treatment BMPs (catch basin inserts/screens, hydrodynamic separators, gross solids removal devices)	No	No	No	No	Yes
Low-Flow Diversions	No	No	No	No	Yes

NOTE: These conclusions are based on typical BMP size and location.

3.3 Biological Resources

This section establishes the existing conditions and provides an evaluation of potential impacts to biological resources associated with the proposed program.

3.3.1 Environmental Setting

The 12 Enhanced Watershed Management Program (EWMP) areas are each located within Los Angeles County (County), which exhibits native habitats corresponding with the California Floristic Province. The County experiences a mediterranean climate, which is generally characterized by relatively heavy winter precipitation and dry summers. The County encompasses the intersection of the Transverse and Peninsular mountain ranges, supporting a variety of habitats within mountain ranges, broad alluvial valleys, deserts, and coastal shorelines. Los Angeles County hosts one of the most dense and populous urban metropolises in the country, which has substantially altered the native habitats. However, within the mountainous areas and some drainage areas, native habitats still remain.

Habitat Types

The EWMP areas contain an array of coastal habitats such as: marine, intertidal, estuarine, coastal salt marsh, and beach dunes; freshwater aquatic habitat such as marshes, lakes, and ponds; riverine aquatic habitat including streambeds and associated riparian areas; and upland communities such as coastal sage scrub, chaparral, foothill woodlands, and coniferous forests in the mountains. The dominant native plant community in Los Angeles County is chaparral (Los Angeles County, 2012a). In general, communities that are relatively undisturbed and have connectivity to other open space areas function as higher-quality habitat for sensitive plants and wildlife. Non-native, disturbed, and/or isolated habitats generally provide lower-quality wildlife habitat, though some sensitive plants and wildlife are known to occur in such areas.

Habitats within the EWMP Areas

The proposed program comprises12 EWMP areas, each with a disparate mix of urban development and natural habitat features. Although diverse habitats may occur throughout the County and within each of the EWMP areas to varying degrees, the following summaries combine EWMP groups into the following six distinct watershed groups that have similar habitat types:

1. **<u>Southern Coastal EWMP Watersheds</u>** ***(Beach Cites, Peninsula, Southern Santa Monica Bay, Marina del Rey, Ballona, Peninsula)*** – These watersheds are dominated by urbanized inland and beach communities with high-density residential and commercial land uses throughout the watersheds. Sensitive habitats in these areas include coastal drainages, coastal lagoons, and dune scrub. However, the most of the drainages in these watersheds have been channelized with hard-bottom channels such as Ballona Creek and provide minimal habitat value to sensitive species. Most of the coastal creeks have been rechannelized and are largely underground with some exceptions in the Peninsula EWMP. The value of riparian and aquatic resources in these urbanized areas is generally low except for some key exceptions, including the Del Rey Lagoon and Ballona Lagoon

and wetlands where the Ballona Creek watershed meets the coast. **Figure 3.3-1** provides photographs of typical drainages in the watershed.

2. **Dominguez Channel (Dominugez Channel EWMP)** – This watershed is characterized by high-density inland communities and an industrial shoreline. Much of the drainages are urbanized and underground or otherwise concrete-lined, with notable exceptions such as Machado Lake. The Dominguez Channel is tidally influenced but is a man-made rip-rap or concrete-lined channel. Some vegetation occurs in localized drainages and some tributary drainages are being restored for wetland values. However, outside of the restoration areas and recreation features (such as Machado Lake), habitat values in this urban and industrial area are low. **Figure 3.3-2** provides photographs of typical drainages in the watershed.

3. **Northern Coastal EWMP Watersheds** ***(Malibu and Upper Santa Monica Bay)*** – These watersheds are characterized by dense residential development along the coast and less development and greater open space areas inland along the coast mountain range. Sensitive habitats in these areas are more prevalent than in the more urbanized watersheds, including coastal lagoons and dunes, streams and riparian habitats, and upland forests and scrub. Receiving waters in these watersheds remain unlined with significant riparian corridors. The developed areas have lower-density developments than in the Southern Coastal watersheds and are interspersed with canyons and creeks. The coastal streams provide important habitat for sensitive species, including arroyo toad, native fish, and avian species found in riparian forests. **Figure 3.3-3** provides photographs of typical drainages in the watershed.

4. **Upper Los Angeles River Watershed** – This watershed traverses a large diverse area of the Los Angeles Basin characterized by dense urbanization. The predominant urbanization results in limited biological value in the watershed. The natural hydrology of the Los Angeles River watershed has been altered by channelization and the construction of dams and flood control reservoirs. The Los Angeles River and many of its tributaries are lined with concrete for most or all of their length. Soft-bottomed segments of the Los Angeles River occur where groundwater upwelling prevents armoring of the river bottom. Numerous soft-bottom tributary streams feed into the river from the mountainous perimeter.

   Because of persistent dry-weather flows caused by irrigation run off and wastewater treatment plant discharges, vegetation within these drainages is common. The Los Angeles County Flood Control District routinely clears the vegetation from most of the vegetated drainages under permits from the U.S. Army Corps of Engineers (USACE) and California Department of Fish and Wildlife (CDFW). However, several stream segments exhibiting high-value habitats remain throughout this watershed, including Compton Creek and Bull Creek. When not cleared for flood control purposes, these areas can develop into substantial riparian habitats supporting sensitive species such as least Bell's vireo and southwest flycatcher as well as other diverse ecological communities. Lower in the watershed where perennial flows are substantial because of wastewater discharges, aquatic habitats occur that support waders, ducks, and gulls. **Figure 3.3-4** provides photographs of typical drainages in the watershed.

Typical concrete-lined Ballona Creek segment near Culver City.

Fresh water marsh in Playa Del Rey, adjacent to Ballona Creek.

SOURCE: ESA

LA County PEIR EWMP . 140474

Figure 3.3-1
Typical Drainages in the
Southern Coastal EWMP Watersheds

Typical Dominguez Channel segment near Hawthorne.

Dominguez Channel wetlands near Long Beach.

SOURCE: ESA

LA County PEIR EWMP . 140474

Figure 3.3-2
Typical Drainages in the Dominguez Channel Watershed Management Areas

Malibu Lagoon.

Drainage at Marie Canyon Low-Flow Diversion.

SOURCE: ESA

LA County PEIR EWMP . 140474

Figure 3.3-3
Typical Drainages in the
Northern Coastal EWMP Watersheds

Showing aquatic and riparian habitat in concrete channeled Los Angeles River, near the Los Angeles Zoo.

Showing riparian habitat in Bull Creek, near Van Norman Lakes Complex.

SOURCE: ESA

LA County PEIR EWMP . 140474

Figure 3.3-4
Typical Drainages in the
Upper Los Angeles River Watershed

5. **Upper San Gabriel and Rio Hondo and Watersheds** – These watersheds are characterized by high-density development in the lower watershed areas and lower-density development and open space in the upper watersheds in the San Gabriel Mountain foothills. Sensitive habitats in these areas range from sparse riparian areas and scrub within drainages in the urbanized lower watersheds to pristine mountain forests and riparian corridors the San Gabriel Mountains. The San Gabriel River and Rio Hondo are unlined in the upper watershed and convey controlled non-storm and storm flows to recharge basins and downstream sections of the river. Habitats within the soft-bottom river channels consist of chaparral and sage scrub with occasional riparian willow and sycamore riparian vegetation accustomed to long periods of dry weather with occasional ephemeral water flows. Upwelling of groundwater and dry-weather flows combine to support substantial riparian vegetation in the Whittier Narrows area. **Figure 3.3-5** provides photographs of typical drainages in the watershed.
6. **Upper Santa Clara River Watershed** – The Santa Clara River watershed is distinctive in that it is predominantly open space—nearly 90 percent of the watershed is open space with approximately 88 percent being undeveloped. The watershed contains one of the last remaining natural rivers in Southern California. In years of significant rainfall, ephemeral springs and year-round flows exist in some tributaries and natural upstream areas. The river is ephemeral in the upper watershed, experiencing groundwater-induced flows near Santa Clarita, and then wastewater treatment discharges create a perennial flow from Valencia to the Ventura County border. Habitat values in these areas are high, including extremely rare habitat for aquatic resources such as the three-spined stickleback, Santa Ana sucker, and arroyo toad. **Figure 3.3-6** provides photographs of typical drainages in the watershed.

Sensitive Habitats

The California Natural Diversity Database (CNDDB), managed by CDFW, identifies 20 natural communities of special management concern within the broad-ranging EWMP areas, as shown below. **Appendix D** contains a description of each of these habitats and **Figure 3.3-7** depicts their locations throughout the EWMP areas.

- California Walnut Woodland
- Canyon Live Oak Ravine Forest
- Mainland Cherry Forest
- Open Engelmann Oak Woodland
- Riversidean Alluvial Fan Sage Scrub
- Southern California Arroyo Chub/ Santa Ana Sucker Stream
- Southern California Coastal Lagoon
- Southern California Steelhead Stream
- Southern Coast Live Oak Riparian Forest,
- Southern California Threespine Stickleback Stream
- Southern Coastal Bluff Scrub
- Southern Coastal Salt Marsh
- Southern Cottonwood Willow Riparian Forest
- Southern Dune Scrub
- Southern Mixed Riparian Forest
- Southern Riparian Scrub
- Southern Sycamore Alder Riparian Woodland
- Southern Willow Scrub
- Valley Oak Woodland
- Walnut Forest

Typical Upper San Gabriel River landscape.

Drainage in Whittier Narrows, showing aquatic and riparian habitats.

SOURCE: ESA

LA County PEIR EWMP . 140474

Figure 3.3-5
Typical Drainages in the Upper San Gabriel and Rio Hondo Watersheds

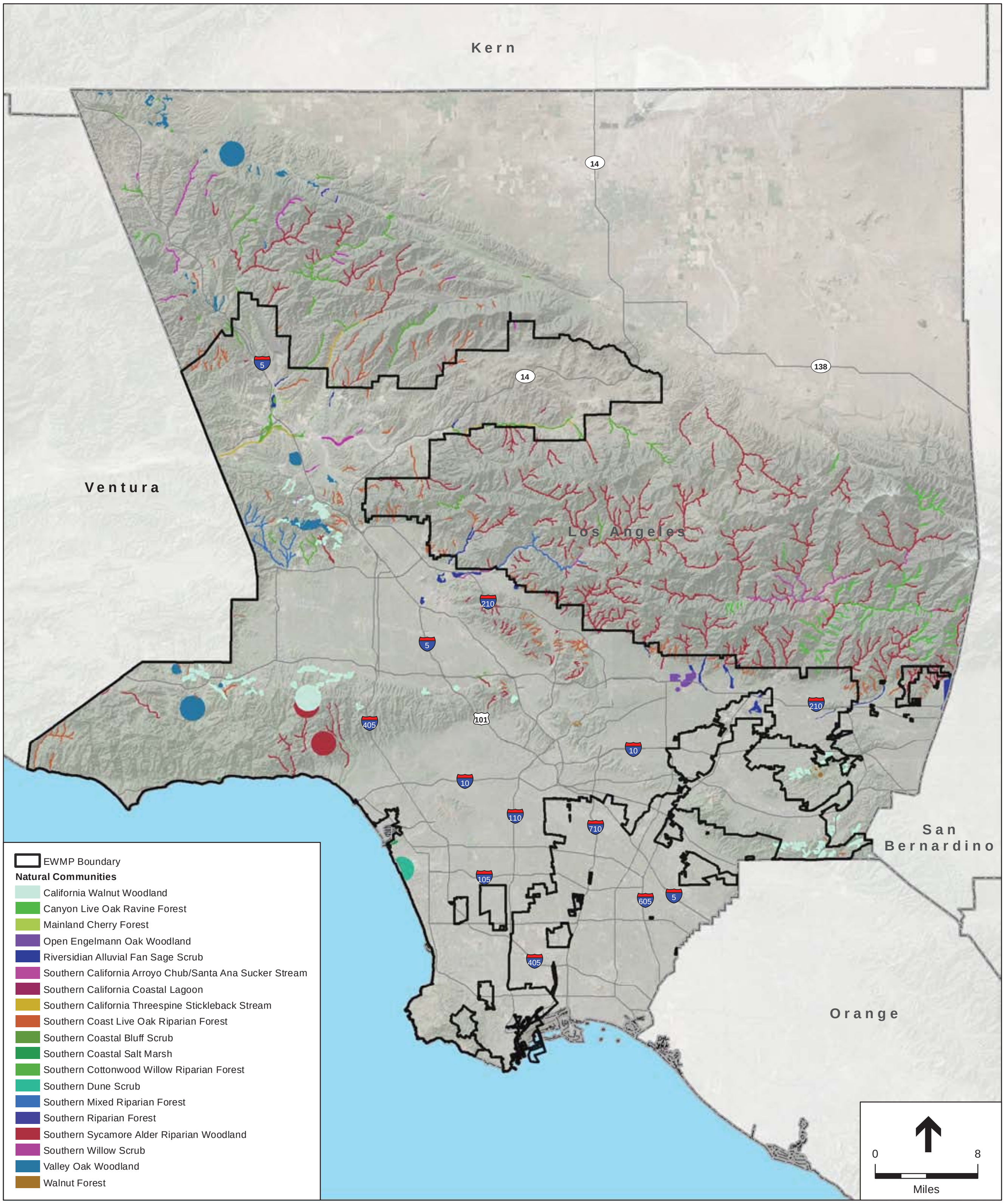
Unlined river channel showing riparian habitat in Upper Santa Clara River.

Typical riparian and aquatic habitat in Upper Santa Clara River.

SOURCE: ESA

LA County PEIR EWMP . 140474

Figure 3.3-6
Typical Drainages in the
Upper Santa Clara River Watershed



SOURCE: ESRI; California Natural Diversity Database (CNDDB), 2014.

LA County PEIR EWMP . 140474

Figure 3.3-7
Natural Communities

Special-Status Species

Special-status species are those plants and animals that, because of their recognized rarity or vulnerability to habitat loss or population decline, are recognized by federal, state, or other agencies. Some of these species receive specific protection that is defined by federal or state endangered species legislation. Others have been designated as "sensitive" on the basis of adopted policies and expertise of state resource agencies or organizations with acknowledged expertise, or policies adopted by local governmental agencies such as counties, cities, and special districts to meet local conservation objectives. These species are referred to collectively as "special-status species" and include the following categories:

- Plants or animals listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (FESA) (50 Code of Federal regulations [CFR] 17.12 [listed plants], 17.11 [listed animals] and various notices in the Federal Register [FR] [proposed species])
- Plants or animals that are candidates for possible future listing as threatened or endangered under FESA (61 FR 40, February 28, 1996)
- Plants or animals listed or proposed for listing by the State of California (State) as threatened or endangered under the California Endangered Species Act (CESA) (14 California Code of Regulations [CCR] 670.5)
- Plants listed as rare or endangered under the California Native Plant Protection Act (California Fish and Game Code, Section 1900 et seq.)
- Plants that meet the definitions of rare and endangered under the California Environmental Quality Act (CEQA) (CEQA Guidelines Section 15380)
- Plants considered under the California Native Plant Society (CNPS) to be "rare, threatened or endangered in California" (Lists 1A, 1B, and 2 in CNPS 2014)
- Plants listed by CNPS as plants about which more information is needed to determine their status and plants of limited distribution (Lists 3 and 4 in CNPS 2014), which may be included as special-status species on the basis of local significance or recent biological information
- Animals fully protected in California (California Fish and Game Code, Sections 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians])
- Plants or animals covered by a locally or state adopted species conservation plan, including sensitive plants and animals and narrow endemic plants that have reasonable potential to occur on-site

The database search yielded 72 plant species and 83 wildlife species within the EWMP area and immediate vicinity (CNDDB 2014). Special-status species are typically supported by native upland and riparian habitats, but they can also inhabit disturbed and urbanized areas. **Appendix E** contains a list of special-status species found within the combined EWMP areas and a figure that depicts their locations.

Wildlife Movement

Habitat linkages are contiguous areas of open space that connect two larger habitat areas. Linkages provide for both diffusion and dispersal for a variety of species within the landscape. In addition, linkages can serve as primary habitat for some smaller species. Corridors are linear linkages between two or more habitat patches. Corridors provide for movement and dispersal, but do not necessarily include habitat capable of supporting all life history requirements of a species.

Wildlife movement corridors are critical for the survivorship of ecological systems for several reasons. Corridors can connect water, food, and cover sources, spatially linking these three resources with wildlife in different areas. In addition, wildlife movement between habitat areas provides for the potential of genetic exchange between wildlife species populations, thereby maintaining genetic variability and adaptability to maximize the success of wildlife responses to changing environmental conditions. This is especially critical for small populations subject to loss of variability from genetic drift and effects of inbreeding. The nature of corridor use and wildlife movement patterns varies greatly among species.

Jurisdictional Resources

Wetlands and permanent and intermittent drainages, creeks, and streams identified as waters of the United States are subject to the jurisdiction of USACE and Regional Water Quality Control Board (RWQCB) under Section 404 and Section 401, respectively, of the Federal Clean Water Act. All of the rivers and flood control drainages that flow to the ocean within the EWMP area are within the jurisdiction of these agencies.

Streambeds are subject to regulation by the CDFW under Section 1602 of the California Fish and Game Code. A stream is defined under these regulations as a body of water that flows at least periodically or intermittently through a bed or channel having banks and that supports fish or other aquatic life. This definition includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation. CDFW jurisdiction typically extends to the edge of the riparian vegetation canopy.

3.3.2 Regulatory Setting

Federal

Federal Endangered Species Act

The U.S. Fish and Wildlife Service (USFWS) administers the federal Endangered Species Act (FESA) that provides a process for listing species as either threatened or endangered, and methods of protecting listed species. Species are listed as either endangered or threatened under Section 4 of the FESA that defines "endangered" as any plant or animal species that is in danger of extinction throughout all or a significant portion of its range and "threatened" if a species is likely to become endangered in the foreseeable future. Section 9 of the FESA prohibits take of listed threatened or endangered species. Except as provided in Sections 7 and 10 of the FESA, take of listed threatened or endangered species is prohibited. The term "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in such conduct. Harm under the definition of take includes disturbance or loss of habitats used by a threatened or endangered species during any portion of its life history. Under the regulations of the FESA, the USFWS may authorize take when it is incidental to, but not the purpose of, an otherwise lawful act.

Pursuant to the FESA, USFWS and National Marine Fisheries Service (NMFS) have designated critical habitat for several endangered and threatened species within Los Angeles County. Critical habitat is identified as a specific geographic area that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. Critical habitat may include an area that is not currently occupied by the species but that will be needed for its recovery (USFWS, 2014a). **Figure 3.3-8** identifies federally designated critical habitats in the County.

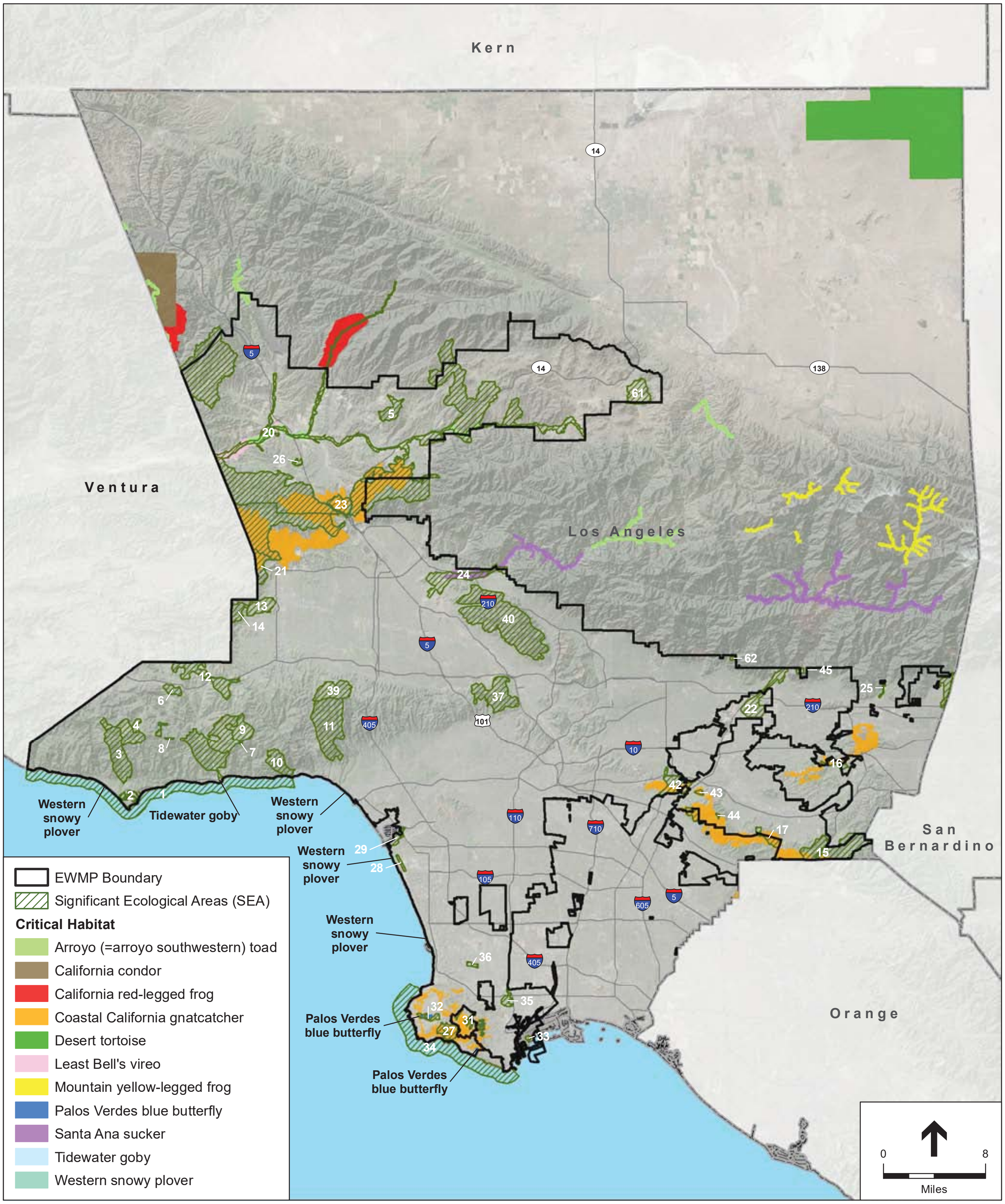
Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-711) makes it unlawful to possess, buy, sell, purchase, barter or take any migratory bird listed in Title 50 of the Code of Federal Regulations Part 10. Take in the context of the MBTA is the possession or destruction of migratory birds, their nests or eggs. Disturbances that causes nest abandonment and/or loss of reproductive effort or the loss of habitats upon which these birds depend would be in violation of the MBTA.

Although impacts to migratory birds are highly unlikely because of the disturbed nature of the proposed project's site locations, the applicant will be required to either avoid impacts to migratory birds and their nests, or to obtain a permit from the USFWS providing for the take of a migratory bird. Should the nesting of any migratory bird occur on or adjacent to the project site during grading or construction activities, a USFWS-qualified biological monitor would have the authority to halt all work activities and notify the city and corresponding resource agency.

Clean Water Act Section 404

Wetlands are generally considered to be areas that are periodically or permanently inundated by surface or ground water and support vegetation adapted to life in saturated soil. Wetlands are recognized as important features on a regional and national level because of their high inherent value to fish and wildlife, use as storage areas for stormwater and floodwater, and water recharge, filtration, and purification functions. Technical standards for delineating wetlands have been developed USACE which generally define wetlands through consideration of three criteria: hydrology, soils, and vegetation. Under Section 404 of the Clean Water Act (CWA), USACE is responsible for regulating the discharge of dredged or fill material into waters of the United States. The term "waters" includes wetlands and non-wetland bodies of water that meet specific criteria as defined in the Code of Federal Regulations. All three of the identified technical parameters (hydrology, soils, and vegetation) must be met for an area to be identified as a wetland under USACE's CWA Section 404 jurisdiction, unless the area has been modified by human activity. In general, a permit must be obtained before the discharge of dredged or fill material can be placed in wetlands or other waters of the United States. USACE, at its discretion, issues several types of permits (Nationwide, Individual, or General) depending on the acreage and purpose of discharge of fill or dredged material into waters of the United States.



SOURCE: ESRI; Los Angeles County GIS; FWS, 2014.

LA County PEIR EWMP . 140474

Figure 3.3-8
Los Angeles County Significant Ecological Areas and Critical Habitat

State

California Endangered Species Act

The CDFW administers the CESA. The State of California considers an endangered species one whose prospects of survival and reproduction are in immediate jeopardy. A threatened species is one present in such small numbers throughout its range that it is likely to become an endangered species in the near future in the absence of special protection or management. And a rare plant species is one present in such small numbers throughout its range that it may become endangered if its present environment worsens. Except as provided in CESA Section 2081, State threatened, endangered, and candidate species are protected against take, which under the CESA is restricted to direct killing or harm of individual animals and does not apply to the loss of habitat as it does under FESA.

Clean Water Act Section 401 Certification or Waiver, and State Discharge Permit under the Porter-Cologne Act

The State of California regulates water quality related to discharge of fill material into waters of the State pursuant to Section 401 of the CWA. Section 401 compliance is a federal mandate regulated by the State. The local RWQCBs have jurisdiction over all those areas defined as jurisdictional under Section 404 of the CWA. Where a 404 permit is required, a 401 water quality certification from the RWQCB is also required.

In addition, the State regulates water quality for all waters of the State, that may also include isolated wetlands as defined under the California Porter-Cologne Water Quality Control Act (Porter Cologne; Ca. Water Code, Div. 7, Section 13000 et seq.). The State 401 Certification Program regulates all discharges that can affect water quality, even if there is no significant nexus to a traditional navigable water body required for USACE determination of jurisdiction over waters of the United States. In such instances, a Waste Discharge Permit is required even though federal CWA Section 401 water quality certification or 404 permits are not required.

Section 1602 Lake and Streambed Alteration Agreement

Jurisdictional authority of the CDFW over the bed, bank, or channel of a river, stream, or lake is established under Section 1600 et seq. of the Fish and Game Code, which pertains to activities that would disrupt the natural flow or alter the channel, bed, or bank of any lake, river, or stream. The Fish and Game Code stipulates that it is unlawful to substantially divert or obstruct the natural flow or substantially change the bed, channel or bank of any river, stream, or lake resulting in a substantial effect on a fish or wildlife resource without notifying the CDFW and completing the Streambed Alteration Agreement process.

Fish and Game Code of California

All birds, and raptors specifically, and their nests, eggs, and parts thereof are protected under Sections 3503.5 of the Fish and Game Code of California. Disturbance that causes nest abandonment and/or loss of reproductive effort (e.g., killing or abandonment of eggs or young) is considered a violation of this code. Additionally Section 3513 prohibits the take or possession of any migratory nongame bird listed by the MBTA.

Non-Listed Species Management and Conservation Concerns

Species of Special Concern is an informal designation used by CDFW for some declining wildlife species that are not proposed for listing as threatened or endangered. This designation does not provide legal protection, but signifies that these species are recognized as declining by CDFW.

The CNPS has developed an inventory of California's sensitive plant species. This inventory summarizes information on the distribution, rarity, and endangerment of California's vascular plants. The inventory is divided into four lists based on the rarity of the species. In addition, the CNPS provides an inventory of plant communities that are considered natural communities of special concern by the State and federal resource agencies, academic institutions, and various conservation groups. The determination of the level of significance of impacts on plant species and natural communities is based on the number and size of remaining occurrences as well as recognized threats.

Natural communities of special concern are those that support concentrations of special-status plant or wildlife species, are of relatively limited distribution, or are of particular value to wildlife. Natural communities of special concern are not afforded legal protection unless they are designated critical habitat for federally listed threatened or endangered species, support formally listed species, or are jurisdictional wetland habitats.

Local

Los Angeles County Significant Ecological Areas

As part of the General Plan Conservation/Open Space and Land Use elements, the County has identified and adopted policies for Significant Ecological Areas (SEAs). The purpose of establishing a SEA is to maintain biological diversity by establishing natural biological parameters, including species, habitat types, and linkages. The County General Plan includes recommended management practices for each SEA. Forty-eight SEAs fall within the EWMP area, as shown in Figure 3.3-7.

Santa Monica Mountains Conservancy

The Santa Monica Mountains Conservancy was established by the California State Legislature in 1980. The Conservancy's mission is to preserve and restore natural habitats in Southern California to form an interlinking system of parks and wildlife habitats that are easily accessible to the general public. The Conservancy's Comprehensive Plan outlines conservation priorities and recreational opportunities in the Santa Monica Mountains. Development projects in the Santa Monica Mountains area subject to review by the County for consistency with the Comprehensive Plan.

Los Angeles County Oak Tree Ordinance and City Tree Preservation Ordinances

Title 22, Part 16, of the Los Angeles County Code of Ordinances is the Oak Tree Ordinance. The ordinance was established to recognize oak trees within the County as a historical, aesthetic, and ecological resource. The ordinance applies to all unincorporated areas of the County. Several cities within the County may have adopted this or a similar ordinance. The Los Angeles County ordinance, in particular, prohibits a person to "cut, destroy, remove, relocate, inflict damage, or encroach into the protected zone of any tree of the oak genus" that is 8 inches or more in diameter. Other city ordinances, such as the City of Los Angeles, may protect other tree species in addition to oaks.

Los Angeles County Oak Woodland Management Plan

Los Angeles County adopted a California Oak Woodlands Conservation Management Plan pursuant to the requirements of Assembly Bill (AB) 242 in 2011. The Los Angeles County Oak Woodlands Conservation Management Plan provides consistent policy for the management of oak woodlands that can be incorporated into the Los Angeles County General Plan and other relevant planning documents, developing a comprehensive and cohesive strategy for dealing with loss, and creating opportunities for recovering oak woodlands.

3.3.3 Impact Assessment

Thresholds of Significance

To determine the level of significance of an identified impact, the criteria outlined in the CEQA Guidelines were used. CEQA Guidelines Section 15065 directs lead agencies to find that a project may have a significant effect on the environment if it has the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of an endangered, rare, or threatened species, or eliminate important examples of the major periods of California history or prehistory. CEQA Guidelines Section 15206 further specifies that a project shall be deemed to be of statewide, regional, or area-wide significance if it would substantially affect sensitive wildlife habitats including, but not limited to, riparian lands, wetlands, bays, estuaries, marshes, and habitats for rare and endangered species as defined by the Fish and Game Code Section 903. CEQA Guidelines Section 15380 provides that a plant or animal species, even if not on one of the official lists, may be treated as "rare or endangered" if, for example, it is likely to become endangered in the foreseeable future. Additional criteria to assess significant impacts to biological resources due to the proposed project are specified in CEQA Guidelines Section 15382 (Significant Effect on the Environment) "…*a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance*."

Appendix G of the CEQA Guidelines indicates that a project would have a significant impact on biological resources if it would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS.
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFG or USFWS.

- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.

Project Impact Discussion

Impact 3.3-1: The proposed project could have a substantial adverse effect, either directly or through habitat modifications, on any sensitive species identified as special-status in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.

Structural (Regional, Centralized, and Distributed) BMPs

Construction

Construction of structural Best Management Practices (BMPs) would occur primarily within high-density urban, commercial, industrial, and transportation areas where they will either replace or improve upon existing stormwater infrastructure. Construction typically requires the permanent removal of aboveground infrastructure and/or surface materials such as asphalt and concrete, as well as excavation and grading for projects on soil-covered sites. The majority of the construction impact area would occur within developed and disturbed areas adjacent to existing infrastructure that do not support native vegetation or undisturbed habitat. However, since most of the BMPs would be located in existing drainages, each individual BMP could affect riparian vegetation during installation. Most of the smaller BMPs would avoid impacting high-value habitats during construction. Upland scrubs and native oak forests would be only incidentally affected if at all. In stream effects could occur to riparian scrub and aquatic habitats.

Construction of structural BMPs, regional and centralized BMPs in particular, may affect large open space or riparian habitats that would have a higher potential to support special-status wildlife species. For example, centralized BMPs include the construction of stream/creek restoration projects and low-flow diversion (LFD) projects which may require working within or adjacent to sensitive communities (i.e., streams or wetlands) that could support special-status wildlife species. Large projects could affect upland scrub or oak woodlands. **Mitigation Measure BIO-1** requires that implementing agencies evaluate the suitability of potential BMP sites for their potential to impact valued habitats such as oak woodland and riparian willow forests.

Common and protected migratory birds and raptors are likely to nest or forage in habitats found within the EWMP area. Implementation of the structural BMPs may result in temporary or permanent loss of foraging habitat for migratory birds, including raptor species. Similarly, proposed construction activities could impact nesting birds or roosting bats. Potential bat roost sites in the vicinity of the project areas may include abandoned structures and bridges.

Mitigation Measures BIO-2 through **BIO-8** require impact characterization, minimization and compensation for impacts to highly valued habitats in consultation with the USFWS and CDFW. Implementation of mitigation measures requiring careful consideration of suitable sites would reduce impacts to natural habitats on a regional scale to less-than-significant levels.

Operation

Maintenance of BMPs may involve accessing drainages through habitat areas or clearing vegetation. If BMPs require routine maintenance that affects habitat, those activities would need to be conducted in the non-bird nesting season to avoid impacts to nesting birds where feasible. Since drainages are within the CDFW jurisdiction, any vegetation-clearing activities would be subject to permits from CDFW as well as potentially the Los Angeles RWQCB and USACE. These permits would include provisions to avoid and mitigate impacts to sensitive habitats and species. Adherence to these conditions of approval would ensure that impacts to natural resources from maintenance would be less than significant.

BMPs designed to retain peak storm flows including regional BMPs would have no impact on downstream biological resources, since peak storm flows do not support perennial vegetation. The natural hydrology of the region experiences ephemeral flows that respond to seasonal precipitation, conveying water from the upper watersheds to the lower watersheds quickly. Urbanization has increased the speed of water flows through the system. The BMPs are designed to slow water flows and return to a hydrology closer to predevelopment conditions.

However, some drainages have developed new perennial flow regimes that support vegetation as a result of landscape runoff or wastewater discharges. Some of this vegetation may support special-status species including least Bell’s vireo or southwest willow flycatcher, particularly in suburban areas. If BMPs designed to retain dry-weather flows reduced the wetted area of drainages or completely eliminated flows in certain drainages that support riparian habitat, impacts to sensitive species would be significant.

This potential effect is most likely to occur within suburban areas, which are more prevalent in the Santa Clara River watershed, Malibu watershed, and San Gabriel watershed. The more urbanized watersheds in the southern coastal areas, such as Dominguez Channel and Ballona Creek, would be less likely to experience impacts to riparian vegetation from low-flow retention, with some noted exceptions such as the Ballona wetlands.

The primary threat to the local ecology in Los Angeles County is urban development. Returning the local hydrology to a more natural condition would occur over time and would result in improved natural habitat functions with little direct impact to protected sensitive species. Although riparian habitat may flourish in certain urban drainages, the vegetation is often a nuisance. Many soft-bottom channels are periodically cleared of vegetation by the Los Angeles County Flood Control District under a permit from the USFWS and CDFW that requires compensation elsewhere in the watershed. The reduction in perennial flows in most channels may result in less "choking" of flood control channels with nuisance vegetation, resulting in flood control benefits.

Furthermore, in many cases, it is difficult to attribute the health and extent of a wetted area supporting vegetation to specific Municipal Separate Storm Sewer System (MS4) discharge points. Individual BMP installation may reduce flows, but not eliminate wetted areas supporting certain habitat areas, resulting in no immediate observed reduction in riparian cover.

Over time, the addition of BMPs into suburban watersheds may reduce vegetation within certain drainages slowly as the cumulative effects of multiple BMPs combine to limit dry-weather flows. The gradual reduction in habitat would allow sensitive species to adapt to the changing conditions, particularly avian species such as least Bell's vireo would relocate to other nesting areas as conditions change. This is not dissimilar to natural conditions where riparian areas change over time with large flood flows. Although this gradual decrease in dry-weather flows in the region may reduce riparian vegetation in certain locations, the overall reduction is not expected to be significant, since the high-value habitats are limited and largely dependent on groundwater or wastewater treatment discharges.

Nonetheless, to ensure that impacts to downstream biological resources are less than significant, **Mitigation Measure BIO-1** requires that implementing agencies evaluate the potential direct impacts that could result from dry-weather flow reduction to downstream habitats. These conditions may be most prevalent in the Santa Clara River watershed, Malibu Watershed, the Upper Los Angeles River Watershed, and San Gabriel River Watershed where suburban landscape irrigation runoff has created isolated patches of riparian vegetation. **Mitigation Measures BIO-2** and **BIO-4** would require consultation with the wildlife agencies if flow reduction resulted in significant downstream habitat impacts. However, on a regional scale, a return to a more natural hydrology is not expected to significantly reduce the prevalence of high-value habitats or their use by sensitive species in the County. With implementation of Mitigation Measures BIO-1, BIO-2 and BIO-4, impacts to riparian vegetation from flow retention would be less than significant.

Future project-level environmental review processes will consider proposed projects as necessary to determine project-level impacts on special-status wildlife species and will require the implementation of project-specific mitigation measures to minimize and reduce potentially significant impacts to special-status wildlife species. Where potentially significant impacts to biological resources are identified for individual projects, implementation of Mitigation Measures BIO-1 through BIO-8 would avoid or reduce the impact to a less than significant level.

Summary of EWMP Groups

The following discussion provides additional detail to each of the watershed groups:

<u>Southern Coastal EWMP Watersheds</u> ***(Beach Cites, Southern Santa Monica Bay, Peninsula, Marine del Rey, Ballona)*** – Few direct impacts to biological resources from construction would be expected in these watersheds since the drainages are largely channelized. Large-scale lagoon restoration projects would temporarily affect habitats within the construction zones, but the

objective of these projects is to enhance biological functions. Otherwise, the urbanized drainages in these areas exhibit low-quality habitats and any work on the beach that could affect sensitive avian species would be minimal.

LFDs and dry-weather flow retention in this EWMP area would result in less fresh water reaching the tidal areas than is currently the case. However, at the lower end of the watershed, impacts to riparian and aquatic resources would be minimal since the areas are highly urbanized and the drainages are channelized with low habitat value. An exception to this is the Ballona freshwater marsh. Reduction in dry-weather flows to the coastal lagoons would reduce pollutant loading from the watershed and as a result improve water quality and native habitat values compared to existing conditions. In the upper portion of the watersheds, the reduction of perennial flows in drainages could affect urban-influenced low-value habitats. However, if these habitats were of sufficient value to support least Bell's vireo or other sensitive species, mitigation may be required. Implementation of mitigation measures BIO-1 through BIO-8 would reduce impacts to less-than-significant levels.

Northern Coastal EWMP Watersheds ***(Malibu and Upper Santa Monica Bay)*** – Installation of structural BMPs within drainages could affect existing habitats and sensitive species, particularly in the upper drainages that are largely undeveloped and exhibit high habitat values. Implementation of mitigation measures BIO-1 through BIO-8 would ensure that implementing agencies identify potentially affected resources and implement measures to avoid or reduce impacts to less-than-significant levels. Once installed, the modification to the hydrology created by the BMPs would more closely resemble historical conditions.

LFDs in the upper watersheds would return local coastal creeks to conditions resembling pre-urbanization. Native habitats along the coast have adapted to the climatological conditions and would continue to thrive with implementation of dry-weather-flow diversions and flow retention. However, in some localized areas, flow diversions could affect downstream riparian and aquatic habitat, reducing fresh water flow and wetted areas inhabited by willow forests. However, much of the high-value riparian and aquatic habitats in the upper coastal watershed that support sensitive birds and fish are fed from natural seepage. Infiltration BMPs would augment seepage and would serve to expand wetted areas supporting riparian and wetland habitats. Implementation of mitigation measures BIO-1 through BIO-8 would reduce impacts to less-than-significant levels.

Upper San Gabriel and Rio Hondo and Watersheds – Installation of structural BMPs in the upper San Gabriel and Rio Hondo watersheds have the potential to impact riparian and in-channel scrub habitats. The larger rivers are dry most of the year and habitat is adapted to the ephemeral cycle. If construction activities were to occur in an area exhibiting native vegetation, implementing agencies would need to implement measures to avoid, reduce, or compensate for significant impacts. Implementation of mitigation measures BIO-1 through BIO-8 would ensure that implementing agencies identify potentially affected resources and implement measures to avoid or reduce impacts to less-than-significant levels.

Upper Los Angeles River Watershed – The Upper Los Angeles River watershed is large and exhibits a large variety of habitats within drainages and within surrounding uplands and mountains. If construction activities were to occur in an area exhibiting native vegetation, implementing agencies would need to implement measures to avoid, reduce, or compensate for significant impacts. However, these construction effects would be temporary and would not result in significant reduction in habitat values within the watershed.

LFDs and retention in this highly urbanized watershed could result in substantial modifications to hydrologic conditions in the smaller channels and streams. Much of the higher value habitat occurs on the perimeter of the watershed and would not be affected by the BMPs. However, the vegetated channels in the mid and lower portions of the watershed could be cut off from perennial flows, resulting in a reduction of wetted area and associated habitat. Implementation of mitigation measures BIO-1 through BIO-8 would ensure that implementing agencies identify potentially affected resources and implement measures to avoid or reduce impacts to less-than-significant levels.

Dominguez Channel Watershed – These watersheds are highly urbanized, supporting little native vegetation. What vegetation does exist is associated with either the tidal channel or urban runoff. Construction within these areas would not encounter high-value upland, riparian, or aquatic habitats. Implementation of mitigation measures would ensure that impacts to habitat values would be less than significant.

Low-flow and dry-weather-flow retention in the Dominguez Channel watershed would not result in significant impacts to riparian or aquatic habitats downstream since very few high-value habitats exist in the watershed. One exception to this is Machado Lake, which relies on freshwater flows to maintain vegetation. However, returning the local hydrology to a more natural condition would result in less-than-significant impacts to biological resources.

Upper Santa Clara River Watershed – The Santa Clara River watershed exhibits the most open space and high-value riparian habitats of all the EWMP groups. Construction of structural BMPs could impact upland forests, scrub, riparian and aquatic habitats. If construction activities were to occur in an area exhibiting native vegetation, implementing agencies would need to implement measures to avoid, reduce, or compensate for significant impacts. In addition mitigation measure BIO-1 requires that implementing agencies evaluate the suitability of BMP locations prior to development in order to avoid impacts to sensitive habitats.

LFDs and dry-weather-flow retention may affect areas downstream of urbanized areas. However, the Upper Santa Clara River is ephemeral and generally dry upstream of the wastewater discharges. Furthermore, the stream is a gaining stream below the urbanized area, responding to rising groundwater levels. Any retention of dry-weather flow would have only minor effects on the aquatic or riparian habitats in tributary streams and no impacts to the Santa Clara River itself. In fact, increased underflow into the riverbed from groundwater would benefit the riparian and aquatic habitats. In addition, implementing agencies would be required to evaluate potential impacts from flow retention BMPs. Implementation of mitigation measures would ensure that impacts are less than significant.

Summary of Impact

BMPs designed to retain dry-weather flows could reduce wetted area or completely eliminate flows in certain drainages that support sensitive species. To ensure that impacts to downstream biological resources are less than significant for regional and centralized BMPs, Permittees would implement **Mitigation Measures BIO-1** through **BIO-8** which provide for the identification and minimization of potential effects. As a result, impacts to sensitive species resulting from the implementation the EWMPs would be less than significant. The smaller distributed BMPs would not result in significant impacts and would not be required to implement mitigation measures.

Mitigation Measures

BIO-1: Prior to approving a regional or centralized BMP, the Permittee shall conduct an evaluation of the suitability of the BMP location. Appropriate BMP sites should avoid impacting large areas of native habitats including upland woodlands and riparian forests that support sensitive species to the extent feasible. The evaluation shall include an assessment of potential downstream impacts resulting from flow diversions.

BIO-2: Prior to ground-disturbing activities in areas that could support sensitive biological resources, a habitat assessment shall be conducted by a qualified biologist to determine the potential for special-status wildlife species to occur within affected areas, including areas directly or indirectly impacted by construction or operation of the BMPs.

BIO-3: If a special-status wildlife species is determined to be present or potentially present within the limits of construction activities, a qualified biologist shall conduct preconstruction surveys of proposed work zones and within an appropriately sized buffer around each area as determined by a qualified biologist within 14 days prior to ground disturbing activities. Any potential habitat capable of supporting a special-status wildlife species shall be flagged for avoidance if feasible.

BIO-4: If avoidance of special-status species or sensitive habitats that could support special-status species (including, but not limited to, critical habitat, riparian habitat, and jurisdictional wetlands/waters) is not feasible, the Permittee shall consult with the appropriate regulating agency (USACE/USFWS or CDFW) to determine a strategy for compliance with the Endangered Species Act, California Fish and Game Code, and other regulations protecting special-status species and sensitive habitats. The Permittee shall identify appropriate impact minimization measures and compensation for permanent impacts to sensitive habitats and species in consultation with regulatory agencies. Construction of the project will not begin until the appropriate permits from the regulatory agencies are approved.

BIO-5: If construction and vegetation removal is proposed between February 1 and August 31, a qualified biologist shall conduct a pre-construction survey for breeding and nesting birds and raptors within 500-feet of the construction limits to determine and map the location and extent of breeding birds that could be affected by the project. Active nest sites located during the pre-construction surveys shall be avoided until the adults and young are no longer reliant on the nest site for survival as determined by a qualified biologist.

BIO-6: All construction areas, staging areas, and right-of-ways shall be staked, flagged, fenced, or otherwise clearly delineated to restrict the limits of construction to the minimum necessary near areas that may support special-status wildlife species as determined by a qualified biologist.

BIO-7: Prior to construction in areas that could support special-status plants, a qualified botanist shall conduct a pre-construction floristic inventory and focused rare plant survey of project areas to determine and map the location and extent of special-status plant species populations within disturbance areas. This survey shall occur during the typical blooming periods of special-status plants with the potential to occur. The plant survey shall follow the CDFW Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (November 24, 2009).

BIO-8: If temporary construction-related impacts to special-status plant populations are identified within a disturbance area, the implementing agencies shall prepare and implement a special-status species salvage and replanting plan. The salvage and replanting plan shall include measures to salvage, replant, and monitor the disturbance area until native vegetation is re-established under the direction of CDFW and USFWS.

Significance Determination: Less than significant with mitigation. (The application of these mitigation measures to specific BMP types and categories are identified in Table 3.3-1.)

Non-Structural (Institutional) BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the construction of new facilities. Consequently, there would be no direct impacts to special-status species or their habitats. However, many of the non-structural BMPs would result in the reduction of dry-weather urban runoff that could reduce perennial flows in local drainages. Returning the local hydrology to a more natural condition would occur overtime and would reduce overall wetted areas within minor drainages and swales throughout the region. Local riparian and lake features that rely on urban runoff could gradually shift from riparian and marsh to upland and sparse riparian. Shorelines may shift and wetted areas may decrease over time as more water is retained in the upper watershed, but these changes would not significantly degrade biological resources in the region as a whole since the revised hydrology would be a more natural condition for the arid region. Groundwater seepage would continue to support the major riparian corridors in the Malibu, Santa Clara, Upper Los Angeles, and San Gabriel watersheds. Retention of flows in the upper watershed would even augment these groundwater resources, offsetting any impacts from surface flow reductions. Moreover, improved water quality in the region's drainages and lagoons would be beneficial to habitat health. Overall, implementation of non-structural BMPs will not significantly impact sensitive species in the EWMP areas.

Mitigation Measures: None required

Significance Determination: Less than significant

Riparian Habitat or Other Sensitive Natural Communities

Impact 3.3-2: The proposed project could have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS.

Structural (Regional, Centralized, and Distributed) BMPs

As previously discussed, 20 sensitive natural communities tracked by the CNDDB occur within the EWMP area. In addition, Significant Ecological Areas are considered sensitive natural communities as identified by the Los Angeles County General Plan. The SEAs, riparian and other sensitive communities (which include riparian habitats such as Southern Cottonwood Willow Riparian Forest) are not expected to occur within the disturbance areas of the BMP projects since the majority of the structural BMPs would occur in developed or disturbed areas. While some regional and centralized structural BMPs (i.e., floodplain management and stream restoration projects) could occur within or adjacent to SEAs, riparian habitat or other sensitive natural communities, these types of BMPs would provide multi-beneficial water quality and habitat restoration improvements to the applicable EWMP watershed. Further, each development proposed within a designated SEA must undergo a performance review process for compliance with the SEA design compatibility criteria and other standards for approval by the Los Angeles County Department of Regional Planning (County of Los Angeles 2012).

In addition, future project-level environmental review processes would consider all proposed projects on a case-by-case basis to determine whether an individual project would impact riparian or other sensitive natural communities and where it is necessary, would require the implementation of site-specific mitigation measures to minimize and reduce potentially significant impacts to riparian and other sensitive natural communities. Impacts would be reduced to less-than-significant levels with the implementation of Mitigation Measures BIO-1 through BIO-8.

> **Mitigation Measures:** Implement Mitigation Measures BIO-1 and BIO-8.
>
> **Significance Determination:** Less than significant with mitigation. (The application of these mitigation measures to specific BMP types and categories are identified in Table 3.3-1.)

Non-Structural (Institutional) BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the construction of new facilities. Consequently, there would be no impacts to riparian or other sensitive natural communities from construction. However, many of the non-structural BMPs would result in the reduction of dry-weather urban runoff that could reduce perennial flows in local drainages. Returning the local hydrology to a more natural condition would occur overtime and would reduce overall wetted areas within minor drainages and swales throughout the region. Local riparian and lake features that rely on urban runoff could gradually shift from riparian and marsh to upland and sparse riparian. Shorelines may shift and wetted areas may decrease over time as more water is retained in the upper watershed, but these changes would not significantly degrade biological resources in the region as a whole since the revised hydrology would be a more natural condition for the arid region. Groundwater seepage would continue to support the major riparian corridors in the Malibu, Santa Clara, Upper Los Angeles, and San Gabriel watersheds. Retention of flows in the upper watershed would even augment these groundwater resources, offsetting any impacts from surface flow reductions. Moreover, improved water quality in the region's drainages and lagoons would be beneficial to habitat health. Overall, implementation of non-structural BMPs will not significantly impact riparian habitat or other sensitive natural communities in the EWMP areas.

Mitigation Measures: None required

Significance Determination: No impact

Wetland Habitats

Impact 3.3-3: The proposed project could have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

Structural (Regional, Centralized, and Distributed) BMPs

Construction through areas within or adjacent to waterways (creeks, stream, reservoir) or wetland features would require approval from one or more of the following: USACE, RWQCB, or CDFW. Wetlands occur throughout the EWMP Areas ranging from isolated segments of improved urban channels to the open river segments of the Santa Clara, Los Angeles, and San Gabriel Rivers. Once project facility locations and designs are determined, exact locations and acreages of jurisdictional areas located within or adjacent to impact areas shall be determined through a formal jurisdictional delineation.

For projects impacting native vegetation within jurisdictional drainages, the implementing agency would be required to obtain California Fish and Game Code Section 1602 compliance and Section 404 compliance from the USACE and Section 401 Certification from the RWQCB. In addition, implementation of Mitigation Measures BIO-1 through BIO-9 would ensure compliance with state and federal regulations relating to potentially jurisdictional features, including wash habitat vegetation that may fall under CDFW jurisdiction.

Mitigation Measures

Implement Mitigation Measures BIO-1 through BIO-8.

BIO-9: Prior to construction, a qualified wetland delineator shall be retained to conduct a formal wetland delineation in areas where potential jurisdictional resources (i.e., wetlands or drainages) subject to the jurisdiction of USACE, RWQCB, and CDFWmay be affected by the project. If jurisdictional resources are identified in the EWMP area and would be directly or indirectly impacted by individual projects, the qualified wetland delineator shall prepare a jurisdictional delineation report suitable for submittal to USACE, RWQCB, and

CDFW for purposes of obtaining the appropriate permits. Habitat mitigation and compensation requirements shall be implemented prior to construction in accordance with Mitigation Measure BIO-4.

Significance Determination: Less than significant with mitigation. (The application of these mitigation measures to specific BMP types and categories are identified in Table 3.3-1.)

Non-Structural (Institutional) BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the construction of new facilities. Consequently, there would be no impacts to wetlands or other jurisdictional features from construction. Non-structural BMPs would result in a reduction of urban dry-weather surface flows that currently may support wetlands. Returning the local hydrology to a more natural condition would occur overtime. Local wetland features that rely on urban runoff could gradually become non-hydric, resulting in a reduction in wetlands in the region. However, their functions as ephemeral water ways would not be reduced, but rather would reflect the more natural condition afforded by the Southern California climate. The revised hydrology would not result in a reduction of waters of the United States. Moreover, the retained water infiltrated into the ground would augment the shallow groundwater that serves to support local wetlands and riparian habitats. Increased groundwater seepage would increase the extent of wetlands and wetted areas and on a regional scale offset any reduction caused by surface flow reductions.

Implementation of BMPs would ensure compliance with the CWA requiring MS4s to reduce dry-weather flows in this region. Although compliance with Section 402 of the CWA may result in a reduction of wetlands in the region supported by surface flow, the infiltration of surface water into the ground would offset the potential impact, resulting in no net loss and a less-than-significant impact to wetlands.

Mitigation Measures: None required

Significance Determination: No impact

Wildlife Movement

Impact 3.3-4: The proposed project could interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

Structural (Regional, Centralized, and Distributed) BMPs

There are no established wildlife movement corridors within the EWMP area as described within the Los Angeles County General Plan directly affected by implementation of the EWMPs. While portions of the EWMP areas are located within the linkage design for the San Gabriel-Castaic and Santa Monica-Sierra Madre connections, implementation of structural BMPs would primarily be constructed within existing stormwater facilities or disturbed areas. Furthermore, the EWMPs would not reduce open water features used by migratory birds or reduce fresh water flows that support sensitive fish species.

Implementation of the EWMP would not be expected to interfere with wildlife movement or any migratory corridor/linkage, and would not be constructed within a native wildlife nursery site.

Mitigation Measures: None required

Significance Determination: Less than significant

Non-Structural (Institutional) BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the construction of new facilities. Consequently, there would be no impacts related to the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors.

Mitigation Measures: None required

Significance Determination: No impact

Local Policies or Ordinances

Impact 3.3-5: The proposed project could conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

Structural (Regional, Centralized, and Distributed) BMPs

The proposed project would mainly be constructed within highly urbanized and disturbed areas within existing infrastructure. Any impacts to oak trees within Los Angeles County would be required to comply with the Oak Tree Preservation Ordinance (or other tree ordinances established by the local city). A tree permit may be required if impacts to oak trees or other protected trees are determined to be necessary. No impacts to oak trees or other protected tree species is anticipated. However, the exact locations of the BMP projects have not been established. Implementation of **Mitigation Measure BIO-10** would reduce any potential impacts to protected tree species to a less-than-significant level.

Mitigation Measure

BIO-10: Oak trees and other protected trees shall be avoided to the extent feasible. If trees may be impacted by project construction, a certified arborist shall conduct a tree inventory of the construction impact area. If any oak trees or other protected trees will be impacted by BMP construction, the implementing agency shall obtain any required County or City permits.

Significance Determination: Less than significant with mitigation. (The application of this mitigation measures to specific BMP types and categories are identified in Table 3.3-1.)

Non-Structural (Institutional) BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the construction of new facilities. Consequently, there would be no impacts related to conflicts with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

Mitigation Measures: None required

Significance Determination: No impact

Adopted Habitat Conservation Plans

Impact 3.3-6: The proposed project could conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.

Structural (Regional, Centralized, and Distributed) BMPs

The EWMP areas are not located within an adopted federal or state habitat conservation plan area, but 48 SEAs are located within the boundary of the EWMP area (Figure 3.3-1). In addition, the County Oak Woodland Management Plan covers habitats that exist within some EWMPs. The SEAs and Oak Woodland Management Plan provide protection to many of the sensitive natural communities and special-status species within the County; however, the majority of the structural BMPs would occur in developed or disturbed areas that are expected to be outside of adopted SEAs. As previously discussed, while some regional and centralized structural BMPs (i.e., floodplain management and stream restoration projects) could occur within or adjacent to SEAs, these types of BMPs would provide multi-beneficial water quality and habitat restoration improvements to the applicable EWMP watershed. Further, each development proposed within a designated SEA must undergo a performance review process for compliance with the SEA design compatibility criteria and other standards for approval by the Los Angeles County Department of Regional Planning (County of Los Angeles 2012). Therefore, conflicts with the management policies for each SEA are not anticipated, and impacts would be less than significant.

Mitigation Measures: None required

Significance Determination: Less than significant.

Non-Structural (Institutional) BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the construction of new facilities. Consequently, there would be no impacts related to conflicts with an adopted habitat conservation plan or the Los Angeles County General Plan.

Mitigation Measures: None required

Significance Determination: No impact

Cumulative Impact Discussion

Structural (Regional, Centralized, and Distributed) BMPs

BMPs would be constructed throughout the EWMP watersheds. Most of the distributed BMPs would be small in scale and would not result in cumulatively significant impacts, as they would occur within existing developed or disturbed areas at existing stormwater infrastructure/facilities. For regional and centralized BMPs at the larger scale, Mitigation Measures BIO-1 through BIO-10 would reduce potentially significant impacts to biological resources, and any additional or more site-specific mitigation measures developed during the future project-level environmental review processes may further reduce potential impacts.

Cumulatively, throughout the region, the retention of stormwater and treatment of pollutants within each watershed, and the reduction of pollutant loading in waterways would substantially benefit the water quality of the region's aquatic and coastal habitats, as well as the plants and wildlife dependent on them. Implementation of the BMPs would also return the local hydrology to a more natural condition. Much of the vegetation supported by urban runoff within these EWMP areas as discussed above is cleared to ensure sufficient flood control function of the channels. In addition, the majority of high-value habitats in the region rely on groundwater seepage rather than perennial urban runoff. Although some drainage segments may exhibit reduced riparian habitat or wetlands over time due to the reduced dry-weather flow, the cumulative effect would be offset by increased groundwater recharge and seepage supporting expanded wetland and riparian vegetation supporting local flora and fauna populations. Therefore, the program's potential contribution to cumulative effects on biological resources is considered less than significant.

Implementation of BMPs would ensure compliance with Section 402 of the CWA that requires MS4s to reduce dry-weather flows in this region. Although compliance with Section 402 of the CWA may result in a reduction of wetlands in the region supported by surface flow, the infiltration of surface water into the ground would offset the potential impact, resulting in a less than significant cumulative impact to biological resources in the region.

Mitigation Measures: None required

Significance Determination: Less than significant

Non-Structural (Institutional) BMPs

As discussed previously, cumulatively, throughout the region, the retention of stormwater and treatment of pollutants within each watershed, and the reduction of pollutant loading in waterways would substantially benefit the water quality of the region's aquatic and coastal habitats, as well as the plants and wildlife dependent on them. Although some drainage segments may exhibit reduced riparian habitat or wetlands over time due to the reduced dry-weather flow, the cumulative effect would be offset by increased groundwater recharge and seepage supporting expanded wetland and riparian vegetation supporting local flora and fauna populations.

Therefore, the program's potential contribution to cumulative effects on biological resources is considered less than significant.

Mitigation Measures: None required

Significance Determination: Less than significant

3.3.4 Summary of Impact Assessment

Table 3.3-1 shows a summary of the structural BMPs requiring mitigation.

TABLE 3.3-1
SUMMARY OF BIOLOGICAL RESOURCE IMPACTS REQUIRING MITIGATION MEASURES

	Thresholds of Significance						
Structural BMPs	**Sensitive Species**	**Sensitive Habitats**	**Wetland Habitats**	**Wildlife Movement**	**Local Policies and Ordinances**	**Habitat Conservation Plans**	**Cumulative Impacts**
Applicable Mitigation Measures:	**BIO-1 through BIO-8**	**BIO-1 through BIO-8**	**BIO-1 through BIO-9**	**None Required**	**BIO-10**	**None Required**	**None Required**
Regional BMPs							
Regional Retention and Infiltration	Yes	Yes	Yes	No	No	No	Yes
Regional Capture, Detention and Use	Yes	Yes	Yes	No	No	No	Yes
Centralized BMPs							
Bioinfiltration	Yes	Yes	Yes	No	No	No	Yes
Constructed Wetlands	Yes	Yes	Yes	No	No	No	Yes
Treatment/LFDs	Yes	Yes	Yes	No	No	No	Yes
Creek, River, Estuary Restoration	Yes	Yes	Yes	No	No	No	Yes
Distributed BMPs							
Site Scale Detention	Yes	Yes	Yes	No	No	No	Yes
LID – Infiltration/Filtration BMPs – Porous Pavement, Green Streets, Bioswale/Filter Strips, downspout disconnects	No	No	No	No	No	No	No
LID – Green Infrastructure – Capture and Use – Cisterns, Rain Barrels, Green roofs, Planter Boxes	No	No	No	No	No	No	No
Flow through Treatment BMPs	No	No	No	No	No	No	No
Source Control Treatment BMPs (catch basin inserts/screens, hydrodynamic separators, gross solids removal devices)	No	No	No	No	No	No	No
Low-Flow Diversion	No	No	No	No	No	No	No

NOTE: These conclusions are based on typical sizes and locations of BMPs.

3.4 Cultural Resources

This chapter addresses the potential impacts of the proposed program on cultural resources. Cultural resources include prehistoric and historic sites, structures, districts, places, and landscapes, or any other physical evidence associated with human activity considered important to a culture, a subculture, or a community for scientific, traditional, religious, or any other reason. Under the California Environmental Quality Act (CEQA), paleontological resources, although not associated with past human activity, are grouped within cultural resources. For the purposes of this analysis, cultural resources may be categorized into the following groups: archaeological resources, historic resources (including architectural/engineering resources), contemporary Native American resources, human remains, and paleontological resources.

Archaeological resources are places where human activity has measurably altered the earth or left deposits of physical remains. Archaeological resources may be either prehistoric-era (before European contact) or historic-era (after European contact). The majority of such places in California are associated with either Native American or Euro-American occupation of the area. The most frequently encountered prehistoric or historic Native American archaeological sites are village settlements with residential areas and sometimes cemeteries; temporary camps where food and raw materials were collected; smaller, briefly occupied sites where tools were manufactured or repaired; and special-use areas like caves, rock shelters, and rock art sites. Historic-era archaeological sites may include foundations or features such as privies, corrals, and trash dumps.

Historic resources include standing structures, infrastructure, and landscapes of historic or aesthetic significance that are generally 50 years of age or older. In California, historic resources considered for protection tend to focus on architectural sites dating from the Spanish Period (1529–1822) through World War II (WWII) and Post War–era facilities. Some resources, however, may have achieved significance within the past 50 years if they meet the criteria for exceptional significance. Historic resources are often associated with archaeological deposits of the same age.

Contemporary Native American resources, also called ethnographic resources, can include archaeological resources, rock art, and the prominent topographical areas, features, habitats, plants, animals, and minerals that contemporary Native Americans value and consider essential for the preservation of their traditional values. These locations are sometimes hard to define and traditional culture often prohibits Native Americans from sharing these locations with the public.

Paleontology is a branch of geology that studies the life forms of the past, especially prehistoric life forms, through the study of plant and animal fossils. Paleontological resources represent a limited, nonrenewable, and impact-sensitive scientific and educational resource. As defined in this section, paleontological resources are the fossilized remains or traces of multicellular invertebrate and vertebrate animals and multicellular plants, including their imprints from a previous geologic period. Fossil remains such as bones, teeth, shells, and leaves are found in the geologic deposits (rock formations) where they were originally buried. Paleontological resources include not only the actual fossil remains, but also the collecting localities, and the geologic formations containing those localities.

3.4.1 Environmental Setting

Cultural Resources

Part of the program area is located in the Los Angeles Basin. The basin is formed by the Santa Monica Mountains to the northwest, the San Gabriel Mountains to the north, and the San Bernardino Mountains and San Jacinto Mountains to the east. The basin was formed by alluvial and fluvial deposits derived from these surrounding mountains. Prior to urban development and the channeling of the Los Angeles River, much of the program area was likely covered with marshes, thickets, dense woodland, and grassland. Historically, the Los Angeles River originated from a spring near what is present-day Encino. The river flowed eastward from Encino through the southern portion of the San Fernando Valley near the foot of the Santa Monica Mountains before turning southeast at what is present-day Griffith Park (Gumprecht, 2001). From there, it flowed to the Pacific Ocean along a frequently shifting course, sometimes flowing south to empty into San Pedro Bay near Long Beach, sometimes flowing west to the Santa Monica Bay along the course of what is present-day Ballona Creek. In its natural state, the river’s flow meandered dramatically, narrowed and widened intermittently, and even returned underground completely in certain locations. The floodplain forest of the Los Angeles Basin formed one of the most biologically rich habitats in Southern California. Willow, cottonwood, and sycamore and dense underbrush of alder, hackberry, and shrubs once lined the Los Angeles River as it passed near what is present-day downtown Los Angeles (Gumprecht, 2001). Although historically most of the Los Angeles River was dry for at least part of the year, shallow bedrock in the Elysian Park area north of what is present-day downtown forced much of the river’s underground water to the surface. This allowed for a steady year-round flow of water through the area that later became known as downtown Los Angeles (Gumprecht, 2001).

Prehistory

The abundant and diverse environmental resources of the coastal Los Angeles basin have attracted human inhabitants from the earliest times. The prehistory of the region has been summarized within four major horizons or cultural periods: Early, Millingstone, Intermediate, and Late Prehistoric (Wallace, 1955).

The Early period covers the interval from the first presence of humans in Southern California until post-glacial times. While people are known to have inhabited Southern California beginning at least 13,000 years Before Present (B.P.) (Arnold et al., 2004), the first evidence of human occupation of the Los Angeles area dates to at least 9,000 B.P. These occupations are associated with a period known as the Millingstone Cultural Horizon (7,000-4,000 B.P) (Wallace, 1955; McIntyre, 1990). Departing from the subsistence strategies of their nomadic big-game hunting predecessors, Millingstone populations established more permanent settlements. Settlements were located primarily on the coast and in the vicinity of estuaries, lagoons, lakes, streams, and marshes where a variety of resources, including seeds, fish, shellfish, small mammals, and birds, were exploited. Early Millingstone occupations are typically identified by the presence of handstones (manos) and millingstones (metates), while those Millingstone occupations dating later than 5,000 B.P. contain a mortar and pestle complex as well, signifying an increased dependence on new food sources, such as acorns and starchy tubers.

Although many aspects of Millingstone culture persisted, by 3,500 B.P., a number of socioeconomic changes occurred (Wallace, 1955; McIntyre, 1990). These changes are associated with the period known as the Intermediate Horizon (3,500–1,500 B.P.) (Wallace, 1955). Increasing population size necessitated the intensified use of existing terrestrial and marine resources (Erlandson, 1994). This was accomplished in part through use of the circular shell fishhook on the coast and more abundant and diverse hunting equipment. The Intermediate Horizon marks a period in which specialization in labor emerged, trading networks became an increasingly important means by which both utilitarian and non-utilitarian materials were acquired, and travel routes were extended. Archaeological evidence suggests that the margins of rivers, marshes, and swamps within the Los Angeles River drainage, with their rich variety of resources, served as locations of prehistoric settlement and travel during this period. Settlement around the Ballona Lagoon increased significantly during this period (Altschul et al., 2003).

The Late Prehistoric Period, spanning from approximately 1,500 years B.P. to the Spanish mission era, witnessed an increase in terrestrial and sea mammal hunting, along with continued seed collecting (Wallace, 1955). Small projectile points indicate the use of the bow and arrow. Although the location of Late Period villages does not significantly change, the villages become larger in size and fewer in number (McIntyre, 1990). Inter-village and inter-regional trade increased, and there is evidence for the use of shell beads as a form of money in economic exchanges.

Ethnographic Background

Tataviam

The northern part of the program area is located within the territory traditionally occupied by the Tataviam. Tataviam territory was concentrated along the upper reaches of the Santa Clara River drainage between the San Fernando Valley on the south and Pastoria Creek in the Tehachapi Mountains to the north. Their territory also included east Piru Creek and the southern slopes of Sawmill and Liebre Moutains, and also extended into the southern end of the Antelope Valley (King and Blackburn, 1978).

There are few historical sources regarding the Tataviam. The word “Tataviam” most likely came from a Kitanemuk word that may be roughly translated as “people of the south-facing slope,” because of their settlement on south-facing mountain slopes (King and Blackburn, 1978). What the Tataviam called themselves is not known. The Tataviam spoke a language that was part of the Takic branch of the Uto-Aztecan language family (King and Blackburn, 1978). The language was related to that spoken by the Gabrielino-Tongva.

Tataviam villages varied in size from larger centers with as many as 200 people, to smaller villages with only a few families (King and Blackburn, 1978). At the time of Spanish contact, the

Tataviam population is estimated to have been less than 1,000. Primary vegetable food sources included acorns, juniper berries, seeds, and yucca buds. Small game such as antelope and deer supplemented these foods. Trade networks between inland groups such as the Tataviam, the coastal regions, and desert regions enabled the trade of exotic materials such as shell, asphaltum, and steatite.

Gabrielino-Tongva

The southern portion of the program area is located in a region traditionally occupied by the Takic-speaking Gabrielino-Tongva Indians. The term "Gabrielino" is a general term that refers to those Native Americans who were administered by the Spanish at the Mission San Gabriel Arcángel. Many contemporary Gabrielino identify themselves by the name "Tongva." Prior to European colonization, the Gabrielino-Tongva occupied a diverse area that included: the watersheds of the Los Angeles, San Gabriel, and Santa Ana rivers; the Los Angeles basin; and the islands of San Clemente, San Nicolas, and Santa Catalina (Kroeber, 1925). The Gabrielino language, like the Tataviam language, was part of the Takic branch of the Uto-Aztecan language family.

The Gabrielino-Tongva Indians were hunter-gatherers and lived in permanent communities located near the presence of a stable food supply. Community populations generally ranged from 50 to 100 inhabitants, although larger settlements may have existed. The Gabrielino-Tongva are estimated to have had a population numbering around 5,000 in the precontact period (Kroeber, 1925). Villages are reported to have been the most abundant in the San Fernando Valley, the Glendale Narrows area north of downtown, and around the Los Angeles River drainage (Gumprecht, 2001). Maps produced by early explorers indicate that at least 26 Gabrielino villages were within close proximity to known Los Angeles River courses, while an additional 18 villages were within reasonably close proximity to the river (Gumprecht, 2001).

Subsistence consisted of hunting, fishing, and gathering. Small terrestrial game were hunted with deadfalls, rabbit drives, and by burning undergrowth, while larger game such as deer were hunted using bows and arrows. Fish were taken by hook and line, nets, traps, spears, and poison (Bean and Smith, 1978). The primary plant resources were the acorn, gathered in the fall and processed in mortars and pestles, and various seeds that were harvested in late spring and summer and ground with manos and metates. The seeds included chia and other sages, various grasses, and islay or holly-leafed cherry.

Coming ashore on Santa Catalina Island in October of 1542, Juan Rodriguez Cabrillo was the first European to make contact with the Gabrielino-Tongva; the 1769 expedition of Gaspar de Portolá also passed through Gabrielino-Tongva territory (Bean and Smith, 1978). Native Americans suffered severe depopulation and their traditional culture was radically altered after Spanish contact. Nonetheless, Gabrielino-Tongva descendants still reside in the greater Los Angeles and Orange County areas and maintain an active interest in their heritage.

Historic Setting

Spanish Period (A.D. 1769-1821)

Although Spanish explorers made brief visits to the region in 1542 and 1602, sustained contact with Europeans did not commence until the onset of the Spanish Period. In 1769 Gaspar de Portolá led an expedition from San Diego, passing through Los Angeles Basin, San Fernando Valley, and Santa Clarita Valley on its way to the San Francisco Bay (McCawley, 1996). This was followed in 1776 by the expedition of Father Francisco Garcés (Johnson and Earle, 1990).

In the late 18th century, the Spanish began establishing missions in California and forcibly relocating and converting native peoples. Two missions were located in the vicinity of the program area: Mission San Gabriel Arcángel, founded in 1771, and Mission San Fernando Rey de España, founded in 1797. Gabrielino-Tongva Indians were primarily sent to Mission San Gabriel to be baptized, although some were also baptized at Mission San Fernando. By 1820, most of the Tataviam population had been baptized at Mission San Fernando (California Missions Resource Center, 2012). Disease and hard labor took a toll on the native population in California; by 1900, the Native Californian population had declined by as much as 90 percent (Cook, 1978). In addition, native economies were disrupted, trade routes were interrupted, and native ways of life were significantly altered.

In an effort to promote Spanish settlement of Alta California, Spain granted several large land concessions from 1784 to 1821. At this time, unless certain requirements were met, Spain retained title to the land (State Lands Commission [SLC], 1982). Over 70 Spanish land grants were made within Los Angeles County.

On September 4, 1781, El Pueblo de la Reina de los Angeles was established not far from the site where Portolá and his men camped during their 1769 excursion. The original pueblo consisted of a central square surrounded by 12 houses and a series of agricultural fields (Gumprecht, 2001).

Mexican Period (A.D. 1821-1848)

The Mexican Period began when Mexico won its independence from Spain in 1821. Mexico continued to promote settlement of California with the issuance of land grants. In 1833, Mexico began the process of secularizing the missions, reclaiming the majority of mission lands and redistributing them as land grants. Many ranchos continued to be used for cattle grazing by settlers during the Mexican Period. Hides and tallow from cattle became a major export for Californios (native Hispanic Californians) (Pitt, 1994; Starr, 2007).

After Mexico gained its independence, the city of Los Angeles became the capital of the California territory in 1835. But few visited the area and the town remained a “sleepy agricultural village” until the Gold Rush in 1848 (Gumprecht, 2001).

American Period (A.D. 1848-present)

In 1846, the Mexican-American War broke out. Mexican forces were eventually defeated in 1847 and Mexico ceded California to the United States as part of the Treaty of Guadalupe Hildalgo in 1848. California officially became one of the United States in 1850.

The County of Los Angeles was established on February 18, 1850, as one of the 27 original counties, several months before California was admitted to the Union on September 9, 1850. It derived its name from the community of Los Angeles, which was designated the County seat. Parts of the county's territory were given to San Bernardino County in 1853, to Kern County in 1866 and to Orange County in 1889 (County of Los Angeles, 2014).

When the discovery of gold in Northern California was announced in 1848, a huge influx of people from other parts of North America flooded into California. The increased population provided an additional outlet for California cattle. As demand increased, the price of beef skyrocketed and California reaped the benefits. However, a devastating flood in 1861, followed by droughts in 1862 and 1864, led to a rapid decline of the cattle industry; over 70 percent of cattle perished during these droughts (McWilliams, 1949; Dinkelspiel, 2008). This event, coupled with the burden of proving ownership of their lands, caused many Californians to lose their lands during this period (McWilliams, 1949). Former ranchos were subsequently subdivided and sold for agriculture and residential settlement.

The first transcontinental railroad was completed in 1869, connecting San Francisco with the eastern United States. Newcomers poured into Northern California. Southern California experienced a trickle-down effect, as many of these newcomers made their way south. The Southern Pacific Railroad extended this line from San Francisco to Los Angeles in 1876. The second transcontinental line, the Santa Fe, was completed in 1886 and caused a fare war, driving fares to an unprecedented low. Settlers flooded into the region and the demand for real estate skyrocketed. As real estate prices soared, land that had been farmed for decades outlived its agricultural value and was sold to become residential communities. The subdivision of the large ranchos took place during this time (Meyer, 1981; McWilliams, 1949).

The city of Los Angeles would experience its greatest growth in the 1880s when two more direct rail connections to the East Coast were constructed. The resulting fare wars led to an unprecedented real estate boom. Despite a subsequent collapse of the real estate market, the population of Los Angeles increased 350 percent from 1880 to 1890 (Dinkelspiel, 2008). From 1890 to 1900, the city continued to grow, and many infrastructure projects were completed during this decade (McWilliams, 1949). E.L. Doheny discovered oil in 1892, adding fuel to the flame, and the population doubled by 1900. From 1900 to 1920, Los Angeles became a tourist mecca (McWilliams, 1949). The Los Angeles Aqueduct was constructed and a large portion of the San Fernando Valley annexed to the city during the first decade of the 20th century. From 1920 to 1930, Los Angeles experienced another population explosion, due in part to the automobile and the development of the movie industry. During the first three decades of the 20th century, more than two million people moved to Los Angeles County, transforming it from a largely agricultural region into a major metropolitan area with a population of 2.8 million within the city of Los Angeles and over 7 million within Los Angeles County by 1970 (U.S. Bureau of the Census, 1998; 1995).

Geoarchaeological Review

A project's probability for encountering archaeological resources depends upon three factors: (1) original formation of an archaeological deposit, (2) post-depositional (mainly geomorphic) processes following deposition of archaeological remains, and (3) project-specific ground disturbances. The original formation of an archaeological deposit in any particular place requires a past human presence as well as behaviors that result in material culture residue. The formation of archaeological deposits is conditioned by the dynamic interaction of paleoenvironmental factors (e.g., past climate, availability of water, abundance of subsistence resources) with a culture's economic, technological, social, and other behavioral systems. As Meyer et al. (2010) have pointed out: "Archaeological deposits are not randomly distributed throughout the landscape, but tend to occur in specific geo-environmental settings." While there seems to be no commonly agreed upon set of landform characteristics for predicting locations in which archaeological sites would be expected to form, landform slope and proximity to water have been invoked as useful predictors in central California (Meyer et al., 2010) and may be relevant to the program area. Stated simply, flat landforms near permanent sources of water tend to be strongly associated with archaeological deposits, while sloping landforms that lack water tend not to have archaeological deposits (Meyer et al., 2010).

Original formation of an archaeological deposit is a necessary, but not sufficient, condition to ensure that an archaeological site is still present centuries or millennia later. Post-depositional conditions must be suitable for preserving archaeological deposits for them to be discovered in the future. Geomorphological processes may work to either preserve or protect archaeological deposits, and their effects may vary depending on the specific setting. Landslides, for example, may displace and destroy archaeological sites at the top of a bluff, but may cover and protect sites at the bottom or toe of the bluff. In a similar vein, fluvial processes may erode archaeological sites along river cutbanks, but may deeply bury archaeological sites along the channel's floodplain. Absence of natural depositional forces—at the top a mountain ridgeline, for example—leave cultural materials exposed to the elements increasing their chance of destruction. Bedrock outcroppings, where little to no soil formation typically takes place, may lack sufficient matrix to cover and preserve traces of past human activity. One of the forces most capable of destroying archaeological sites is human activities. Agriculture, development of infrastructure, and urbanization especially can disturb and destroy archaeological sites, particularly surface or shallow sites, over immense areas.

If the various Enhanced Watershed Management Program (EWMP) projects and approaches may be likened to different types of infrastructure development, then their potential effects to archaeological deposits can be understood in terms of human activity impacts. Program actions that would result in large areas of deep ground disturbance would have a greater probability for encountering and impacting buried archaeological deposits than approaches resulting in more limited horizontal and vertical disturbances.

The program area is bounded on the northwest by the Santa Monica Mountains, on the northeast by the San Gabriel Mountains, on the southeast by the Orange County coastal plain, and on the west and southwest by the Pacific Ocean. The program area largely consists of the Los Angeles, Santa Clara, San Gabriel Rivers, Santa Monica Bay, and the Dominguez Channel Watersheds, and includes the Los Angeles Basin, San Fernando, and Santa Clarita Valleys. Topography varies regionally from sea level at the coast to several thousand feet in the surrounding mountains.

Broadly, erosion of bedrock out of the San Gabriel and Santa Monica Mountains during the Pleistocene and Holocene has resulted in construction of a broad and recent alluvial plain (Los Angeles Basin) between the mountain foothills and the coast. With few exceptions, this plain has been heavily urbanized and modified within the last century. Tectonism and over-steepening has resulted in formation of extensive landslide zones within the mountains and foothills, and many low-lying valleys are filled with colluvium and/or alluvium. Urbanization has occurred within of these valleys, as well as overlooking ridgelines.

The archaeological potential of the program area will be highly variable depending on local conditions. The low-lying alluvial plain and coastlines would be expected to have been preferred areas for past subsistence and occupation, and archaeological sites in these areas may have been subject to substantial burial. However, the extensive urbanization of these areas makes it likely that a high percentage of archaeological sites that once existed have been subject to disturbance or destruction by humans. On the other hand, while foothills and mountains may have been less favored for occupation because of their steeper slopes and more limited access to water, these areas have generally been subject to less development.

Paleontological Resources

The majority of the program area lies within the Los Angeles Basin, which is characterized by relatively flat (slight dip to the south) alluviated areas punctuated by tectonically uplifted highlands that drain into lower-lying areas and eventually the Pacific Ocean. It is these drainages that are, in part, responsible for the thick sequence of terrestrial sedimentary rocks that underlie much of the greater Los Angeles area and the diversity of fossils contained therein. During much of the early geological history of the program area, from the Early Miocene (approximately 23 million years before present) to the Late Pleistocene (approximately 11,000 years before present) sea level was much higher than today, and the much of the area was under water. Thick, richly fossiliferous (fossil-bearing) marine sedimentary sequences underlie much of the area, and where significant uplift has occurred because of tectonic forces, these fossil-rich rocks are exposed at the surface.

The following analysis of paleontological sensitivity within the program boundaries is based on available surficial geological mapping, published and unpublished technical reports, published scientific journals, and the University of California Museum of Paleontology online specimen database. No museum paleontological records searches were enlisted for this analysis. Because of the large geographic area and complex geology represented by the proposed program, surficial geological units and paleontological resources are outlined separately by each of the five watersheds (Santa Clara River, Los Angeles River, San Gabriel River, Santa Monica Bay, and Dominguez Channel), as shown in Figure 1-1. Furthermore, igneous and metamorphic rock units are omitted from this analysis because of they have no potential to yield significant paleontological resources.

Units are assigned a sensitivity rating based on Society for Vertebrate Paleontology (SVP) guidelines. The SVP has outlined criteria for screening the paleontological potential of rock units and has established assessment and mitigation procedures tailored to accommodating such potential. The SVP established four categories of paleontological sensitivity (potential) for rock units: high, undetermined, low, and no potential (SVP, 2010):

- **High Potential.** Rock units (or formations) in which vertebrate or significant invertebrate fossils have been found. These rock units include sedimentary and some volcanic formations that contain significant fossil resources anywhere within their geographic extent and sedimentary deposits formed in a time period or composed of materials suitable for the preservation of fossils. Only invertebrate fossils that provide new information on existing flora or fauna or on the age of a rock unit would be considered significant.
- **Undetermined Potential.** Rock units for which little information is available concerning their paleontological content, geologic age, and depositional environment are considered to have undetermined potential. Further study is necessary to determine if these rock units have high or low potential to contain significant paleontological resources. A field survey by a qualified professional paleontologist to specifically determine the paleontological resource potential of these rock units is required before a paleontological resource impact mitigation program can be developed. In cases where no subsurface data are available, paleontological potential can sometimes be determined by strategically located excavations into subsurface stratigraphy.
- **Low Potential.** Rock units that have few, if any, records of vertebrate fossils in institutional collections, or that have been shown in surveys or paleontological literature to be largely absent of fossil resources. Low-potential rocks also include metamorphic and igneous rocks other than some volcanic rocks.
- **No Potential.** Some rock units have no potential to contain significant paleontological resources, for instance high- grade metamorphic rocks (such as gneisses and schists) and plutonic igneous rocks (such as granites and diorites). Rock units with no potential require no protection or impact mitigation measures relative to paleontological resources. Units with no potential are not included in the following discussion.

Table 3.4-1 identifies paleontologically sensitive geologic formations within the region.

TABLE 3.4-1
PALEONTOLOGICALLY SENSITIVE GEOLOGIC UNITS/FORMATIONS WITHIN THE PROGRAM AREA

Geologic Unit/Formation	Sensitivity	Watershed
Recent Surficial Sediments (Quaternary alluvium, slopewash)	Low, higher at depth	All
Pleistocene (Older) Alluvium and Quaternary Terrace Deposit	High	All
Pacoima Formation	Undetermined	Los Angeles River
La Habra Formation	High	San Gabriel River
Saugus Formation	High	Santa Clara River and Los Angeles River
San Pedro Sand	High	Los Angeles River and Santa Monica Bay
Inglewood Formation	Undetermined	San Gabriel River
Fernando Formation	High	Santa Clara River and Los Angeles River
Pico Formation	High	Los Angeles River and Santa Monica Bay
Modelo Formation	High	Los Angeles River
The Towsley Formation	High	Santa Clara River and Los Angeles River
Ridge Basin Group	High	Santa Clara River
Sisquoc Formation	High	Santa Clara River and Los Angeles River
Puente Formation	High	San Gabriel River
Late Miocene Unnamed Marine Strata	Undetermined	Los Angeles River and Santa Monica Bay
Castaic Formation	High	Santa Clara River
The Monterey Formation	High	Santa Clara River
Mint Canyon Formation	High	Santa Clara River and Los Angeles River
Topanga Formation	High	Los Angeles River, Santa Monica Bay, and San Gabriel River
Trancas Formation	Undetermined	Santa Monica Bay
Tick Canyon Formation	High	Santa Clara River
Vasquez Formation	Low	Santa Clara River
Sespe-Vaqueros Formations	High	Santa Clara River and Santa Monica Bay
Llajas Formation	High	Los Angeles River and Santa Monica Bay
Eocene Unnamed marine strata	Undetermined	Los Angeles River and Santa Monica Bay
Santa Susana Formation	High	Los Angeles River and Santa Monica Bay
Martinez Formation	High	Los Angeles River
Chico Formation	High	Los Angeles River
Chatsworth Formation	High	Los Angeles River

SOURCES: Dibblee, 1996, 1997a, 1997b, 1997c, 1997d; Dibblee and Ehrenspeck 1989a, 1989b, 1990, 1991a, 1991b, 1991c, 1991d, 1992a, 1992b, 1992c, 1993a, 1993b, 1996a, 1996b, 1998, 1999, 2001a, 2001b; Dibblee et al., 1993, 1999; Dibblee and Minch, 2003, 2007; Durham et al., 1954; Evans and Miller, 1978; Fierstine et al, 2012; Groves 1991a, 1991b; Jennings, 1962; Kellogg, 1925, 1929; Kern, 1973; Koch et al., 1974; Maxson, 1930; Mount, 1971; Parham et al., 2003; Repenning, 1977; Smith et al., 2002; Squires, 1979, 2001; Squires et al., 2006; Stanton, 1960; Whistler, 1967; Yerkes and Campbell, 2005.

3.4.2 Regulatory Setting

Federal, state, and local governments have developed laws and regulations designed to protect significant cultural resources that may be affected by actions that they undertake or regulate. The National Historic Preservation Act (NHPA) and CEQA are the primary federal and state laws governing preservation of historic and archaeological resources of national, regional, state, and local significance. If individual projects entail a federal nexus, such as a federal approval, federal funding, or federal property, federal historic preservation laws such as the NHPA may apply.

Federal

National Historic Preservation Act of 1966

Enacted in 1966, the NHPA declared a national policy of historic preservation and instituted a multifaceted program, administered by the Secretary of the Interior, to encourage the achievement of preservation goals at the federal, state, and local levels. Section 106 of the NHPA states that federal agencies with direct or indirect jurisdiction over federally funded, assisted, or licensed undertakings must take into account the effect of the undertaking on any historic property that is included in, or eligible for inclusion in, the National Register of Historic Places (NRHP) and that the ACHP must be afforded an opportunity to comment. The steps of the Section 106 process are accomplished through consultation with the State Historic Preservation Office, federally recognized Indian tribes, local governments, and other interested parties. The goal of consultation is to identify potentially affected historic properties, assess effects to such properties, and seek ways to avoid, minimize, or mitigate any adverse effects on such properties.

National Register of Historic Places

The NRHP was established by the NHPA of 1966, as "an authoritative guide to be used by federal, state, and local governments, private groups and citizens to identify the Nation's historic resources and to indicate what properties should be considered for protection from destruction or impairment" (Code of Federal Regulations 36 Section 60.2). The NRHP recognizes both historical-period and prehistoric archaeological properties that are significant at the national, state, and local levels.

To be eligible for listing in the NRHP, a resource must be significant in American history, architecture, archaeology, engineering, or culture. Districts, sites, buildings, structures, and objects of potential significance must meet one or more of the following four established criteria (U.S. Department of the Interior, 1995):

A. Are associated with events that have made a significant contribution to the broad patterns of our history.

B. Are associated with the lives of persons significant in our past.

C. Embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.

D. Have yielded, or may be likely to yield, information important in prehistory or history.

Unless the property possesses exceptional significance, it must be at least 50 years old to be eligible for NRHP listing (U.S. Department of the Interior, 1995).

In addition to meeting the criteria of significance, a property must have integrity. Integrity is defined as "the ability of a property to convey its significance" (U.S. Department of the Interior, 1995). The NRHP recognizes seven qualities that, in various combinations, define integrity: location, design, setting, materials, workmanship, feeling, and association. To retain historic integrity a property must possess several, and usually most, of these seven aspects. Thus, the retention of the specific aspects of integrity is paramount for a property to convey its significance.

State

California Register of Historical Resources

Under the California Public Resources Code, Section 5024.19(a), the California Register of Historical Resources (CRHR) was created in 1992 and implemented in 1998 as "an authoritative guide in California to be used by State and local agencies, private groups, and citizens to identify the State's historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from substantial adverse change." Certain properties, including those listed in or formally determined eligible for listing in the NRHP and California Historical Landmarks numbered 770 and higher, are automatically included in the CRHR. Other properties recognized under the California Points of Historical Interest program, identified as significant in historical resources surveys or designated by local landmarks programs, may be nominated for inclusion in the CRHR. A resource, either an individual property or a contributor to a historic district, may be listed in the CRHR if the State Historical Resources Commission determines that it meets one or more of the following criteria, which are modeled on NRHP criteria:

- **Criterion 1.** It is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
- **Criterion 2.** It is associated with the lives of persons important in our past.
- **Criterion 3.** It embodies the distinctive characteristics of a type, period, region, or method of construction; represents the work of an important creative individual; or possesses high artistic values.
- **Criterion 4.** It has yielded, or may be likely to yield, information important in history or prehistory.

Furthermore, under California Public Resources Code (PRC) 5024.1, Title 14 California Code of Regulations (CCR), Section 4852(c), a cultural resource must retain integrity to be considered eligible for the CRHR. Specifically, it must retain sufficient character or appearance to be recognizable as a historical resource and convey reasons of significance. Integrity is evaluated with regard to retention of such factors as location, design, setting, materials, workmanship, feeling, and association.

California Historical Landmarks

California Historical Landmarks (CHLs) are buildings, structures, sites, or places that have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other value and that have been determined to have statewide historical significance by meeting at least one of the criteria listed below. The resource also must be approved for designation by the County Board of Supervisors (or the city or town council in whose jurisdiction it is located); be recommended by the State Historical Resources Commission; and be officially designated by the Director of California State Parks. The specific standards now in use were first applied in the designation of CHL #770. CHLs #770 and above are automatically listed in the CRHR.

To be eligible for designation as a landmark, a resource must meet at least one of the following criteria:

- It is the first, last, only, or most significant of its type in the state or within a large geographic region (Northern, Central, or Southern California).
- It is associated with an individual or group having a profound influence on the history of California.
- It is a prototype of, or an outstanding example of, a period, style, architectural movement or construction or is one of the more notable works or the best surviving work in a region of a pioneer architect, designer, or master builder.

California Points of Historical Interest

California Points of Historical Interest (PHIs) are sites, buildings, features, or events that are of local (city or county) significance and have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other value. PHI designated after December 1997 and recommended by the SHRC are also listed in the CRHR. No historic resource may be designated as both a landmark and a point. If a point is later granted status as a landmark, the point designation will be retired. In practice, the point designation program is most often used in localities that do not have a locally enacted cultural heritage or preservation ordinance.

To be eligible for designation as a PHI, a resource must meet at least one of the following criteria:

- It is the first, last, only, or most significant of its type within the local geographic region (city or county).
- It is associated with an individual or group having a profound influence on the history of the local area.
- It is a prototype of, or an outstanding example of, a period, style, architectural movement or construction or is one of the more notable works or the best surviving work in the local region of a pioneer architect, designer, or master builder.

California Environmental Quality Act

CEQA is the principal statute governing environmental review of projects occurring in the state and is codified at PRC Section 21000 et seq. CEQA requires lead agencies to determine if a project would have a significant effect on the environment, including significant effects on historical or archaeological resources.

Under CEQA (Section 21084.1), a project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment. The CEQA Guidelines (Title 14 CCR Section 15064.4) recognize that an historical resource includes: (1) a resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the CRHR; (2) a resource included in a local register of historical resources, as defined in PRC Section 5020.1(k) or identified as significant in a historical resource survey meeting the requirements of PRC Section 5024.1(g); and (3) any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California by the lead agency, provided the lead agency's determination is supported by substantial evidence in light of the whole record. The fact that a resource does not meet the three criteria outlined above does not preclude the lead agency from determining that the resource may be an historical resource as defined in PRC Sections 5020.1(j) or 5024.1.

If a lead agency determines that an archaeological site is a historical resource, the provisions of Section 21084.1 of CEQA and Section 15064.4 of the CEQA Guidelines apply. If a project may cause a substantial adverse change (defined as physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired) in the significance of an historical resource, the lead agency must identify potentially feasible measures to mitigate these effects (CEQA Guidelines Sections 15064.4(b)(1), 15064.4(b)(4)).

If an archaeological site does not meet the historical resource criteria contained in the CEQA Guidelines, then the site may be treated in accordance with the provisions of Section 21083, which is a unique archaeological resource. As defined in Section 21083.2 of CEQA a "unique" archaeological resource is an archaeological artifact, object, or site, for which it can be clearly demonstrated that without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- Contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information.
- Has a special and particular quality such as being the oldest of its type or the best available example of its type.
- Is directly associated with a scientifically recognized important prehistoric or historic event or person.

If an archaeological site meets the criteria for a unique archaeological resource as defined in Section 21083.2, then the site is to be treated in accordance with the provisions of Section 21083.2, which state that if the lead agency determines that a project would have a significant effect on unique archaeological resources, the lead agency may require reasonable efforts be made to permit any or all of these resources to be preserved in place (Section 21083.1(a)). If preservation in place is not feasible, mitigation measures shall be required.

The CEQA Guidelines note that if an archaeological resource is neither a unique archaeological nor a historical resource, the effects of the project on those resources shall not be considered a significant effect on the environment (CEQA Guidelines Section 15064.4(c)(4)).

Senate Bill 18

Senate Bill 18 (SB 18), which went into effect January 1, 2005, requires local governments (city and county) to consult with Native American Tribes before making certain planning decisions and to provide notice to tribes at certain key points in the planning process. The intent is to "provide California Native American tribes an opportunity to participate in local land use decisions at an early planning stage, for the purpose of protecting, or mitigating impacts to, cultural places" (Governor's Office of Planning and Research [OPR], 2005).

The purpose of involving Tribes at these early planning stages is to allow consideration of cultural places in the context of broad local land use policy, before individual site-specific, project-level, land use designations are made by a local government. The consultation requirements of SB 18 apply to general plan or specific plan processes proposed on or after March 1, 2005.

According to the *Tribal Consultation Guidelines: Supplement to General Plan Guidelines* (OPR, 2005), the following are the contact and notification responsibilities of local governments:

- Prior to the adoption or any amendment of a general plan or specific plan, a local government must notify the appropriate tribes (on the contact list maintained by the Native American Heritage Commission [NAHC]) of the opportunity to conduct consultations for the purpose of preserving, or mitigating impacts to, cultural places located on land within the local government's jurisdiction that is affected by the proposed plan adoption or amendment. Tribes have 90 days from the date on which they receive notification to request consultation, unless a shorter timeframe has been agreed to by the tribe (Government Code Section 65352.3).
- Prior to the adoption or substantial amendment of a general plan or specific plan, a local government must refer the proposed action to those tribes that are on the NAHC contact list and have traditional lands located within the city or county's jurisdiction. The referral must allow a 45-day comment period (Government Code Section 65352). Notice must be sent regardless of whether prior consultation has taken place. Such notice does not initiate a new consultation process.

- Local government must send a notice of a public hearing, at least 10 days prior to the hearing, to tribes who have filed a written request for such notice (Government Code Section 65092).

If an individual structural BMP project entailed the adoption or substantial amendment of a general plan or specific plan, the provisions of Senate Bill 18 may apply.

Local

County

The Conservation and Open Space Element of the 2008 Los Angeles County General Plan governs the natural and cultural resources of the county. The Los Angeles County General Plan has the following relevant goals and policies related to the protection of cultural and paleontological resources.

Goal C/OS-12: Protected cultural heritage resources.

Policy C/OS 12.1: Support an inter-jurisdictional collaborative system that protects and enhances the County's cultural heritage resources.

Policy C/OS 12.2: Support the preservation and rehabilitation of historic buildings.

Policy C/OS 12.3: Ensure proper notification procedures to Native American tribes in accordance with Senate Bill 18 (2004).

Policy C/OS 12.4: Promote public awareness of the County's cultural heritage resources.

Implementation Action C/OS 12.1 Evaluate the efficacy of the Landmarks Preservation Commission and the designation of historic landmarks within the unincorporated areas of the County.

In addition, the General Plan makes the following recommendation:

If a CEQA analysis determines that a project will impact a cultural resource area (historic, cultural, or paleontological), the following guidelines will apply:

1. A literature search for valid archaeological or paleontological surveys shall be conducted (for each initial study of a public or private project).
2. A study of the project site shall be made by a qualified archaeologist or paleontologist who shall determine the scientific value of finds, if any, and a recommendation as to their preservation or disposition.
3. The County Historical Landmarks Commission must be notified of all cultural, historical, or paleontological findings.
4. All significant impacts to cultural resource sites must be mitigated to the greatest extent feasible, and a reasonable period of time must be allowed to salvage the site.

5. The integrity of significant historical features of the structure and/or site should be maintained to the largest extent possible.
6. The integrity of sightlines to the structure or site should be maintained.
7. Development adjacent to a cultural resource site should consider design guidelines and appropriate building design, setbacks, landscaping, and other factors that will protect the integrity of the cultural resource area.
8. Materials collected during surface surveys or salvage operations should be donated to an appropriate nonprofit institution. In the event the property owner wishes to retain possession of the artifacts found, it is desirable that archaeologists or paleontologist be allowed to study and photograph the artifacts.

City General Plans

The numerous cities encompassed by the EWMP program area all have their own respective city General Plans, some of which may contain policies that address cultural resources. As implementation of the individual structural BMP projects proceed, specific policies and objectives pertaining to cultural resources from applicable city general plans will be identified and evaluated on a project-by-project basis during subsequent CEQA environmental processes.

Paleontological Resources

Federal

A variety of federal statutes specifically address paleontological resources. They are generally applicable to a project if that project includes federally owned or federally managed lands, or involves a federal agency license, permit, approval, or funding. Federal legislative protection for paleontological resources stems from the Antiquities Act of 1906 (PL 59-209; 16 United States Code 431 et. seq.; 34 Stat. 225), which calls for protection of historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest on federal lands.

State

Paleontological resources are explicitly afforded protection by CEQA, specifically in Section V(c) of Appendix G, the "Environmental Checklist Form," which addresses the potential for adverse impacts to "unique paleontological resource[s] or site[s]." PRC Section 5097.5 specifies that any unauthorized removal of paleontological remains is a misdemeanor. Further, the California Penal Code Section 622.5 sets the penalties for the damage or removal of paleontological resources.

Professional Standards

The SVP has established standard guidelines for acceptable professional practices in the conduct of paleontological resource assessments and surveys, monitoring and mitigation, data and fossil recovery, sampling procedures, specimen preparation, identification, analysis, and curation. Most practicing professional paleontologists in the United States adhere closely to the SVP's assessment, mitigation, and monitoring requirements as specifically provided in its standard guidelines. Most California state regulatory agencies accept the SVP standard guidelines as a measure of professional practice.

3.4.3 Impact Analysis

The proposed program's potential impacts have been assessed using the CEQA Guidelines Appendix G Checklist. The following sections discuss the key issue areas identified in the CEQA Guidelines with respect to the program's potential effect on cultural resources.

Method of Analysis

This impact analysis is a preliminary, program-level assessment of potential impacts on important cultural resources that could occur as a result of implementation of the proposed program. Because this a program-level analysis, impacts on specific cultural resources that could result from individual projects or structural BMPs are not addressed in this document, but may need to be assessed through additional analysis as project implementation actions are developed and further defined.

The impacts and mitigation measures identified in this section address types of activities that could significantly impact cultural resources including archaeological sites, historic buildings and structures, and locations of importance to Native Americans. Proposed program facilities for structural BMPs include aboveground and belowground facilities, construction of which could result in impacts to cultural and paleontological resources. Program implementation actions that include these types of activities would be required to implement the identified mitigation measures in an effort to reduce any impacts to a less-than-significant level.

The identification of specific impacts and mitigation measures that are appropriate for a specific project implementation action will depend on both the nature of the cultural resources that are present and on the nature of the action. In some instances, mitigation measures must be developed in consultation with multiple agencies and other interested parties.

Thresholds of Significance

For the purposes of this Program Environmental Impact Report (PEIR) and consistency with Appendix G of the CEQA Guidelines, applicable local plans, and agency and professional standards, the program would have a significant impact on cultural resources if it would:

- Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5.
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5.
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.
- Disturb any human remains, including those interred outside of a formal cemetery.

According to CEQA Guidelines (CCR Title 14, 15064.4), a project with an effect that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment (CCR Title 14, 15064.4(b)). The Guidelines further state that a substantial adverse change in the significance of a resource means the physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historic resource would be materially impaired. Actions that would materially impair the significance of a historical resource are any actions that would demolish or adversely alter those physical characteristics of a historical resource that convey its historical significance and qualify it for inclusion in the CRHR or in a local register or survey that meet the requirements of PRC Sections 5020.1(k) and 5024.1(g).

Identified cultural resources that may be impacted by individual structural BMP projects would be evaluated for eligibility for listing on the CRHR or local historic register. Cultural resources that are eligible for the CRHR or local historic register are considered to be significant historic resources. Cultural resources would also be evaluated for their qualification as a unique archaeological resource under CEQA. Cultural resources that are identified within individual structural BMP project areas subject to federal approval, permits, or funding would also be evaluated for eligibility for listing on the NRHP. Cultural resources determined to be eligible for listing on the NRHP are automatically eligible for listing on the CRHR and are considered to be significant cultural resources.

Paleontological resources are also afforded protection by CEQA. Appendix G (Part V) of the CEQA Guidelines provides guidance relative to significant impacts on paleontological resources. A project will have a significant impact on the environment if it adversely affects a paleontological resource or site, or a unique geological feature.

Program Impact Discussion

Historical Resources

Impact 3.4-1: The proposed program could cause a substantial adverse change in the significance of an historical resource as defined in §15064.5.

Structural (Regional, Centralized, and Distributed) BMPs

Distributed BMPs are most likely to be implemented in high-density urban, commercial, industrial, and transportation areas where they would either replace or improve upon existing stormwater infrastructure. These types of BMPs are generally “retrofit” type projects that replace existing impervious surfaces with pervious surfaces such as bioinfiltration cells, bioswales, porous pavement, and filter strips that tie into existing stormwater management systems. These projects may also augment the existing stormwater management systems with additional inlet screens, filter media systems, sediment removal systems, and diversions to sanitary sewer lines. Ground disturbance for distributed BMPs is typically less than 1 to 2 acres in extent, but may extend in some limited applications up to 5 acres where space is available. Centralized structural BMPs collect, store, treat, and filter stormwater from multiple parcels and much larger drainage areas. Like centralized BMPs, regional BMPs can be implemented in a broad range of land use types, from high-density urban to open space, and can have multiple benefits (habitat, recreation, aesthetics, etc.). Centralized and regional structural BMPs require greater footprints for construction and implementation.

Built Environment Resources

Any historic built environment resources (including buildings and structures) that are 50 years or older within the program area may be eligible for listing in the CRHR or local register, although such resources have not yet been identified. Historic built environment resources that are found eligible for the CRHR or local register would be considered historical resources under CEQA. A project that causes a substantial adverse change in the significance of a built environment resource that qualifies as an historical resource (i.e., physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings) would result in a significant impact to historical resources.

Implementation of structural BMPs occurring under the proposed program could impact significant historic built environment resources that exist within the program area. Built environment resources can include not only buildings and structures, but also built infrastructure such as concrete channels, dams, sidewalks, and roads. Impacts could include not only physical demolition or alteration of built environment resources, but also changes to the historic setting of a resource, and impacts that may adversely affect that ability of a resource to convey its significance. **Mitigation Measure CUL-1** would reduce impacts to significant historic built resources. However, in some circumstances, documentation of an historical resource, by way of historic narrative, photographs, or architectural drawings, as mitigation for the effects of demolition of the resource will not mitigate the effects to a point where clearly no significant effect on the environment would occur (CEQA Guidelines § 15126.4(b)(2)). Therefore, implementation of the proposed program may ultimately result in a "substantial adverse change" to historic resources through various development activities for which no possible mitigation may be available to maintain the historic integrity of the affected resource or its surroundings.

Archaeological and Other Cultural Resources

Historical resources can include not only buildings and structures, as discussed above, but also any object, site area, place, record, or manuscript which a lead agency determines to be historically significant, or which is listed in or determined eligible for listing in the CRHR (CEQA Guidelines Section 15064.5(a)).

The program area has a long history of human occupation, dating to at least 9,000 years before the present. The abundant natural resources within the program area, including rivers, creeks, the Pacific Ocean, and the flora and fauna associated with these water features, would have attracted and sustained human settlement. Significant archaeological resources have been recorded throughout the program area, and numerous Native American village sites are known to have existed within the program area (Altschul et al., 2003; Gumprecht, 2001; McCawley, 1996). Archaeological sensitivity varies across the program area based on specific environmental factors, as discussed above, but archaeological resources could potentially be present in any individual structural BMP project area.

Known archaeological resources, as well as unknown and unrecorded archaeological resources that may be unearthed during construction activities associated with implementation of structural BMPs, could be impacted by individual projects. Some of these resources may qualify as historical resources. Disturbance of previously unknown and unrecorded archaeological resources can occur even in already developed areas, as older buildings are known to have often been built on top of or within archaeological deposits. Although much of the program area is already heavily developed, potentially significant buried archaeological resources could nevertheless still exist within the program area, beneath and between structures and roads. If previously undiscovered artifacts or buried archaeological resources are uncovered during excavation or construction, significant impacts could occur.

Resources of importance to Native American Tribes or other cultural groups that may qualify as historical resources may also be present within individual EWMP areas. These resources may be identified through cultural resources studies and through consultation and coordination with local Native American Tribes or other cultural groups.

Given the above, the proposed program has the potential to adversely affect archaeological resources and other cultural resources that qualify as historical resources. Since the proposed program is at the programmatic level, specific project locations and design elements have yet to be finalized. As such, impacts to specific cultural resources are not addressed here. However, as program implementation actions move forward, individual projects would undergo additional CEQA review prior to construction. The program area should be considered sensitive for archaeological and other cultural resources, which should be taken into consideration during subsequent CEQA review. Any structural BMP that involves grading, trenching, excavation, vegetation removal, or other form of ground disturbance could impact archaeological resources or other cultural resources. Indirect impacts to archaeological resources, as a result of erosion or vandalism resulting from increased access to or visibility of resources, could also occur.

Implementation of **Mitigation Measures CUL-2**, **CUL-3**, and **CUL-4** would reduce impacts to archaeological and other cultural resources that qualify as historical resources. However, because the degree of impact and the applicability, feasibility, and success of these measures cannot be accurately predicted for each specific project at this time, the program level impact related to archaeological and cultural resources that qualify as historical resources is considered significant and unavoidable. In some circumstances, documentation and data recovery as mitigation for impacts to an historical resource of an archaeological nature will not mitigate the effects to a point where clearly no significant effect on the environment would occur. Data recovery as mitigation for historical resources that are eligible for the CRHR under Criterion 4, or that derive their significance from their scientific value or data potential, may effectively mitigate impacts to a less than significant level. However, for historical resources that are eligible to the CRHR under Criteria 1, 2, or 3, data recovery may not adequately mitigate impacts to those aspects of the resource that convey its significance and make it eligible for listing in the CRHR.

Impacts to historical resources would remain significant and unavoidable after implementation of Mitigation Measures CUL-1 through CUL-4 at this program-level analysis. It should be noted that not all individual EWMP projects may result in a significant and unavoidable impact with regard to historical resources, as the impacts associated with each individual EWMP project would be dependent on its location; the presence, nature, and significance of any historical resources within the construction area; and specific impacts to historical resources. It is anticipated that the implementing agencies of the EWMP projects would, through the environmental review process, consider each discretionary EWMP project on a case-by-case basis to ascertain whether an individual project would impact cultural resources. Therefore, the identification of a significant and unavoidable program-level impact in this PEIR does not preclude the finding of future less-than-significant impacts for the individual structural BMP projects occurring in the EWMP areas.

Mitigation Measures:

CUL-1: For individual EWMP projects that could impact buildings or structures (including infrastructure) 45 years old or older, implementing agencies shall ensure that a historic built environment survey is conducted or supervised by a qualified historian or architectural historian meeting the Secretary of the Interior's Professional Qualification Standards for Architectural History. Historic built environment resources shall be evaluated for their eligibility for listing in the CRHR or local register prior to the implementing agency's approval of project plans. If eligible resources that would be considered historical resources under CEQA are identified, demolition or substantial alteration of such resources shall be avoided. If avoidance is determined to be infeasible, the implementing agency shall require the preparation of a treatment plan to include, but not be limited to, photo-documentation and public interpretation of the resource. The plan will be submitted to the implementing agency for review and approval prior to implementation.

CUL-2: Implementing agencies shall ensure that individual EWMP projects that require ground disturbance shall be subject to a Phase I cultural resources inventory on a project-specific basis prior to the implementing agency's approval of project plans. The study shall be conducted or supervised by a qualified archaeologist, defined as an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for Archaeology, and shall be conducted in consultation with the local Native American representatives expressing interest. The cultural resources inventory shall include a cultural resources records search to be conducted at the South Central Coastal Information Center; scoping with the NAHC and with interested Native Americans identified by the NAHC; a pedestrian archaeological survey where deemed appropriate by the qualified archaeologist; and formal recordation of all identified archaeological resources on California Department of Parks and Recreation 523 forms and significance evaluation of such resources presented in a technical report following the guidelines in *Archaeological Resource Management Reports (ARMR): Recommended Contents and Format*, Department of Parks and Recreation, Office of Historic Preservation, State of California, 1990.

If potentially significant archaeological resources are encountered during the survey, the implementing agency shall require that the resources are evaluated by the qualified archaeologist for their eligibility for listing in the CRHR and for significance as a historical resource or unique archaeological resource per CEQA Guidelines Section 15064.5. Recommendations shall be made for treatment of these resources if found to be significant, in consultation with the implementing agency and the appropriate Native American groups for prehistoric resources. Per CEQA Guidelines Section 15126.4(b)(3), preservation in place shall be the preferred manner of mitigation to avoid impacts to archaeological resources qualifying as historical resources. Methods of avoidance may include, but shall not be limited to, project reroute or redesign, project cancellation, or identification of protection measures such as capping or fencing. Consistent with CEQA Guidelines Section 15126.4(b)(3)(C), if it is demonstrated that resources cannot be avoided, the qualified archaeologist shall develop additional treatment measures, which may include data recovery or other appropriate measures, in consultation with the implementing agency, and any local Native American representatives expressing interest in prehistoric or tribal resources. If an archaeological site does not qualify as an historical resource but meets the criteria for a unique archaeological resource as defined in Section 21083.2, then the site shall be treated in accordance with the provisions of Section 21083.2.

CUL-3: The implementing agency shall retain archaeological monitors during ground-disturbing activities that have the potential to impact archaeological resources qualifying as historical resources or unique archaeological resources, as determined by a qualified archaeologist in consultation with the implementing agency, and any local Native American representatives expressing interest in the project. Native American monitors shall be retained for projects that have a high potential to impact sensitive Native American resources, as determined by the implementing agency in coordination with the qualified archaeologist.

CUL-4: During project-level construction, should subsurface archaeological resources be discovered, all activity in the vicinity of the find shall stop and a qualified archaeologist shall be contacted to assess the significance of the find according to CEQA Guidelines Section 15064.5. If any find is determined to be significant, the archaeologist shall determine, in consultation with the implementing agency and any local Native American groups expressing interest, appropriate avoidance measures or other appropriate mitigation. Per CEQA Guidelines Section 15126.4(b)(3), preservation in place shall be the preferred means to avoid impacts to archaeological resources qualifying as historical resources. Methods of avoidance may include, but shall not be limited to, project reroute or redesign, project cancellation, or identification of protection measures such as capping or fencing. Consistent with CEQA Guidelines Section 15126.4(b)(3)(C), if it is demonstrated that resources cannot be avoided, the qualified archaeologist shall develop additional treatment measures, such as data recovery or other appropriate measures, in consultation with the implementing agency and any local Native American representatives expressing interest in prehistoric or tribal resources. If an archaeological site does not qualify as an historical resource but meets the criteria for a unique archaeological resource as defined in Section 21083.2, then the site shall be treated in accordance with the provisions of Section 21083.2.

Significance Determination: Significant and unavoidable The application of these mitigation measures to specific BMP types and categories is identified in Table 3.4-2.)

Non-Structural (Institutional) BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the construction of new facilities, demolition, or any ground disturbance. Consequently, implementation of non-structural BMPs would not impact historical resources.

Mitigation Measures: None required

Significance Determination: No impact

Unique Archaeological Resources

Impact 3.4-2: The program could cause a substantial adverse change in the significance of unique archaeological resources as defined in §15064.5.

Structural (Regional, Centralized, and Distributed) BMPs

As discussed under Impact 3.4-1, the program area should be considered sensitive for archaeological resources. Archaeological sensitivity varies across the program area based on specific environmental factors, as discussed above, but archaeological resources could potentially be present in any individual structural BMP project area. Known archaeological resources, as well as unknown and unrecorded archaeological resources that may be unearthed during construction activities associated with implementation of structural BMPs, could be impacted by individual EWMP projects. Any structural BMP which involves grading, trenching, excavation, vegetation removal, or other form of ground disturbance could impact archaeological resources, some of which may qualify as unique archaeological resources. Implementation of **Mitigation Measures CUL-2**, **CUL-3**, and **CUL-4** would require that unique archaeological resources be treated in accordance with the provisions of Section 21083.2, which would reduce impacts to unique archaeological resources to a less-than-significant level.

Mitigation Measures: Implement **Mitigation Measures CUL-2**, **CUL-3**, **CUL-4**

Significance Determination: Less than significant (The application of these mitigation measures to specific BMP types and categories is identified in Table 3.4-2.)

Non-Structural (Institutional) BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the construction of new facilities or any ground disturbance. Consequently, implementation of non-structural BMPs would not impact unique archaeological resources.

Mitigation Measures: None required

Significance Determination: No impact

Paleontological Resources

Impact 3.4-3: The program could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

Structural (Regional, Centralized, and Distributed) BMPs

As discussed, the program area is underlain by a number of high or undetermined paleontological sensitivity units. These sensitive geological formations/units may contain significant paleontological resources. The Los Angeles County General Plan Conservation Element requires that a paleontologist be retained to mitigate potential impacts to nonrenewable paleontological resources. However, significant paleontological resources can be uncovered even in areas of low sensitivity, and it is possible that ground-disturbing construction activities associated with implementation of the program could result in the inadvertent discovery of paleontological resources, which could be a significant impact. Implementation of **Mitigation Measures CUL-5** and **CUL-6** would reduce these impacts to less-than-significant levels at this program-level of analysis.

Mitigation Measures:

CUL-5: For individual structural BMP projects that require ground disturbance, the implementing agency shall evaluate the sensitivity of the project site for paleontological resources. If deemed necessary, the implementing agency shall retain a qualified paleontologist to evaluate the project and provide recommendations regarding additional work, potentially including testing or construction monitoring.

CUL-6: In the event that paleontological resources are discovered during construction, the implementing agency shall notify a qualified paleontologist. The paleontologist will evaluate the potential resource, assess the significance of the find, and recommend further actions to protect the resource.

Significance Determination: Less than significant (The application of these mitigation measures to specific BMP types and categories is identified in Table 3.4-2.)

Non-Structural (Institutional) BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the construction of new facilities or any ground disturbance. Consequently, implementation of non-structural BMPs would not impact paleontological resources.

Mitigation Measures: None required

Significance Determination: No impact

Human Remains

Impact 3.4-4: The program could disturb any human remains, including those interred outside of a formal cemetery.

Structural (Regional, Centralized, and Distributed) BMPs

Program-level development involving ground disturbance within the program area could impact human remains. In the event that human remains are discovered, including those interred outside of formal cemeteries, the human remains could be inadvertently damaged, which could be a significant impact. Implementation of **Mitigation Measure CUL-7** would reduce impacts to less-than-significant levels at this program-level of analysis.

Mitigation Measures:

CUL-7: The implementing agency shall require that, if human remains are uncovered during project construction, work in the vicinity of the find shall cease and the County Coroner shall be contacted to evaluate the remains, following the procedures and protocols set forth in Section 15064.5 (e)(1) of the CEQA Guidelines. If the County Coroner determines that the remains are Native American, the Coroner will contact the Native American Heritage Commission, in accordance with Health and Safety Code Section 7050.5, subdivision (c), and Public Resources Code 5097.98 (as amended by AB 2641). The NAHC will then designate a Most Likely Descendant of the deceased Native American, who will engage in consultation to determine the disposition of the remains.

Significance Determination: Less than significant (The application of this mitigation measure to specific BMP types and categories is identified in Table 3.4-2.)

Non-Structural (Institutional) BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the construction of new facilities or any ground-disturbance. Consequently, implementation of non-structural BMPs would not impact human remains.

Mitigation Measures: None required

Significance Determination: No impact

Cumulative Impact Discussion

Structural (Regional, Centralized, and Distributed) BMPs

The geographic area of analysis for cultural resources is defined as the jurisdictions within which the proposed program is located. This geographic scope of analysis is appropriate because the archaeological, historical, and paleontological resources within this radius are expected to be similar to those that occur on the individual project sites because of their proximity; similar environments, landforms, and hydrology would result in similar land-use—and, thus, site types. Similar geology within this vicinity would likely yield fossils of similar sensitivity and quantity. This is a large enough area to encompass any effects of the program on cultural and paleontological resources that may combine with similar effects caused by other projects, and provides a reasonable context wherein cumulative actions could affect cultural and paleontological resources. The program could cause impacts on cultural and paleontological resources during the construction period or as a result of operation and maintenance or closure and decommissioning activities.

Cumulative impacts to cultural resources in the cultural resources geographic scope of analysis could occur if other existing or proposed projects, in conjunction with the proposed program, had or would have impacts on cultural resources that, when considered together, would be significant.

Regional and centralized BMPs will not be well distributed throughout the watershed because of the limited feasible and applicable sites; however, distributed BMPs, which may comprise the majority of the BMPs implemented under the EWMPs, will be better distributed. Therefore, while the distributed BMPs may have limited or no impact on cultural resources on a project-by-project basis, when taken together, they may impact cultural resources on a regional scale.

Los Angeles County contains a significant archaeological and historical record that, in many cases, has not been well documented or recorded. There is the potential for ongoing and future development projects in the vicinity to disturb landscapes that may contain known or unknown historical resources. Thus, potential construction impacts of the implementation of the proposed program, in combination with other projects in the area, could contribute to a cumulatively significant impact on historical resources. Mitigation measures are included in this PEIR to reduce potentially significant program impacts to historical resources during construction. While implementation of **Mitigation Measures CUL-1** through **CUL-4** would reduce impacts to historical resources, implementation of the proposed program may ultimately result in a substantial adverse change to historical resources through various development activities for which no possible mitigation may be available to maintain the historic integrity of the affected resource or its surroundings, and impacts to historical resources would remain significant and unavoidable at a program level. Therefore, the implementation of structural BMPs may contribute to a cumulatively significant environmental impact to historical resources.

Implementation of **Mitigation Measures CUL-2**, **CUL-3**, and **CUL-4** would require that unique archaeological resources be treated in accordance with the provisions of CEQA Section 21083.2, which would reduce impacts to unique archaeological resources to a less-than-significant level. Therefore, the program would not contribute to a cumulatively significant environmental impact to unique archaeological resources.

Excavation activities associated with the implementation of individual structural BMPs in conjunction with other projects in the area could contribute to the progressive loss of fossil remains, associated geological and geographic data, and fossil bearing strata, which is a potentially significant impact. However, the proposed program would have a less-than-significant impact to paleontological resources with incorporation of **Mitigation Measure CUL-5** and

CUL-6. Therefore, with the implementation of Mitigation Measures CUL-5 and CUL-6, cumulative impacts to paleontological resources would be less than significant.

Furthermore, implementation of **Mitigation Measure CUL-7** provides a mechanism to reduce impacts to human remains should they be encountered during ground-disturbing activities, and cumulative impacts to human remains would be less than significant.
With implementation of applicable regulatory requirements and **Mitigation Measures CUL-1** through **CUL-7**, the implementation of the proposed program would not have a cumulatively considerable contribution to impacts to unique archaeological resources, paleontological resources, or human remains from decommissioning activities. Implementation of the proposed program may contribute to a cumulatively significant environmental impact to historical resources.

Mitigation Measures: Implement **Mitigation Measures CUL-1** through **CUL-7**

Significance Determination: Significant and unavoidable (The application of these mitigation measures to specific BMP types and categories is identified in Table 3.4-2.)

Non-Structural BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the construction of new facilities or any ground disturbance. Consequently, implementation of non-structural BMPs would not contribute to a cumulatively significant environmental impact to cultural resources.

Mitigation Measures: None required

Significance Determination: No impact

3.4.4 Summary of Impact Assessment

Table 3.4-2 shows a summary of the structural BMPs requiring mitigation.

TABLE 3.4-2
SUMMARY OF CULTURAL RESOURCE IMPACTS REQUIRING MITIGATION MEASURES

	Thresholds of Significance					
Structural BMPs	**Built Environment Resources**	**Archaeological and Other Cultural Resources**	**Unique Archaeological Resources**	**Paleontological Resources**	**Human Remains**	**Cumulative Impacts**
Applicable Mitigation Measures:	**CUL-1 through CUL-4**	**CUL-1 through CUL-4**	**CUL-2; CUL-3; CUL-4**	**CUL-5 and CUL-6**	**CUL-7**	**CUL-1 through CUL-7**
Regional BMPs						
Regional Detention and Infiltration	Yes	Yes	Yes	Yes	Yes	Yes
Regional Capture, Detention and Use	Yes	Yes	Yes	Yes	Yes	Yes
Centralized BMP						
Bioinfiltration	Yes	Yes	Yes	Yes	Yes	Yes
Constructed Wetlands	Yes	Yes	Yes	Yes	Yes	Yes
Treatment/Low-Flow Diversions	Yes	Yes	Yes	Yes	Yes	Yes
Creek, River, Estuary Restoration	Yes	Yes	Yes	Yes	Yes	Yes
Distributed BMPs						
Site-Scale Detention	Yes	Yes	Yes	Yes	Yes	Yes
LID – Infiltration/Filtration BMPs – Porous Pavement, Green Streets, Bioswale/Filter Strips, downspout disconnects	Yes	Yes	Yes	Yes	No	Yes
LID – Green Infrastructure – Capture and Use – Cisterns, Rain Barrels, Green roofs, Planter Boxes [(1)]	Yes	Yes	Yes	No	No	Yes
Flow-through Treatment BMPs[(1)]	Yes	Yes	Yes	Yes	No	Yes
Source-Control Treatment BMPs (catch basin inserts/screens, hydrodynamic separators, gross solids removal devices)[(1)]	Yes	Yes	Yes	No	No	Yes
Low-Flow Diversions	Yes	Yes	Yes	Yes	No	Yes

[(1)] These type of BMPs are generally built as retrofits to existing MS4 systems and would require in most cases little or no excavation.

NOTE: These conclusions are based on typical location and need for ground disturbance.

3.5 Geologic and Mineral Resources

This section addresses the potential impacts to geology, soils, and seismicity associated with implementation of the proposed program. This section provides a description of the regional geology, a summary of the regulations related to geologic and seismic hazards, and an evaluation of the potential impacts that may result from implementing the proposed program and identifies mitigation measures to minimize potential effects. This section also evaluates whether the proposed program would result in a loss of available mineral resources.

3.5.1 Environmental Setting

Regional

The project area is located in the center portion of the Transverse Ranges Geomorphic Province (California Geological Survey [CGS], 2002b). California's geomorphic provinces are naturally defined geologic regions that display a distinct landscape or landforms with unique, defining features based on geology, faults, topographic relief, and climate. This province consists of an east-west trending series of steep mountain ranges and valleys that deviate from the normal northwest trend of other Coastal California geomorphic provinces due to intense north-south compression squeezing the ranges within this province. The east-west structure of the Transverse Ranges is oblique to the normal northwest trend of coastal California, hence the name "Transverse." The province extends offshore to include San Miguel, Santa Rosa, and Santa Cruz islands. The eastern extension, the San Bernardino Mountains, has been displaced to the south along the San Andreas Fault. As a result, this is one of the most rapidly rising regions on earth and it is seismically active. Cenozoic petroleum-rich sedimentary rocks have been folded and faulted, making this an important oil-producing area in the United States. The Los Angeles Basin is in the southern part of the province and separates the Transverse Ranges Province from the Peninsular Ranges Provinces to the south.

Project Area

Topography

The project area is bounded on the northwest by the Santa Monica Mountains, on the northeast by the San Gabriel Mountains, on the southeast by the Orange County coastal plain, and on the west and southwest by the Pacific Ocean. The project area largely consists of the watersheds for the Los Angeles, Santa Clara, San Gabriel Rivers, Santa Monica Bay, and the Dominguez Channel, and includes the Los Angeles Basin and the San Fernando and Santa Clarita Valleys. Topography varies regionally from sea level at the coast to several thousand feet in the surrounding mountains.

Geology

The project area geology consists of Tertiary and older (1.6 million years and older) bedrock mountain ranges and hills surrounding and separating Quaternary and younger (1.6 million years and younger) sediment-filled basins and valleys, as shown in **Figure 3.5-1**, Regional Geology (U.S. Geological Survey [USGS], 1990). To the northwest of the project area, the Santa Monica Mountains have a granitic and metamorphic core covered with marine sedimentary sandstone, shale, and conglomerate rocks. To the northeast of the project area, the San Gabriel Mountains consist mostly of granitic rocks with some metamorphic gneiss and schist rocks. Several lower hills separate the Los Angeles Basin and the San Fernando and Santa Clara Valleys. Marine sediments and erosion of the surrounding mountain ranges and hills within the project area have filled the intervening basins and valleys with thick deposits of sediments. The recent surface sediments are mostly sand and silt. Much of the basin and valley areas have been highly disturbed through development and much of the surface materials consist of undocumented fills.

Seismicity and Faults

This section characterizes the region's existing faults, describes historical earthquakes, estimates the likelihood of future earthquakes, and describes probable groundshaking effects.

Earthquake Terminology and Concepts

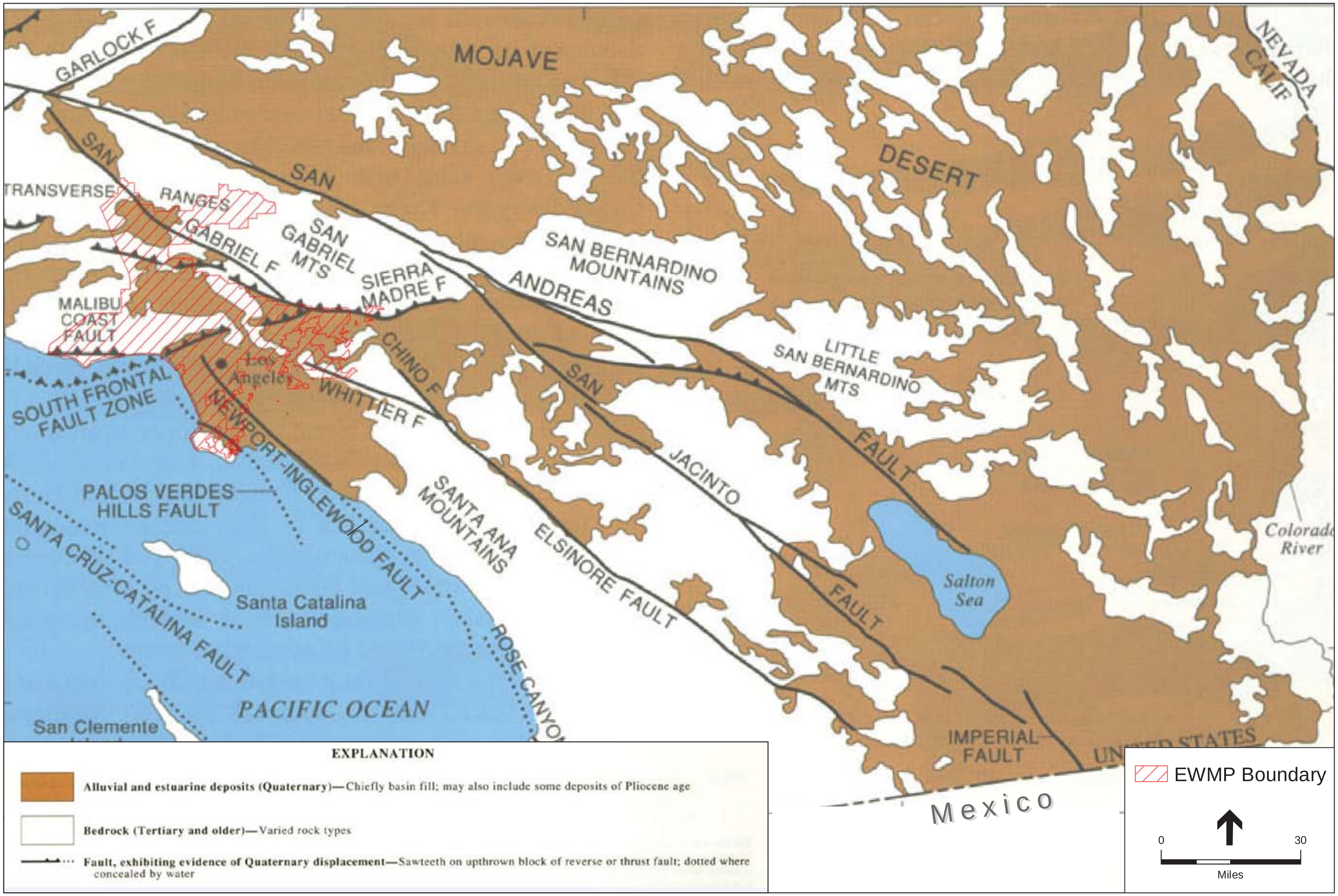
Earthquake Mechanisms and Fault Activity

Faults are planar features within the earth's crust that have formed to release strain caused by the dynamic movements of the earth's major tectonic plates. An earthquake on a fault is produced when these strains overcome the inherent strength of the earth's crust, and the rock ruptures. The rupture causes seismic waves that propagate through the earth's crust, producing the groundshaking effect known as an earthquake. The rupture also causes variable amounts of slip along the fault, which may or may not be visible at the earth's surface.

The State of California defines an active fault as one that has had surface displacement within Holocene time (the last 11,000 years).

Earthquake Magnitude

When an earthquake occurs along a fault, its size can be determined by measuring the energy released during the event. A network of seismographs records the amplitude and frequency of the seismic waves that an earthquake generates. The Richter magnitude (ML) of an earthquake represents the highest amplitude measured by the seismograph at a distance of 100 kilometers from the epicenter. While the Richter magnitude scale was historically the primary measure of earthquake magnitude, seismologists now use the moment magnitude (Mw) scale as the preferred way to express the size of an earthquake (USGS, 2009). The Mw scale is related to the physical characteristics of a fault, including the rigidity of the rock, the size of fault rupture, and the style of movement or displacement across the fault.



SOURCE: USGS, 1990

LA County PEIR WMP . 140474

Figure 3.5-1

Regional Geology

Peak Ground Acceleration

A common measure of ground motion at any particular site during an earthquake is the peak ground acceleration (PGA) (USGS, 2007b). The PGA for a given component of motion is the largest value of horizontal acceleration obtained from a seismograph. PGA is expressed as the percentage of the acceleration due to gravity (g), which is approximately 980 centimeters per second squared. In terms of automobile acceleration, one "g" of acceleration is equivalent to the motion of a car traveling 328 feet from rest in 4.5 seconds. For comparison purposes, the maximum PGA value recorded during the Mw 6.7 1994 Northridge earthquake was 1.8 g, among the highest ever instrumentally recorded in an urban area in North America. Unlike measures of magnitude, which provide a single measure of earthquake energy, PGA varies from place to place and is dependent on the distance from the epicenter and the character of the underlying geology (e.g., hard bedrock, soft sediments, or artificial fills).

Modified Mercalli Intensity Scale

The Modified Mercalli Intensity Scale assigns an intensity value based on the observed effects of groundshaking produced by an earthquake (CGS, 2002a). Unlike measures of earthquake magnitude and PGA, the Modified Mercalli Intensity Scale is qualitative in nature in that it is based on actual observed effects rather than measured values. Similar to PGA, Modified Mercalli values for an earthquake at any one place can vary depending on the earthquake's magnitude, the distance from its epicenter, the focus of its energy, and the type of geologic material. The Modified Mercalli values for intensity range from I (earthquake not felt) to XII (damage nearly total), and intensities ranging from IV to X can cause moderate to significant structural damage. Because the Modified Mercalli scale is a measure of groundshaking effects, intensity values can be correlated to a range of average PGA values, as shown in **Table 3.5-1**.

Faults and Historical Earthquake Activity

The project area is located in a seismically active region of California. Major earthquakes have affected the region in the past and are expected to occur in the near future on one of the active faults in the area. The San Andreas transform fault system, which forms the boundary between the North American and Pacific tectonic plates, is responsible for the highly seismic nature of Southern California. The fault bends in an east-west direction from the Southern end of the San Joaquin Valley to the eastern end of the San Bernardino Mountains. This portion of the San Andreas Fault system is referred to as the "Big Bend" and generates major compression forces, which in turn create many smaller fault branches (SCEC, 2011). The active faults in the vicinity of the project area are shown in **Figure 3.5-2**, Local Faults with Recent Movement.

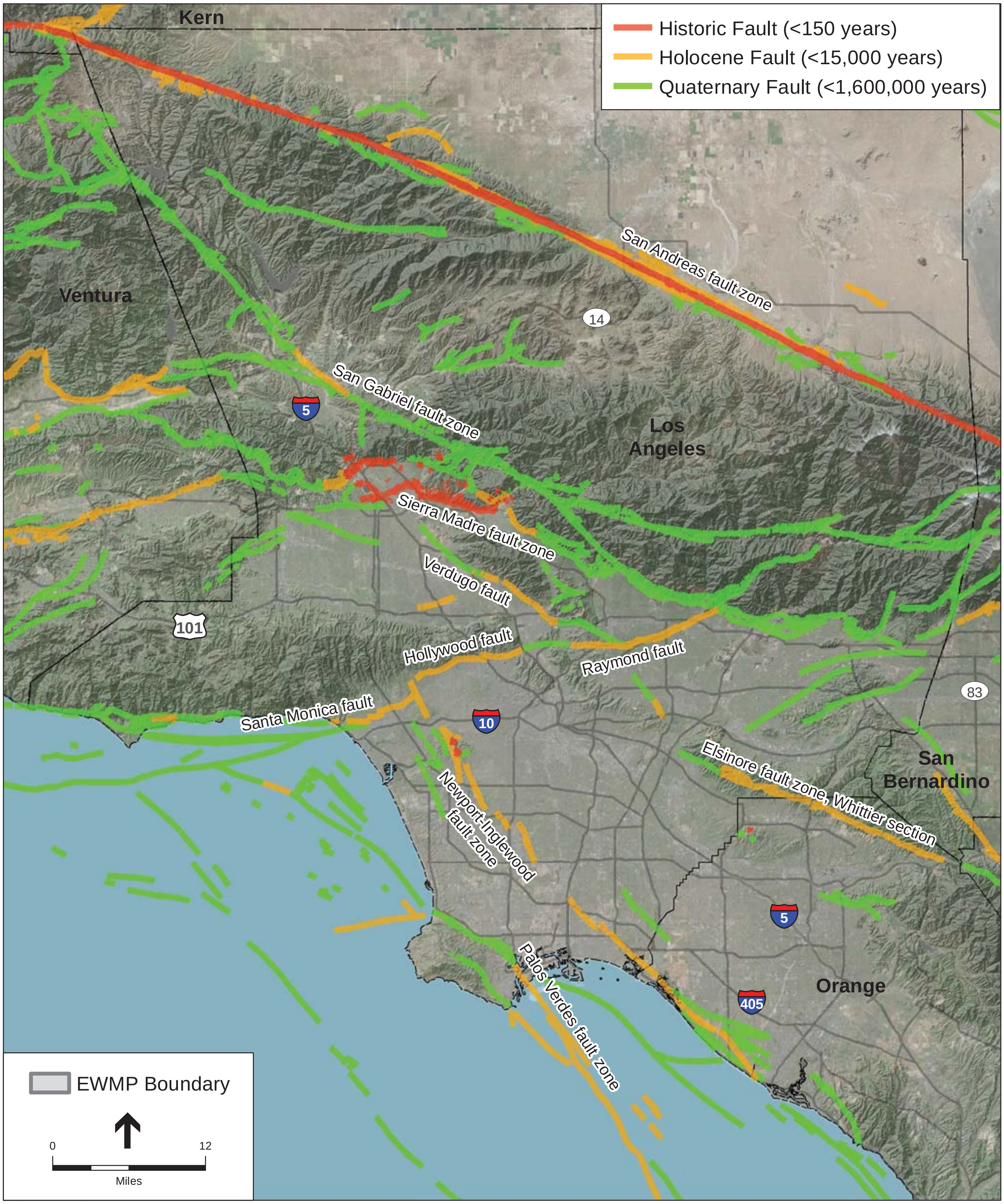
Table 3.5-2 identifies both historically active and active faults in the vicinity of the project area and their corresponding characteristics that are capable of generating significant groundshaking at the proposed EMWP facilities. Two other fault characteristics—the maximum moment magnitude and the slip rate—are also important in determining the potential damage a fault may cause. The maximum moment magnitude of a fault refers to the largest possible earthquake it can experience given its existing geology (USGS, 2009). A fault's slip rate is defined as how fast the two sides of a fault are slipping relative to one another. The fastest moving faults have more and larger earthquakes than faults that do not slip as fast.

TABLE 3.5-1
MODIFIED MERCALLI INTENSITY SCALE

Intensity Value	Intensity Description	Average Peak Ground Acceleration[a]
I	Not felt except by a very few people under especially favorable circumstances.	< 0.0017 g
II	Felt only by a few people at rest, especially on upper floors on buildings. Delicately suspended objects may swing.	0.0017 – 0.014 g
III	Felt noticeably indoors, especially on upper floors of buildings, but many people do not recognize it as an earthquake. Standing automobiles may rock slightly, vibration similar to a passing truck. Duration estimated.	0.0017 – 0.014 g
IV	During the day felt indoors by many, outdoors by few. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing automobiles rocked noticeably.	0.014 – 0.039 g
V (Light)	Felt by nearly everyone, many awakened. Some dishes and windows broken; a few instances of cracked plaster; unstable objects overturned. Disturbances of trees, poles may be noticed. Pendulum clocks may stop.	0.035 – 0.092 g
VI (Moderate)	Felt by all, many frightened and run outdoors. Some heavy furniture moved; fallen plaster or damaged chimneys. Damage slight.	0.092 – 0.18 g
VII (Strong)	Everybody runs outdoors. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken. Noticed by people driving automobiles.	0.18 – 0.34 g
VIII (Very Strong)	Damage slight in specially designed structures; considerable in ordinary substantial buildings, with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. Sand and mud ejected in small amounts. Changes in well water. People driving automobiles disturbed.	0.34 – 0.65 g
IX (Violent)	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse. Buildings shifted off foundations. Ground cracked conspicuously. Underground pipes broken.	0.65 – 1.24 g
X (Very Violent)	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations; ground badly cracked. Rails bent. Landslides considerable from riverbanks and steep slopes. Shifted sand and mud. Water splashed (slopped) over banks.	> 1.24 g
XI (Very Violent)	Few, if any, masonry structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly.	> 1.24 g
XII (Very Violent)	Damage total. Practically all works of construction are damaged greatly or destroyed. Waves seen on ground surface. Lines of sight and level are distorted. Objects are thrown upward into the air.	> 1.24 g

[a] Value is expressed as a fraction of the acceleration due to gravity (g). Gravity (g) is 9.8 meters per second squared. 1.0 g of acceleration is a rate of increase in speed equivalent to a car traveling 328 feet from rest in 4.5 seconds.

SOURCES: Adapted from CGS, 2002a.



SOURCE: ESRI, USGS

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Figure 3.5-2
Local Faults with Recent Movement

TABLE 3.5-2
PRINCIPAL HISTORICALLY ACTIVE AND ACTIVE FAULTS IN THE PROJECT VICINITY

Fault	Maximum Moment Magnitude	Historical Seismicity (Last 150 Years)	Slip Rate (mm/year)	Fault Classification
San Andreas (Mojave section)	7.4	M 7.0 (1899)	30.0	Historically Active
Newport-Inglewood	7.1	M 6.4 (1933)	1.0	Historically Active
Sierra Madre (San Fernando section)	6.7	M 6.4 (1971)	2.0	Historically Active
Whittier-Elsinore	6.8	M 5.9 (1987)	2.5	Historically Active
Palos Verdes	7.3	-	3.0	Active
San Gabriel	7.2	-	1.0	Active
Verdugo	6.9	-	0.5	Active
Santa Monica	6.6	-	1.0	Active
Raymond	6.5	-	1.5	Active
Hollywood	6.4	-	1.0	Active

SOURCES: CGS, 2003, 2010

Seismic Hazards

Seismic hazards are generally classified into two categories: primary seismic hazards (surface fault rupture and groundshaking) and secondary seismic hazards (liquefaction and other types of seismically induced ground failure, along with seismically induced landslides).

Surface Fault Rupture

Seismically induced ground rupture is defined as the physical displacement of surface deposits in response to an earthquake's seismic waves. The magnitude, sense, and nature of fault rupture can vary for different faults or even along different strands of the same fault. Although future earthquakes could occur anywhere along the length of an active fault, only regional strike slip earthquakes of magnitude 6.0 or greater are likely to be associated with significant surface fault rupture and offset (CDMG and USGS, 1996). It is also important to note that unmapped subsurface fault traces could experience unexpected and unpredictable earthquake activity and fault rupture. Ground rupture is considered more likely along active faults, which are referenced in Figure 3.5-2 and Table 3.5-2. The highest potential for surface faulting is along existing fault traces that have had displacement in the last 11,000 years (Holocene Epoch).

Groundshaking

Groundshaking intensity varies depending on the overall earthquake magnitude, distance to the fault, focus of earthquake energy, and type of geologic materials underlying an area. Geologists and engineers attempt to predict earthquake ground acceleration at sites to improve the structural design of buildings so that the building can withstand earthquake motion and not collapse. A probabilistic seismic hazard assessment describes seismic hazard from earthquakes that geologists and seismologists agree could occur. The analysis takes into consideration the uncertainties in the size and location of earthquakes and the resulting ground motions that can affect a particular site. Given the presence of the known active faults listed in Table 3.5-2, the entire project area is susceptible to seismic groundshaking.

Liquefaction and Lateral Spreading

Liquefaction is the rapid loss of shear strength experienced in saturated, predominantly granular soils below the groundwater level during strong earthquake groundshaking and occurs due to an increase in pore water pressure (VT, 2013). Liquefaction-induced lateral spreading is defined as the finite, lateral displacement of gently sloping ground as a result of pore-pressure buildup or liquefaction in a shallow underlying deposit during an earthquake. The occurrence of this phenomenon is dependent on many complex factors, including the intensity and duration of groundshaking, particle-size distribution, and density of the soil.

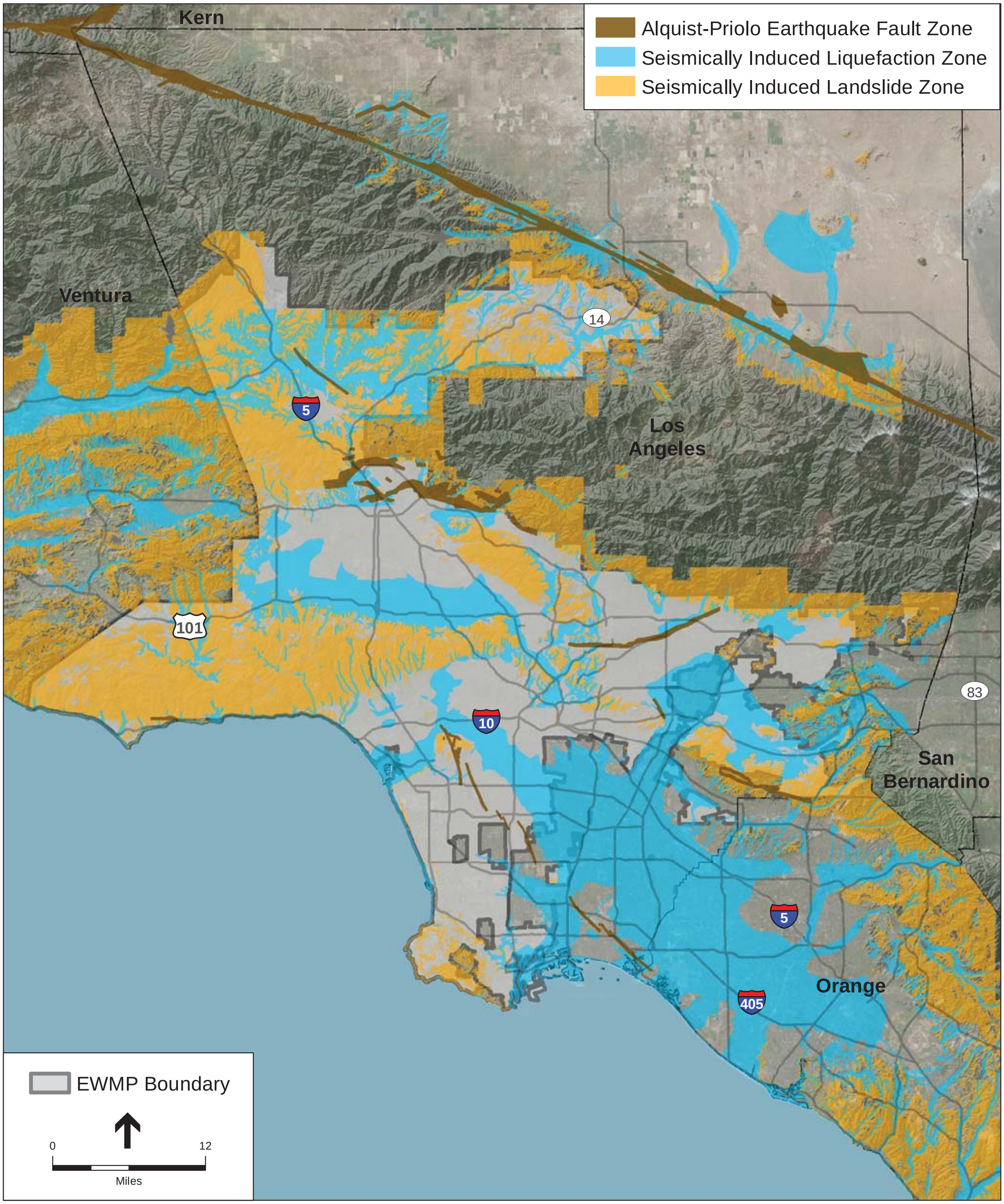
The potential damaging effects of liquefaction include differential settlement, loss of ground support for foundations, ground cracking, heaving and cracking of structures due to sand boiling, and buckling of deep foundations due to ground settlement. Dynamic settlement (i.e., pronounced consolidation and settlement from seismic shaking) may also occur in loose, dry sands above the water table, resulting in settlement of and possible damage to overlying structures. In general, a relatively high potential for liquefaction exists in loose, sandy soils that are within 50 feet of the ground surface and are saturated (below the groundwater table). Lateral spreading can move blocks of soil, placing strain on buried pipelines that can lead to leaks or pipe failure. **Figure 3.5-3**, Liquefaction and Landslide Potential Map, shows areas susceptible to seismically induced liquefaction and landslides within the county.

Earthquake-Induced Settlement

Settlement of the ground surface can be accelerated and accentuated by earthquakes. During an earthquake, settlement can occur as a result of the relatively rapid rearrangement, compaction, and settling of subsurface materials (particularly loose, noncompacted, and variable sandy sediments). Settlement can occur both uniformly and differentially (i.e., where adjoining areas settle at different rates). Areas are susceptible to differential settlement if underlain by compressible sediments, such as poorly engineered artificial fill. Earthquake-induced settlement could occur in the event of an earthquake and is a potential seismic hazard discussed further in the Impact and Mitigations Measures section.

Seismically Induced Landslides

Landslides are defined as the movement of rock, debris, or earth masses down a slope. Landslides are a form of "mass wasting," which refers to any downslope movement of soil and rock under the direct influence of gravity (USGS, 2004). Landslide events include rock falls, topples, slides, spreads, and debris flows. Causes of landslides include rainfall, earthquakes, volcanic activity, groundwater changes, and alteration of a slope by man-made construction activities. Figure 3.5-3, Liquefaction and Landslide Potential Map shows areas susceptible to seismically induced liquefaction and landslides within the County.



SOURCE: ESRI Imagery, California Department of Conservation

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Figure 3.5-3
Liquefaction and Landslide Potential Map

Geologic Hazards

Geologic hazards include land movement of problematic soils, including landslides and other slope failures, expansive soils, erosion, settlement and subsidence, and sinkholes. These geologic hazards are discussed below.

Landslides and Slope Failure

As discussed, ground failure is dependent on the slope and geology as well as the amount of rainfall, excavation, or seismic activities. A slope failure is a mass of rock, soil, and debris displaced down a slope by sliding, flowing, or falling. Steep slopes and downslope creep of surface materials characterize landslide-susceptible areas. The areas shown in Figure 3.5-3 that are susceptible to seismically induced landslides and slope failure would also be susceptible to movement from non-seismic causes, such as excavation of the toe of a landslide area or the introduction of excessive water to the head of the landslide area.

Expansive Soils

Expansive soils are clay-rich and subsequently subject to changes in volume with changes in moisture (NRCS, 2013). This results in the shrinking and swelling of expansive soils from changes in water content. Expansive soils can exert pressure on building foundations, “heaving” or lifting buildings during periods of high moisture and resulting in the settlement of buildings during periods of low moisture. They can also exhibit high amounts of pressure on building foundations, resulting in lateral movement. Techniques exist to reduce effects of expansive soils. Such techniques include prewetting of the soil, which allows for pre-expansion of the soil with the idea that further pressure would be minimized, and structural slabs, which provide extra reinforcement to resist movement and distress caused by pressure of underlying expansive soil.

Erosion

Erosion is the wearing away of soil and rock by processes such as mechanical or chemical weathering, mass wasting, and the action of waves, wind, and underground water (NCRS, 2001a, 2001b). Excessive soil erosion can eventually damage infrastructure such as pipelines, wellheads, building foundations, and roadways. In general, granular soils with relatively low cohesion and soils located on steep topography have a higher potential for erosion. In addition, soils erosion can be accelerated beyond natural rates in areas with depleted plant cover and degraded soil structure resulting from excessive disturbance or reduced organic matter input. During construction, exposed soils within the project area would be susceptible to erosion due to stormwater runoff during the rainy season.

Settlement and Subsidence

Settlement of the ground surface can occur under static forces (e.g., due to gravity or groundwater removal) but can also be accelerated and accentuated by earthquakes. As stated previously, during an earthquake, settlement can occur from rapid rearrangement, compaction, and settling of subsurface materials (particularly loose, noncompacted, and variable sandy sediments). Settlement can occur both uniformly and differentially (i.e., where adjoining areas settle at different rates). In addition, areas are susceptible to differential settlement if underlain by compressible sediments, such as poorly engineered artificial fill or poorly graded gravels. The sediments within the basins and valleys are typically alluvium comprised mostly of sand and silt. The potential for settlement would be higher in unconsolidated sediments and lower in consolidated or sediments reworked during development.

Subsidence is a form of settlement defined as the gradual settling or sudden sinking of the earth's surface due to subsurface movement of earth materials. Principle causes include either natural (tectonic movement) or human extraction activities, such as the removal of groundwater, oil, or gas. The extraction activities reduce the pore pressure, increase void spaces, and allow the underlying soils to compact.

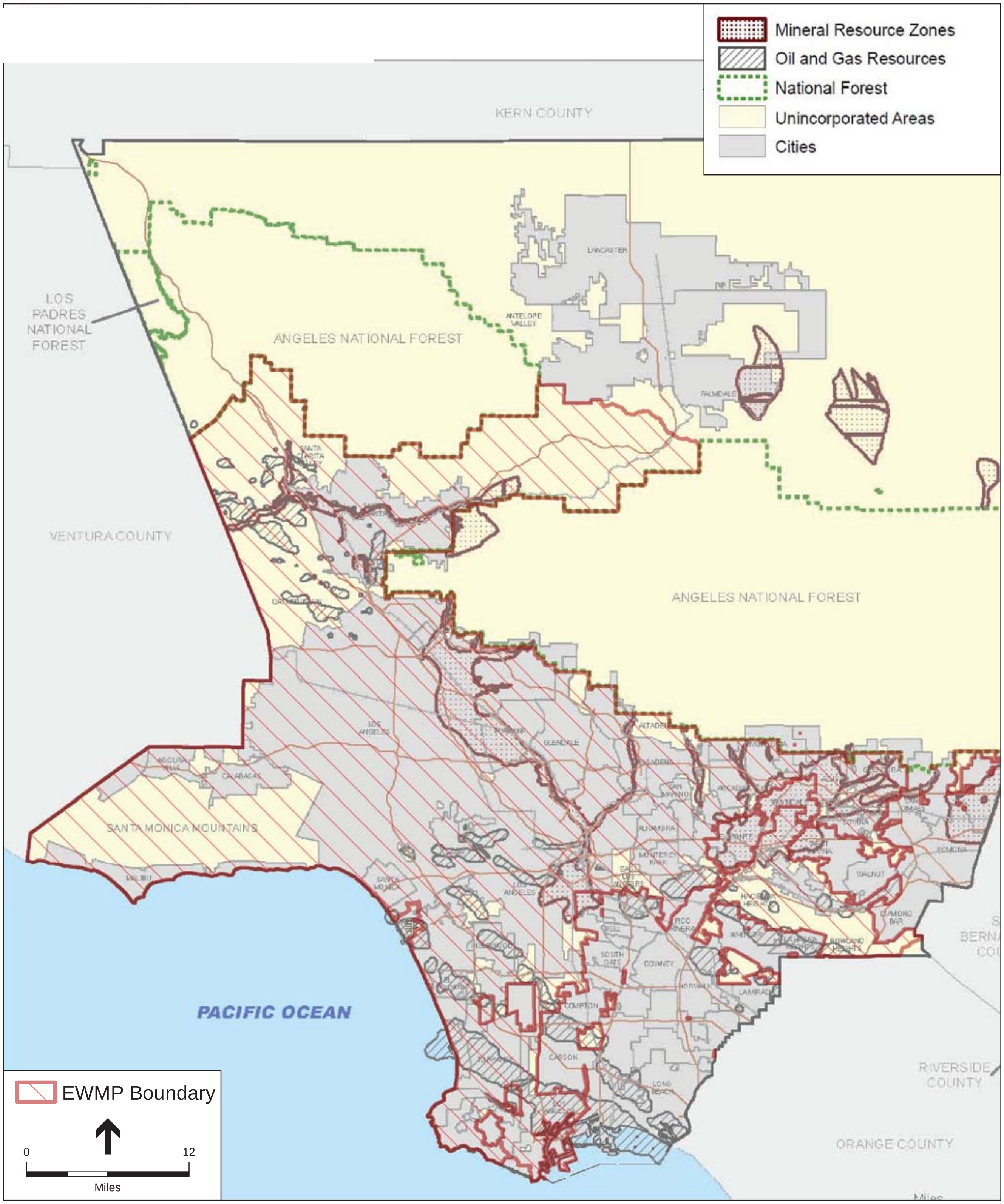
Sinkholes

A sinkhole is an area of ground which has no natural external surface drainage; all water stays inside the sinkhole and rains into the subsurface. Some sinkholes form so slowly they are not noticed, but others form suddenly when a collapse occurs. Sinkholes can have a dramatic effect if they occur in an urban setting. Sinkhole occurrence within Los Angeles County is generally limited but depends on several characteristics, including frequency of drought, type and structure of parent material, changes in groundwater dispersal, and localized topographic conditions, which can directly cause or exacerbate sinkholes (USGS, 2007a).

Mineral Resources

Mineral resources include commercially viable oil and gas deposits, and nonfuel mineral resources deposits. Nonfuel mineral resources include metals such as gold, silver, iron, and copper; industrial metals such as boron compounds, rare-earth elements, clays, limestone, gypsum, salt, and dimension stone; and construction aggregate, including sand, gravel, and crushed stone. **Figure 3.5-4**, Mineral Resources Map, shows the mineral and oil and gas resources zones identified in the draft County General Plan (County of Los Angeles, 2014c).

California is the largest producer of sand and gravel in the nation and the greater Los Angeles area is the nation's leading producer for its geographical size. The County has large quantities of sand and gravel, which are located close to the market. Major sand and gravel extraction sites are located in the alluvial fans of the Big Tujunga Wash in the San Fernando Valley and in the San Gabriel River near Irwindale. Other extraction areas are located in northern Los Angeles County in other washes.



SOURCE: County of Los Angeles, 2014c

LA County PEIR EWMP . 140474

Figure 3.5-4
Mineral Resources Map

3.5.2 Regulatory Framework

State

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to protect structures for human occupancy from the hazard of surface faulting (Bryant and Hart, 2007). In accordance with the Act, the State Geologist established regulatory zones—called earthquake fault zones—around the surface traces of active faults, and published maps showing these zones. Buildings for human occupancy[1] cannot be constructed across surface traces of faults that are determined to be active. Because many active faults are complex and consist of more than one branch that may experience ground-surface rupture, earthquake fault zones extend approximately 200 to 500 feet on either side of the mapped fault trace. Cities and counties must regulate certain development projects within the zones, which includes withholding permits until geologic investigations demonstrate that development sites are not threatened by future surface displacement. Surface fault rupture is not necessarily restricted within an Alquist-Priolo Zone. This applies to the project because structural Best Management Practices (BMPs) would be either prohibited within these fault zones or a geotechnical investigation would be required to develop design features to limit the impact from a seismic event.

Seismic Hazard Mapping Act

The Seismic Hazards Mapping Act was passed in 1990 following the Loma Prieta earthquake to reduce threats to public health and safety and to minimize property damage caused by earthquakes, strong ground shaking, liquefaction, landslides, or other hazards caused by earthquakes. This act requires the State Geologist to delineate various seismic hazard zones, and Cities, Counties, and other local permitting agencies to regulate certain development projects within these zones. Before a development permit is granted for a site within a seismic hazard zone, a geotechnical investigation must be conducted and appropriate mitigation measures incorporated into the project's design. For projects that would locate structures for human occupancy within designated Zones of Required Investigation, the Seismic Hazards Mapping Act requires project applicants to perform a site-specific geotechnical investigation to identify the potential site-specific seismic hazards and corrective measures, as appropriate, prior to receiving building permits. The CGS *Guidelines for Evaluating and Mitigating Seismic Hazards* (Special Publication 117A, CGS, 2008) provides guidance for evaluating and mitigating seismic hazards. The CGS is in the ongoing process of producing official maps based on USGS topographic quadrangles. This act applies to the program because structural BMPs would be either prohibited within these seismic hazard zones or a geotechnical investigation would be required to develop design features to limit the impact from a seismic event.

California Building Code

The California Building Code (CBC), which is codified in Title 24 of the California Code of Regulations, Part 2, was promulgated to safeguard the public health, safety, and general welfare

[1] A habitable building is any structure where human occupancy would exceed approximately 2,000 hours annually.

by establishing minimum standards related to structural strength, egress facilities, and general building stability. The purpose of the CBC is to regulate and control the design, construction, quality of materials, use/occupancy, location, and maintenance of all building and structures within its jurisdiction. Title 24 is administered by the California Building Standards Commission, which, by law, is responsible for coordinating all building standards. Under State law, all building standards must be centralized in Title 24 or they are not enforceable. The provisions of the CBC apply to the construction, alteration, movement, replacement, and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout California.

NPDES Construction General Permit

Construction associated with the proposed program would disturb more than one acre of land surface for centralized and regional structural BMPs (and possibly for those distributed structural BMPs larger than one acre), affecting the quality of stormwater discharges into waters of the United States. The proposed program would therefore be subject to the *NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities* (Order 2009-0009-DWQ, NPDES No. CAS000002, Construction General Permit [CGP]), as amended by Order 2010-0014-DWQ and Order 2012-0006-DWQ). The CGP regulates discharges of pollutants in stormwater associated with construction activity to waters of the United States from construction sites that disturb one or more acres of land surface, or that are part of a common plan of development or sale that disturbs more than one acre of land surface.

The CGP requires the development and implementation of a Stormwater Pollution Prevention Plan (SWPPP) that includes specific BMPs designed to prevent pollutants from contacting stormwater and keep all products of erosion from moving off-site into receiving waters. The SWPPP BMPs are intended to protect surface water quality by preventing the off-site migration of eroded soil and construction-related pollutants from the construction area. The CGP and SWPPPs are described in more detail in Section 3.8, Hydrology and Water Quality.

Surface Mining and Reclamation Act of 1975

The State Surface Mining and Reclamation Act (SMARA), as amended, is the primary State law governing the conservation and development of mineral resources in California (Health and Safety Code, Division 2, Chapter 9, Section 2710, et seq.). Specifically, it mandates the development of mineral land classifications to help identify and protect mineral resources in areas within the State that are subject to urban expansion or other irreversible land uses that would preclude mineral extraction. After classification of mineral resource zones, SMARA provides for the designation of lands containing mineral deposits of regional or statewide significance, as discussed further below in the CGS section. In addition, SMARA was designed to provide guidelines for the proper reclamation of mineral lands. Local jurisdictions are required to enact specific procedures to guide mineral conservation and extraction at particular sites and to incorporate mineral resource management policies into their General Plans. SMARA applies to the program because structural BMPs would be either prohibited within these mineral resource areas or the local jurisdiction would be required to approve the placement of the structural BMP within the mineral resource zone.

California Geological Survey

Based on guidelines adopted by CGS, areas known as Mineral Resource Zones (MRZs) are classified according to the presence or absence of significant nonfuel mineral resources deposits. Nonfuel mineral resources include metals such as gold, silver, iron, and copper; industrial metals such as boron compounds, rare-earth elements, clays, limestone, gypsum, salt, and dimension stone; and construction aggregate including sand, gravel, and crushed stone. These classifications indicate the potential for a specific area to contain significant mineral resources.

The classification process involves the determination of Production-Consumption (P-C) Region boundaries, based on identification of active aggregate operations (Production) and the market area served (Consumption). The P-C regional boundaries are modified to include only those portions of the region that are urbanized or urbanizing and are classified for their aggregate content. An aggregate appraisal further evaluates the presence or absence of significant sand, gravel, or stone deposits that are suitable sources of aggregate. The classification of these mineral resources is a joint effort of the State and local governments. It is based on geologic factors and requires that the State Geologist classify the mineral resources area as one of the four MRZs, or Scientific Resource Zones (SZs) or Identified Resource Areas (IRAs), which are described as the following (County of Los Angeles, 2014c):

- MRZ-1: Areas where available geologic information indicates there is little or no likelihood for presence of significant mineral resources.
- MRZ-2: Areas where available geologic information indicates that significant measured or indicated resources are present or where adequate information indicates that significant mineral deposits are present or where it is judged that a high likelihood for their presence exists.
- MRZ-3: Areas where available geologic information indicates known or inferred mineral occurrences of undetermined mineral resource significance.
- MRZ-4: Areas of no known mineral occurrences where geologic information does not rule out the presence or absence of significant mineral resources.
- SZ Areas: Containing unique or rare occurrences of rocks, minerals, or fossils that are of outstanding scientific significance shall be classified in this zone.
- IRA Areas: County or State Division of Mines and Geology Identified Areas where adequate production and information indicates that significant minerals are present.

Much of the area within the MRZ sites in Los Angeles was developed with structures prior to the MRZ classification and, therefore, is unavailable for extraction.

Local

County of Los Angeles General Plan

A General Plan is a basic planning document that, alongside the zoning code, governs development in a city or county. The State requires each city and county to adopt a General Plan with seven mandatory elements: land use, open space, circulation, housing, noise, conservation, and safety, along with any number of optional elements as appropriate. The proposed Enhanced

Watershed Management Programs (EWMPs, or "program") would be subject to the local plans and policies of the areas in which they are located.

The County of Los Angeles is currently updating their General Plan from the element versions adopted in the 1980s and 1990s; the new comprehensive plan is expected to be complete by late 2014. Below are the relevant goals and policies from both the existing General Plan (County of Los Angeles, 1980, 1990) and the Draft General Plan 2035 (County of Los Angeles, 2014a) which relate to the EWMPs.

Existing General Plan – Conservation and Open Space Element, Adopted 1980

Goal – Conserve Natural Areas: The variety and stability of plant and animal communities requires the preservation of important natural habitats. These are threatened by land development and the resultant extension of roads through environmentally sensitive areas.

Policy 12: Protect watershed, stream, and riparian vegetation to minimize water pollution, soil erosion and sedimentation, maintain natural habitats, and aid in ground water recharge.

Goal – Protect Mineral Resources: In the past, valuable mineral resources have been lost when incompatible urban uses were moved into productive areas. These reserves must be protected, and potential sites identified. At the same time, mineral production must not be allowed top conflict seriously with the goals of environmental protection.

Policy 15: Protect and conserve existing mineral resources, evaluate the extent and value of additional deposits, and require future reclamation of depleted sites.

Goal – Protect Public Safety: Our society places high value on human life. Development in areas subject to fires, floods, seismic and geologic hazards can result in loss of life and property, and increased governmental costs. Steep sloping lands are particularly vulnerable to fire, landslide, mudslide and erosion hazards. Protection and proper management of lands subject to these hazards are needed.

Policy 21: Restrict urban development in areas subject to seismic and geologic hazards.

Policy 22: Restrict urban development in flood prone areas, and thus avoid major new flood control works. Maintain natural watershed processes by regulating development in tributary watersheds. Minimize increased runoff, erosion, and siltation of streambeds that would limit the uses of streams and water bodies for recreation and other beneficial water-rated uses.

Existing General Plan – Safety Element, Seismic Hazards, Adopted 1990

Goal: Minimize injury and loss of life, property damage, and the social, cultural, and economic impacts caused by earthquake hazards.

Policy 1: Encourage the use of non-urbanized segments of active fault zones for rural and open space purposes.

Policy 2: Review projects proposing new expansion and construction of new development, especially critical facilities, and encourage them to avoid localities exposed to high earthquake hazards through such techniques as cluster development and transfer of development rights.

Policy 3: Continue enforcement of stringent site investigations (such as seismic, geologic, and soils investigations) and implementation of adequate hazard mitigation measures for development projects in areas of high earthquake hazard, especially those involving critical facilities. Do not approve proposals and projects which cannot mitigate safety hazards to the satisfaction of responsible agencies.

Existing General Plan – Safety Element, Geologic Hazards, Adopted 1990

Goal: Protect public safety and minimize the social and economic impacts from geologic hazards.

Policy 8: Review proposals and projects proposing new development and expansion of existing development in areas susceptible to land sliding, debris flow, and rock falls and in areas where collapsible or expansive soils are a significant problem; and disapprove projects which cannot mitigate safety hazards to the satisfaction of responsible agencies.

Policy 9: Continue to improve and enforce stringent slope investigation and design standards, and to apply innovative hazard mitigation and maintenance plans for development in hillside areas.

Policy 10: Upgrade slope maintenance measures and improve emergency response capability in hillside areas.

Existing General Plan – Land Use Element, Adopted 1980

Goal: Conserve resources and enhance environmental quality.

Policy 26: Protect known mineral resource reserves (including sand and gravel) from encroachment of incompatible land uses.

Draft General Plan, 2014 – Conservation and Natural Resources Element

Goal – C/NR-5: Protected and useable local surface water resources. (Some of these policies also apply to this geology section)

Policy C/NR 5.2: Require compliance by all County departments with adopted Municipal Separate Storm Sewer System (MS4), General Construction, and point source NPDES permits.

Policy C/NR 5.4: Actively engage in implementing all approved Enhanced Watershed Management Programs/Watershed Management Programs and Coordinated Integrated Monitoring Programs/Integrated Monitoring Programs or other County-involved TMDL implementation and monitoring plans.

Policy C/NR 5.6: Minimize point and non-point source water pollution. (This applies to this geology section because this policy would include minimizing erosion that generates sediment)

Goal – C/NR-10: Locally available mineral resources to meet the needs of construction, transportation, and industry.

Policy C/NR 10.1: Protect MRZ-2s and access to MRZ-2s from development and discourage incompatible adjacent land uses.

Draft General Plan, 2014 – Safety Element

Goal S 1: An effective regulatory system that prevents or minimizes personal injury, loss of life and property damage due to seismic and geotechnical hazards.

Policy S 1.1: Discourage development in Seismic Hazard and Alquist-Priolo Earthquake Fault Zones.

Policy S 1.3: Require developments to mitigate geotechnical hazards, such as soil instability and landsliding, in Hillside Management Areas through siting and development standards.

City General Plans

The numerous cities encompassed by the EWMP area all have their own respective city General Plans, which may contain policies that address geology and minerals. As implementation of the individual structural BMP projects proceeds, specific policies and objectives pertaining to geology and minerals from applicable city General Plans would be identified and evaluated on a project-by-project basis during subsequent CEQA environmental processes.

County of Los Angeles Building Code Section 113

Section 113 prohibits the location of most structures for human occupancy across the traces of active faults, and lessens the impacts of fault rupture.

County of Los Angeles Low Impact Development Manual

- The County of Los Angeles (County) prepared the 2014 Low Impact Development Standards Manual (LID Standards) to comply with the requirements of the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit for stormwater and non-stormwater discharges from the MS4 within the coastal watersheds of Los Angeles County (CAS004001, Order No. R4-2012-0175), referred to as the 2012 MS4 Permit (County of Los Angeles, 2014b). The LID

Standards provide guidance for the implementation of stormwater quality control measures in new development and redevelopment projects in unincorporated areas of the County with the intention of improving water quality and mitigating potential water quality impacts from stormwater and non-stormwater discharges. The November 2013 LID Ordinance became effective December 5, 2013.

City of Los Angeles Low Impact Development Manual

In November 2011, the City of Los Angeles adopted the Stormwater Low Impact Development (LID) Ordinance #181899) with the stated purpose of:

- Requiring the use of LID standards and practices in future developments and redevelopments to encourage the beneficial use of rainwater and urban runoff
- Reducing stormwater/urban runoff while improving water quality
- Promoting rainwater harvesting
- Reducing offsite runoff and providing increased groundwater recharge
- Reducing erosion and hydrologic impacts downstream
- Enhancing the recreational and aesthetic values in our communities

The City institutionalized the use of LID techniques for development and redevelopment projects. Subsequent to the adoption of the Stormwater LID Ordinance, the City prepared the *Development Best Management Practices Handbook, Low Impact Development Manual,* dated June 2011, to describes the required BMPs (City of Los Angeles, 2011).

Other Cities LID

Various other cities within the County also have LID standards or guidance. The goals, objectives, and content of the LID document are similar to that of the County and City of Los Angeles, and are not referenced here.

3.5.3 Impact Analysis

The proposed program's potential impacts were assessed using the California Environmental Quality Act (CEQA) Guidelines Appendix G Checklist. This section discusses the key issue areas identified in the CEQA Guidelines with respect to the project's potential effect to geologic and mineral resources.

Thresholds of Significance

For the purposes of this PEIR and consistency with Appendix G of the CEQA Guidelines, the project would have a significant impact on geologic resources if it would:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

  - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault;
  - Strong seismic groundshaking;
  - Seismic-related ground failure, including liquefaction; or
  - Landslides
- Result in substantial soil erosion or the loss of topsoil
- Be located on a geologic unit that is unstable or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse
- Be located on expansive soils, as defined in 24 CCR 1803.5.3 of the CBC (2013)[2]
- Have soils incapable of adequately supporting the use of a septic tank or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater

The project would have a significant impact on mineral resources if it would:

- Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state
- Result in the loss of availability of a locally important mineral resource recovery site delineated on a local General Plan, Specific Plan, or other land use plan

Project Impact Discussion

Exposure to Seismic-Related Hazards

Impact 3.5-1: The proposed program could locate new facilities in areas susceptible to seismic impacts such as (1) rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault, (2) strong seismic groundshaking, or (3) seismically induced liquefaction or landslides, which could expose people, structures, or habitat to potential risk of loss, damage, injury, or death.

Structural (Regional, Centralized, and Distributed) BMPs

The EWMP area lies in a region that is seismically active and includes numerous active faults. In the event of an earthquake, fault rupture and seismic groundshaking could be experienced in the project area, as is typical throughout Southern California. The seismic groundshaking could trigger seismically induced liquefaction, landslides, or other slope failure. As discussed in Section 3.5.1, *Environmental Setting*, and shown in Figure 3.5-2, 10 active faults are known within the project area. Facilities constructed on or within up to 500 feet of an active fault trace could be damaged by fault rupture. Seismic groundshaking and seismically induced liquefaction,

2 The updated CBC no longer cites the UBC Table 18-1-B for identifying expansive soils. The checklist in Appendix G of the CEQA Guidelines still refers to this out of date table. This PEIR uses the updated CBC section as defined in 24 CCR 1803.5.3 of the CBC (2013).

landslides, or other slope failure could result in structural damage to facilities, which in turn could affect operation of related systems. Regional and centralized BMPs with above-ground infrastructure components that could be seismically impacted include infiltration, bioretention, or detention basins with above ground berms or levees that form the basin. Subsurface infiltration, retention, or storage structures (e.g., trenches, galleries, and wells) and structures generally flush with the surrounding area (e.g., permeable pavement, swales, filter strips, and wetlands) would be less vulnerable to significant seismic damage, but could still be damaged during large earthquakes. Damage to these underground systems include structural damage to the underground vaults, connection to existing MS4, and underdrains that connect to the MS4. Centralized BMPs that consist of large diversion and treatment systems can also experience structural damage under seismic events.

Distributed structural BMPs would be smaller, site- or parcel-specific structures and would therefore be less vulnerable to seismic damage. Although distributed structural BMPs that include above-ground components (e.g., sides or levees to basins, planter boxes, rain barrels, water clarifiers) could be damaged by a seismic event, the resulting release of water would be smaller and less likely to cause significant damage. Damage to these underground systems includes structural damage to the underground vaults, connection to existing MS4, and underdrains that connect to the MS4. For all three structural BMPs, infiltration of water to the underlying soil can result in an increased potential for soil instability and liquefaction.

All of the proposed facilities would be uninhabitable. However, damage to facilities could result in threats to the safety of people in downslope areas or damage to other downslope facilities. To ensure impacts to public safety are minimized, prior to construction of each specific project, a design-level geotechnical investigation would be required. The geotechnical evaluation would identify the potential geologic and seismic hazards and would recommend site-specific design criteria to abate seismic hazards, such as special foundations and structural setbacks, and these recommendations would be incorporated into the design of individual proposed projects.

The geotechnical investigations would be conducted by a geotechnical engineer. Furthermore, project designs would be subject to the CBC design standards and local codes.[3] The California Professional Engineers Act (Building and Professions Code Sections 6700-6799), and the Codes of Professional Conduct, as administered by the California Board of Professional Engineers and Land Surveyors, provide the basis for regulating and enforcing engineering practice in California.

In addition, the County of Los Angeles LID Standards, as well as LID Standards for the various cities, require that all structural BMPs (regional, centralized, and distributed) that include ground-disturbance activities, regardless of size; conduct a site assessment; and identify design considerations. The site assessment specifically includes identifying the potential for fault rupture, seismic shaking, and seismically induced liquefaction and other ground failures. The

[3] A geotechnical engineer specializes in structural behavior of soil and rocks. Geotechnical engineers conduct soil investigations, determine soil and rock characteristics, provide input to structural engineers, and provide recommendations to address problematic conditions or soils.

design considerations must be prepared by a geotechnical engineer and must specifically include design features to minimize or avoid damage from fault rupture and seismic events.

It is likely that the structural elements of each proposed project would be subjected to a moderate to strong earthquake at least once during their operational life which could include surface displacement from fault rupture or seismic shaking. Completion of a comprehensive design-level geotechnical investigation, adherence to the current CBC, LID Standards, and local ordinances and laws regulating construction, and the application of proven seismic design criteria as standard engineering practice would ensure that structures are designed to withstand seismic events without sustaining substantial damage or collapsing. Therefore, this impact is considered less than significant.

Mitigation Measures: None required

Significance Determination: Less than significant

Non-Structural/Institutional BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the construction of new facilities that are susceptible to seismic impacts. Consequently, there would be no new facilities that would place people or structures at risk to injury or damage due to fault rupture. Therefore, this impact would have no impact relative to fault rupture.

Mitigation Measures: None required

Significance Determination: No impact

Soil Erosion or Topsoil Loss

Impact 3.5-2: The proposed program could result in substantial soil erosion or the loss of topsoil.

Structural (Regional, Centralized, and Distributed) BMPs

Construction activities for proposed program facilities such as excavation and grading could result in soil erosion or loss of topsoil during rain or high-wind events. Erosion could damage facilities, pose risk to people, or damage habitat or improvements downslope of a proposed program, resulting in potentially significant impacts. However, each BMP type would generally serve to slow down or fully retain stormwater runoff. This would act to reduce erosion potential compared with existing conditions. Discharge points from centralized and distributed BMPs would be designed to minimize scour potential, and in any case improve scour potential from existing conditions.

To prevent erosion and runoff from construction sites, the CGP requires the preparation and implementation of a SWPPP that would include BMPs to control erosion and off-site sedimentation from construction sites. The required compliance with the SWPPP and implementation of erosion control BMPs would ensure that soil erosion and loss of topsoil would be minimized to levels considered less than significant.

Proposed projects that are smaller than one acre would be required to comply with the BMPs identified in the Los Angeles County MS4 Permit (RWQCB Order No. R4-2010-0175), which would implement minimum-control BMPs to provide erosion control and sediment control strategies for small construction sites (see Chapter 3.8, *Surface Hydrology and Water Quality*, for a more detailed explanation of the MS4 Permit.). Compliance with SWPPPs and runoff BMPs (will vary with the area of disturbance, construction vehicles used, site grade, and duration of project) would ensure less than significant erosion during construction.

Mitigation Measures: None required

Significance Determination: Less than significant

Non-Structural/Institutional BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the construction of new facilities. Consequently, there would be no new facilities that would increase erosion or the loss of topsoil due to the construction of new facilities.

Mitigation Measures: None required

Significance Determination: No impact

Soil Stability

Impact 3.5-3: The proposed program could be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the program, and potentially result in on-site or off-site non-seismically induced geologic hazards such as landslides, lateral spreading, subsidence, collapse or sinkholes, settlement, or slope failure.

Structural (Regional, Centralized, and Distributed) BMPs

Non-seismically-induced geologic hazards such as landslides, lateral spreading, settlement, and slope failure can be caused by unstable soils. Infiltration of water into surficial soils can increase soil instability. Distributed structural BMPs would be smaller, site- or parcel-specific structures and would therefore be less vulnerable to geologic hazards. Although distributed structural BMPs that include above ground components (e.g., sides or levees to basins, planter boxes, rain barrels, water clarifiers) could be damaged by geologic hazards, the resulting release of water would be smaller and less likely to cause significant damage. The regional and centralized structural BMPs that include the construction of larger physical structures would be more susceptible to unstable soils.

Furthermore, infiltration could result in saturated soils, soil piping through preferential pathways, breakouts due to infiltrated water finding utility trenches and other preferential pathways, and raising the local groundwater levels such that infrastructure foundations and underground structures could be affected by unstable soils. Increased saturation of shallow soils could reduce the strength of the soils, resulting in an increased susceptibility to failure (e.g., lateral spreading, settlement, instability, soil piping, reduced or loss of shear strength). In addition, infiltrated water could become perched or find preferential pathways such as utility trenches and potentially inundate or destabilize subterranean structures and utilities, or breakout downstream and damage above ground structures. To ensure that structural BMPs are not undermined by unstable soils or impact adjacent infrastructure and buildings, **Mitigation Measure GEO-1** requires that each specific project would require a design-level geotechnical investigation. The geotechnical evaluation would identify the potential for geologic hazards and would recommend site-specific design criteria to abate geologic hazards, such as drainage barriers, lined trenches, continued monitoring of subsurface conditions, added site drainage, special foundations, and structural setbacks, and these recommendations would be incorporated into the design of individual proposed projects.

Implementing the design requirements in the CBC and local (County and city) ordinances and recommendations of geotechnical investigations would ensure that all structures are constructed in compliance with the applicable laws, regulations, and policies, including the LID Ordinances. Therefore, this impact is considered less than significant.

Mitigation Measures:

GEO-1: Prior to approval of infiltration BMPs, implementing agencies shall conduct a geotechnical investigation of each infiltration BMP site to evaluate infiltration suitability. If infiltration rates are sufficient to accommodate an infiltration BMP, the geotechnical investigation shall recommend design measures necessary to prevent excessive lateral spreading that could destabilize neighboring structures. Implementing agencies shall implement these measures in project designs.

Significance Determination: Less than significant (The application of this mitigation measure to specific BMP types and categories is identified in Table 3.5-3.)

Non-Structural/Institutional BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the construction of new facilities that would be located on a geologic unit or soil that is unstable. Consequently, there would be no new facilities that would increase erosion or the loss of topsoil due to the construction of new facilities.

Mitigation Measures: None required

Significance Determination: No impact

Expansive Soils

Impact 3.5-4: The proposed program could be located on expansive soil as defined in 24 CCR 1803.5.3 of the California Building Code (2013), creating substantial risks to life or structures.

Structural (Regional, Centralized, and Distributed) BMPs

Soil expansion, also referred to as linear extensibility or shrink-swell, occurs in certain clayey soils that when subjected to repeated wetting and drying, undergo shrinking or swelling. As discussed in Section 3.5.1, *Environmental Setting*, some areas within the project area have expansive soil. Soil expansion can occur in expansive soils that have not been removed or properly conditioned. The differential ground movement that occurs through soil expansion could result in structural damage to facilities over the long term, which in turn could affect operation of related systems. Damage to the facilities could result in threats to the safety of people at or near the facilities.

All structural BMPs, regardless of size (regional, centralized, or distributed) would be susceptible to damage from soil expansion if placed on susceptible soil. Some distributed structural BMPs would be less or not susceptible (e.g., bioswales, planter boxes, flow-through treatment BMPs [debris booms/nets, end-of-pipe nets, floating trash booms]) because soil expansion beneath these BMPs, if any, would not result in significant damage.

Completion of a comprehensive design-level geotechnical investigation, implementing the design requirements in the CBC and local (County and city) ordinances, and ensuring that all structures are constructed in compliance with the applicable laws, regulations, and policies, including the LID Ordinances, would ensure that structural BMPs are constructed in a manner that avoids impacts from expansive soils. Therefore, this impact is considered less than significant.

Mitigation Measures: None required

Significance Determination: Less than significant

Non-Structural/Institutional BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the construction of new facilities. Therefore, this impact would have no impact relative to expansive soils.

Mitigation Measures: None required

Significance Determination: Less than significant

On-Site Wastewater Treatment Systems

Impact 3.5-5: The proposed program could have soils incapable of adequately supporting the use of a septic tank or alternative wastewater treatment systems where sewers are not available for the disposal of wastewater.

Implementation of the proposed program would not include facilities that require the use of septic systems or alternate wastewater disposal systems where sewers are not available for the disposal of wastewater. Therefore, no impact would occur related to soil suitability for septic or alternative wastewater disposal systems.

Mitigation Measures: None required

Significance Determination: No impact

Mineral Resources

Impact 3.5-6: The proposed program could result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state or a locally important mineral resource recovery site delineated on a local General Plan, Specific Plan, or other land use plan.

Structural (Regional, Centralized, and Distributed) BMPs

The EWMP project area includes mineral resource areas in Los Angeles County that contain known or potentially productive petroleum fields, natural gas, construction aggregate, and mineral deposits. If the construction of a specific proposed program occurred within a mineral resources area, the access to or availability of that mineral resource could be restricted or eliminated.

Typical distributed structural BMPs would be constructed within areas that are already urbanized and disturbed, and would therefore not be available for mineral resource activities. Regional or centralized structural BMPs could be constructed in locations that are not already urbanized and are located within a designated MRZ, specifically an MRZ-2, an area with known mineral resources. Siting projects within designated MRZs could be conducted if the BMPs do not impede access to the mineral resources. In any case, siting large and small BMPs would need to comply with local and County General Plan zoning restrictions. Compliance with local General Plans and the County of Los Angeles General Plan would ensure that impacts to mineral resources would be less than significant.

Mitigation Measures: None required

Significance Determination: Less than significant

Non-Structural/Institutional BMPs

As discussed in Chapter 2.0, *Project Description*, Non-structural/institutional BMPs do not include the construction of new facilities. Consequently, there would be no new facilities that would affect mineral resources. Therefore, this impact would have no impact.

Mitigation Measures: None required

Significance Determination: Less than significant

Cumulative Impact Discussion

Structural (Regional, Centralized, and Distributed) BMPs

Although the EWMP area is located within a seismically active region, with a wide range of geologic and soil conditions, these conditions can vary greatly within a short distance, making the cumulative context for potential impacts one that is typically more localized. Consequently, most projects would have minimal potential to impact or be impacted by other projects. Impacts would be largely contained within the footprint of each individual proposed project.

Many of the distributed BMPs, as well as the larger-scale regional and central BMPs, would include infiltration as a primary component. Consequently, many infiltration projects could be implemented within each watershed. This would result in a significant amount of water infiltrated into the subsurface, which would saturate some shallow soils below the infiltration basins and raise groundwater levels. A general rise in groundwater levels due to stormwater retention and infiltration would provide water supply benefits to the region, but could also raise groundwater levels above current levels. A regional increase in the amount of infiltration added to subsoils throughout the urbanized areas where the structural BMPs will be installed may increase the potential for impacts to existing infrastructure and buildings. To ensure that structural BMPs are not undermined by unstable soils or impact adjacent infrastructure and buildings, each specific project would require a design-level geotechnical investigation. The geotechnical evaluation would identify the potential for geologic hazards and would recommend site-specific design criteria to abate geologic hazards, such as drainage barriers, lined trenches, continued monitoring of subsurface conditions, added site drainage, special foundations, and structural setbacks, and these recommendations would be incorporated into the design of individual proposed projects. Implementation of these requirements for a geotechnical investigation, assessment, and design recommendation for structural BMPs that include adding flows by infiltration and filtration to the subsurface should address the potential for cumulative impacts.

All the groundwater basins in Los Angeles County are actively used for multiple beneficial uses; most are designated as drinking water sources. The potential for groundwater levels to rise high enough to impact structural foundations and other support structures is low since the aquifers are generally over 100 feet below ground surface and are actively managed by overlying users. Furthermore, targeted pumping in areas with elevated groundwater levels would mitigate any soil stability issues. However, water levels may rise in local areas with limited extraction capabilities.

In addition, percolating water could become perched or find preferential pathways such as utility trenches and inundate underground utilities or structures. The cumulative effect of multiple infiltration projects could increase the severity of the perched or migrating water. However, Mitigation Measure GEO-1 would require that BMPs be designed to avoid infiltrating in areas with the potential for perched groundwater or migration. This would minimize the cumulative impact to regional infrastructure.

In addition, groundwater managers in each of the watersheds currently manage pumping effectively to prevent impacts to structural foundations resulting from groundwater mounding from existing recharge efforts. Under existing conditions, in areas with chronically high groundwater levels, dewatering operations are installed, and the water is beneficially used wherever possible. Implementation of **Mitigation Measure GEO-2** would require that the Implementing Agency notify groundwater managers of local infiltration projects to provide better coordination between stormwater retention and groundwater levels management. With this coordination, the potential contribution to cumulative effects to soil stability from elevated groundwater levels would be considered less than significant.

Significance Determination before Mitigation: Potentially significant

Mitigation Measures:

GEO-2: Prior to installing BMPs designed to recharge the local groundwater supplies, the Implementing Agency shall notify local groundwater managers, including the Upper Los Angeles River Area Water Master, the Water Replenishment District of Southern California, or the San Gabriel Water Master as well as local water producers such as local municipalities and water companies. The Implementing Agency shall coordinate BMP siting efforts with groundwater managers and producers to mitigate high groundwater levels while increasing local water supplies.

Significance Determination after Mitigation: Less than significant (The application of this mitigation measure to specific BMP types and categories is identified in Table 3.5-3.)

Non-Structural (Institutional) BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the construction of new facilities. Consequently, there would be no new facilities that would contribute to cumulative impacts.

Mitigation Measures: None required

Significance Determination: Less than significant

3.5.4 Summary of Impact Assessment

Table 3.5-3 shows a summary of the structural BMPs requiring mitigation.

TABLE 3.5-3
SUMMARY OF GEOLOGIC RESOURCE IMPACTS REQUIRING MITIGATION MEASURES

	Thresholds of Significance						
Structural BMPs	**Exposure to Seismic-Related Hazards**	**Soil Erosion or Topsoil Loss**	**Soil Stability**	**Expansive Soils**	**On-Site Wastewater Treatment Systems**	**Mineral Resources**	**Cumulative Impacts**
Applicable Mitigation Measures:	**None Required**	**None Required**	**GEO-1**	**None Required**	**None Required**	**None Required**	**GEO-2**
Regional BMPs							
Regional Detention and Infiltration	No	No	No	No	No	No	Yes
Regional Capture, Detention and Use	No	No	No	No	No	No	Yes
Centralized BMP							
Bioinfiltration	No	No	No	No	No	No	Yes
Constructed Wetlands	No	No	No	No	No	No	Yes
Treatment/Low-Flow Diversions	No	No	No	No	No	No	Yes
Creek, River, Estuary Restoration	No	No	No	No	No	No	Yes
Distributed BMPs							
Site-Scale Detention	No	No	No	No	No	No	Yes
LID – Infiltration/Filtration BMPs – Porous Pavement, Green Streets, Bioswale/Filter Strips, Downspout Disconnects	No	No	No	No	No	No	Yes
LID – Green Infrastructure – Capture and Use – Cisterns, Rain Barrels, Green roofs, Planter Boxes	No	No	No	No	No	No	Yes
Flow through Treatment BMPs	No	No	No	No	No	No	Yes
Source-Control Treatment BMPs (catch basin inserts/screens, hydrodynamic separators, gross solids removal devices)	No	No	No	No	No	No	Yes
Low-Flow Diversions	No	No	No	No	No	No	Yes

NOTE: These conclusions are based on typical BMP size and location.

3.6 Greenhouse Gas Emissions

This section provides a discussion of global climate change, existing regulations pertaining to global climate change, and potential greenhouse gas (GHG) emissions resulting from implementation of the proposed program. Impacts related to GHGs and climate change are analyzed and mitigation measures are provided for any potentially significant impacts. The methods of analyzing emissions described in this section are consistent with the recommendations of the South Coast Air Quality Management District (SCAQMD).

3.6.1 Environmental Setting

Affected Environment

This section presents a discussion of existing climate conditions, the current state of climate change science, and GHG emissions sources in California.

Climate

Climate is the accumulation of daily and seasonal weather events over a long period of time, whereas weather is defined as the condition of the atmosphere at any particular time and place (Ahrens, 2003). The proposed program is located in the County of Los Angeles within the Basin, which has a distinctive climate determined by its terrain and geographic location. The general region lies in the semipermanent high-pressure zone of the eastern Pacific, resulting in a mild climate tempered by cool sea breezes with light average wind speeds. The usually mild climate is interrupted occasionally by periods of extremely hot weather, winter storms, or Santa Ana winds.

Climate Change Overview

Various gases in the earth's atmosphere, classified as GHGs, play a critical role in determining its surface temperature. Solar radiation enters earth's atmosphere from space, and a portion of the radiation is absorbed by the earth's surface. Earth re-radiates this energy back toward space, but the properties of the radiation change from high-frequency solar radiation to lower-frequency infrared radiation. GHGs, which are transparent to solar radiation, are effective in absorbing infrared radiation. As a result, this radiation (that otherwise would have escaped back into space) is now retained in the atmosphere, and results in a warming of the atmosphere. This phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate on earth. Without the greenhouse effect, the earth would not be able to support life as we know it.

Prominent GHGs contributing to the greenhouse effect are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), chlorofluorocarbons (CFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Much of the scientific literature suggests that human-caused emissions of these GHGs in excess of natural ambient concentrations are responsible for intensifying the greenhouse effect and have led to a trend of unnatural warming of earth's climate, known as global climate change or global warming. While there is some debate regarding this issue, it is unlikely that global climate change of the past 50 years can be explained without contribution from human activities (IPCC, 2007).

Climate change is a global problem. GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern. Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about one day), GHGs have long atmospheric lifetimes (one year to several thousand years). GHGs persist in the atmosphere for long enough time periods to be dispersed around the globe. Although the exact lifetime of any particular GHG molecule is dependent on multiple variables and cannot be pinpointed, it is understood that more CO_2 is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, and other forms of sequestration. Of the total annual human-caused CO_2 emissions, approximately 54 percent is sequestered through ocean uptake, uptake by northern hemisphere forest regrowth, and other terrestrial sinks within 1 year, whereas the remaining 46 percent of human-caused CO_2 emissions remains stored in the atmosphere (Seinfeld and Pandis, 1998).

Similarly, impacts of GHGs are borne globally, as opposed to localized air quality effects of criteria air pollutants and toxic air contaminants. The quantity of GHGs that it takes to ultimately result in climate change is not precisely known; however, it is clear that the quantity is enormous, and no single project would measurably contribute to a noticeable incremental change in the global average temperature, or to global, local, or micro climates. From the standpoint of the California Environmental Quality Act (CEQA), GHG impacts to global climate change are inherently cumulative.

Greenhouse Gas Emission Sources

According to much of the scientific literature on this topic, emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the transportation, industrial/manufacturing, utility, residential, commercial, and agricultural sectors. In California, the transportation sector is the largest emitter of GHGs, followed by electricity generation (CARB, 2014a). Emissions of CO_2 are by-products of fossil fuel combustion. CH_4, a highly potent GHG, results from off-gassing (the release of chemicals from nonmetallic substances under ambient or greater pressure conditions) and is largely associated with agricultural practices and landfills. N_2O is also largely attributable to agricultural practices and soil management. CO_2 sinks, or reservoirs, include vegetation and the ocean, which absorb CO_2 through sequestration and dissolution, respectively, and are two of the most common processes of CO_2 sequestration.

California is the 12th to 16th largest emitter of CO_2 in the world (CEC, 2006a). California produced 452 million gross metric tons of CO_2 equivalent (CO_2e) in 2010 (CARB, 2014a). CO_2e is a measurement used to account for the fact that different GHGs have different potential to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. Expressing emissions in CO_2e takes the contributions to the greenhouse effect of all GHG emissions and converts them to the equivalent effect that would occur if only CO_2 were being emitted. This measurement, known as the global warming potential (GWP) of a GHG, is dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. For example, as described in Appendix C, Calculation References, of the General Reporting Protocol of the California Climate Action Registry (CCAR, 2009), 1 ton of CH_4 has the same contribution to the greenhouse effect as approximately 21 tons of CO_2. Therefore, CH_4 is a much more potent GHG than CO_2.

Combustion of fossil fuel in the transportation sector was the single largest source of California's GHG emissions in 2012, accounting for 36 percent of total GHG emissions in the state (CARB, 2014a). This sector was followed by the electric power sector (including both in-state and out-of-state sources) (21 percent) and the industrial sector (19 percent) (CARB, 2014a).

3.6.2 Regulatory Framework

Federal

The federal Clean Air Act (CAA) requires the U.S. Environmental Protection Agency (USEPA) to define national ambient air quality standards to protect public health and welfare in the United States. The CAA does not specifically regulate GHG emissions; however, on April 2, 2007, the U.S. Supreme Court in *Massachusetts v. U.S. Environmental Protection Agency* determined that GHGs are pollutants that can be regulated under the CAA. Currently, there are no federal regulations that establish ambient air quality standards for GHGs.

On December 7, 2009, USEPA adopted its Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases under the CAA (Endangerment Finding). The Endangerment Finding is based on Section 202(a) of the CAA, which states that the USEPA Administrator should regulate and develop standards for "emission[s] of air pollution from any class or classes of new motor vehicles or new motor vehicle engines, which in [its] judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare." The rule addresses Section 202(a) in two distinct findings. The first addresses whether the concentrations of the six key GHGs (CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6) in the atmosphere threaten the public health and welfare of current and future generations. The second addresses whether the combined emissions of GHGs from new motor vehicles and motor vehicle engines contribute to atmospheric concentrations of GHGs and, therefore, contribute to the threat of climate change.

The USEPA Administrator determined that atmospheric concentrations of GHGs endanger the public health and welfare within the meaning of Section 202(a) of the CAA. The evidence supporting this finding consists of human activity resulting in "high atmospheric levels" of GHG emissions, which are likely responsible for increases in average temperatures and other climatic changes. Furthermore, the observed and projected results of climate change (e.g., higher likelihood of heat waves, wild fires, droughts, sea level rise, and higher intensity storms) are a threat to the public health and welfare. Therefore, GHGs were found to endanger the public health and welfare of current and future generations.

Specific GHG regulations that USEPA has adopted to-date are as follows:

> **40 CFR Part 98. Mandatory Reporting of Greenhouse Gases Rule.** This rule requires mandatory reporting of GHG emissions for facilities that emit more than 25,000 metric tons of CO_2e emissions per year (USEPA, 2011). Additionally, reporting of emissions is required for owners of SF_6- and PFC-insulated equipment when the total nameplate capacity of these insulating gases is above 17,280 pounds.

40 CFR Part 52. Proposed Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule. USEPA recently mandated to apply Prevention of Significant Deterioration (PSD) requirements to facilities whose stationary source CO_2e emissions exceed 75,000 tons per year (USEPA, 2010).

The USEPA also recently released a proposed rule which would regulate GHG emissions from existing power plants across the nation. The proposed rule establishes state-by-state 2030 GHG goals.

State

The California Air Resources Board (CARB) is the agency responsible for coordination and oversight of state and local air pollution control programs in California. Various statewide and local initiatives to reduce the state's contribution to GHG emissions have raised awareness that, even though the various contributors to and consequences of global climate change are not yet fully understood, global climate change is under way, and there is a real potential for severe adverse environmental, social, and economic effects in the long term. Because every nation emits GHGs and therefore makes an incremental cumulative contribution to global climate change, cooperation on a global scale will be required to reduce the rate of GHG emissions to a level that can help to slow or stop the human-caused increase in average global temperatures and associated changes in climatic conditions.

There are currently no state regulations in California that establish ambient air quality standards for GHGs. However, California has passed laws directing CARB to develop actions to reduce GHG emissions, and several state legislative actions related to climate change and GHG emissions have come into play in the past decade.

Assembly Bill 1493 (Pavley)

In 2002, then-Governor Gray Davis signed Assembly Bill (AB) 1493. AB 1493 required that CARB develop and adopt, by January 1, 2005, regulations that achieve "the maximum feasible reduction of greenhouse gases emitted by passenger vehicles and light-duty trucks and other vehicles determined by CARB to be vehicles whose primary use is noncommercial personal transportation in the state."

To meet the requirements of AB 1493, in 2004 CARB approved amendments to the California Code of Regulations (CCR) adding GHG emissions standards to California's existing standards for motor vehicle emissions. Amendments to CCR Title 13, Sections 1900 and 1961 (13 CCR 1900, 1961), and adoption of Section 1961.1 (13 CCR 1961.1) require automobile manufacturers to meet fleet-average GHG emissions limits for all passenger cars, light-duty trucks within various weight criteria, and medium-duty passenger vehicle weight classes (i.e., any medium-duty vehicle with a gross vehicle weight rating less than 10,000 pounds that is designed primarily for the transportation of persons), beginning with the 2009 model year. For passenger cars and light-duty trucks with a loaded vehicle weight of 3,750 pounds or less, the GHG emission limits for the 2016 model year are approximately 37 percent lower than the limits for the first year of the regulations, the 2009 model year. For light-duty trucks with a loaded vehicle weight of 3,751 pounds to gross vehicle weight of 8,500 pounds, as well as medium-duty passenger vehicles, GHG emissions would be reduced approximately 24 percent between 2009 and 2016.

Executive Order S-03-05

Executive Order S-03-05, which was signed by Governor Arnold Schwarzenegger in 2005, proclaims that California is vulnerable to the impacts of climate change. It declares that increased temperatures could reduce the Sierra's snowpack, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. To combat those concerns, the Executive Order established total GHG emission targets. Specifically, emissions were to be reduced to the 2000 level by 2010 and are to be reduced to the 1990 level by 2020, and to 80 percent below the 1990 level by 2050.

The Executive Order directed the Secretary of the California Environmental Protection Agency (CalEPA) to coordinate a multi-agency effort to reduce GHG emissions to the target levels. The Secretary will also submit biannual reports to the governor and state legislature describing progress made toward reaching the emission targets, impacts of global warming on California's resources, and mitigation and adaptation plans to combat these impacts. To comply with the Executive Order, the Secretary of CalEPA created the California Climate Action Team (CCAT), which is made up of members from various state agencies and commissions. CCAT released its first report in March 2006. The report proposed to achieve the targets by building on voluntary actions of California businesses, local government, and community actions, as well as through state incentive and regulatory programs.

Assembly Bill 32 (California Global Warming Solutions Act of 2006)

In September 2006, Governor Schwarzenegger signed the California Global Warming Solutions Act (AB 32; California Health and Safety Code Division 25.5, Sections 38500–38599). AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and establishes a cap on statewide GHG emissions. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by 2020. This reduction will be accomplished by enforcing a statewide cap on GHG emissions that will be phased in starting in 2012. To effectively implement the cap, AB 32 directs CARB to develop and implement regulations to reduce statewide GHG emissions from stationary sources.

Senate Bill 1368

Senate Bill (SB) 1368 is the companion bill of AB 32 and was signed by Governor Schwarzenegger in September 2006. SB 1368 required the California Public Utilities Commission (CPUC) to establish a GHG emission performance standard for baseload generation from investor-owned utilities. CPUC adopted a GHG Emissions Performance Standard in January 2007. The California Energy Commission (CEC) adopted consistent regulations for implementing and enforcing SB 1368 for the state's publicly owned utilities in August 2007. These standards cannot exceed the GHG emission rate from a baseload combined-cycle natural-gas-fired plant. The legislation further requires that all electricity provided to California, including imported electricity, must be generated from plants that meet the standards set by the CPUC and CEC.

Executive Order S-1-07

Executive Order S-1-07, which was signed by Governor Schwarzenegger in 2007, proclaims that the transportation sector is the main source of GHG emissions in California, generating more than 40 percent of statewide emissions. It establishes a goal to reduce the carbon intensity of transportation fuels sold in California by at least ten percent by 2020. This order also directed CARB to determine whether this Low Carbon Fuel Standard (LCFS) could be adopted as a discrete early-action measure as part of the effort to meet the mandates in AB 32.

On April 23, 2009, CARB approved the proposed regulation to implement the LCFS. The LCFS will reduce GHG emissions from the transportation sector in California by about 16 million metric tons (MMT) in 2020.

Senate Bill 97

SB 97, signed August 2007 (Chapter 185, Statutes of 2007; Public Resources Code Sections 21083.05 and 21097), acknowledges that climate change is a prominent environmental issue that requires analysis under CEQA. The bill directs the California Office of Planning and Research (OPR) to prepare, develop, and transmit to the California Natural Resources Agency, guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions, as required by CEQA, by July 1, 2009. The Natural Resources Agency was required to certify or adopt those guidelines by January 1, 2010. On April 13, 2009, OPR submitted to the Secretary for Natural Resources its proposed amendments to the CEQA Guidelines for GHG emissions, as required by SB 97. On February 16, 2010, the Office of Administrative Law approved the amendments, and filed them with the Secretary of State for inclusion in the CCR. The amendments became effective on March 18, 2010.

CARB Climate Change Scoping Plan

On December 11, 2008, CARB adopted its Scoping Plan, which functions as a roadmap of CARB's plans to achieve GHG reductions in California required by AB 32 through subsequently enacted regulations (CARB, 2008). CARB's Scoping Plan contains the main strategies California will implement to reduce CO_2e emissions by 169 MMT, or approximately 28.4 percent, from the state's projected 2020 emissions level of 596 MMT of CO_2e under a "business-as-usual" (BAU) scenario. In August 2011, the Scoping Plan was reapproved by the Board and includes the Final Supplement to the Scoping Plan Functional Equivalent Document. This document includes expanded analysis of project alternatives as well as updates the 2020 emission projections in light of the current economic forecasts. Considering the updated 2020 BAU estimate of 507 MMT CO_2e, a 16 percent reduction below the estimated BAU levels would be necessary to return to 1990 levels by 2020. The document also excludes one measure identified in the 2008 Scoping Plan that has been adopted and one measure that is no longer under consideration by CARB (CARB, 2011).

CARB's Scoping Plan calculates 2020 BAU emissions as the emissions that would be expected to occur in the absence of any GHG reduction measures. The 2020 BAU emissions estimate was derived by projecting emissions from a past baseline year using growth factors specific to each of the different economic sectors (transportation, electrical power, commercial and residential, industrial, etc.). CARB used 3-year average emissions, by sector, for 2002–2004 to forecast emissions to 2020. At the time CARB's Scoping Plan process was initiated, 2004 was the most recent year for which actual data was available. The measures described in CARB's Scoping Plan are intended to reduce the projected 2020 BAU levels to 1990 levels, as required by AB 32.

CARB's Scoping Plan also breaks down the amount of GHG emissions reductions CARB recommends for each emissions sector of the state's GHG inventory. CARB's Scoping Plan calls for the largest reductions in GHG emissions to be achieved by implementing the following measures and standards:

- Improved emissions standards for light-duty vehicles (estimated reductions of 31.7 MMT CO_2e)
- The LCFS (15.0 MMT CO_2e)
- Energy efficiency measures in buildings and appliances, and the widespread development of combined heat and power systems (26.3 MMT CO_2e)
- A renewable portfolio standard for electricity production (21.3 MMT CO_2e)

CARB has identified a GHG reduction target of 5 MMT (of the 174 MMT total) local land use changes (Table 2 of CARB's Plan), by implementation of Reduction Strategy T-3 regarding Regional Transportation-Related GHG Targets. Additional land use reductions may be achieved as SB 375 is implemented. CARB's Scoping Plan states that successful implementation of the plan relies on local governments' land use, planning, and urban growth decisions because local governments have primary authority to plan, zone, approve, and permit land development to accommodate population growth and the changing needs of their jurisdictions. CARB further acknowledges that decisions on how land is used will have large effects on the GHG emissions that will result from the transportation, housing, industry, forestry, water, agriculture, electricity, and natural gas emission sectors. CARB's Scoping Plan does not include any direct discussion about GHG emissions generated by construction activity.

Table 3.6-1 shows the Recommended Actions contained in Appendices C and E of CARB's Scoping Plan.

TABLE 3.6-1
RECOMMENDED ACTIONS FROM CARB CLIMATE CHANGE SCOPING PLAN

ID #	Sector	Strategy Name
T-1	Transportation	Pavley I and II – Light-Duty Vehicle GHG Standards
T-2	Transportation	LCFS (Discrete Early Action)
T-3	Transportation	Regional Transportation-Related GHG Targets
T-4	Transportation	Vehicle Efficiency Measures
T-5	Transportation	Ship Electrification at Ports (Discrete Early Action)
T-6	Transportation	Goods-movement Efficiency Measures
T-7	Transportation	Heavy-Duty Vehicle GHG Emission Reduction Measure – Aerodynamic Efficiency (Discrete Early Action)
T-8	Transportation	Medium- and Heavy-Duty Vehicle Hybridization
T-9	Transportation	High-Speed Rail

TABLE 3.6-1 (CONTINUED)
RECOMMENDED ACTIONS FROM CARB CLIMATE CHANGE SCOPING PLAN

ID #	Sector	Strategy Name
E-1	Electricity and Natural Gas	Increased Utility Energy efficiency programs More stringent Building and Appliance Standards
E-2	Electricity and Natural Gas	Increase Combined Heat and Power Use by 30,000GWh
E-3	Electricity and Natural Gas	Renewables Portfolio Standard
E-4	Electricity and Natural Gas	Million Solar Roofs
CR-1	Electricity and Natural Gas	Energy Efficiency
CR-2	Electricity and Natural Gas	Solar Water Heating
GB-1	Green Buildings	Green Buildings
W-1	Water	Water Use Efficiency
W-2	Water	Water Recycling
W-3	Water	Water System Energy Efficiency
W-4	Water	Reuse Urban Runoff
W-5	Water	Increase Renewable Energy Production
W-6	Water	Public Goods Charge (Water)
I-1	Industry	Energy Efficiency and Co-benefits Audits for Large Industrial Sources
I-2	Industry	Oil and Gas Extraction GHG Emission Reduction
I-3	Industry	GHG Leak Reduction from Oil and Gas Transmission
I-4	Industry	Refinery Flare Recovery Process Improvements
I-5	Industry	Removal of CH_4 Exemption from Existing Refinery Regulations
RW-1	Recycling and Waste Management	Landfill CH_4 Control (Discrete Early Action)
RW-2	Recycling and Waste Management	Additional Reductions in Landfill CH_4 – Capture Improvements
RW-3	Recycling and Waste Management	High Recycling/Zero Waste
F-1	Forestry	Sustainable Forest Target
H-1	High GWP Gases	Motor Vehicle Air Conditioning Systems (Discrete Early Action)
H-2	High GWP Gases	SF_6 Limits in Non-Utility and Non-Semiconductor Applications (Discrete Early Action)
H-3	High GWP Gases	Reduction in Perfluorocarbons in Semiconductor Manufacturing (Discrete Early Action)
H-4	High GWP Gases	Limit High GWP Use in Consumer Products (Discrete Early Action, Adopted June 2008)
H-5	High GWP Gases	High GWP Reductions from Mobile Sources
H-6	High GWP Gases	High GWP Reductions from Stationary Sources
H-7[a]	High GWP Gases	Mitigation Fee on High GWP Gases
A-1	Agriculture	CH_4 Capture at Large Dairies

[a] This original measure in the 2008 Scoping Plan was subsequently excluded by CARB in the Final Supplement to the Scoping Plan Functional Equivalent Document in 2011, as CARB staff concluded that implementation of this measure would not be feasible.

SOURCE: CARB, 2008.

As discussed previously, a draft Update to the initial Scoping Plan was developed by CARB in collaboration with the CCAT to address the requirement by AB 32 that the Scoping Plan be updated at least every 5 years. The draft Update to the initial Scoping Plan developed by CARB in collaboration with the CCAT was presented to CARB's Board for discussion at its February 20, 2014 meeting. The draft Update builds upon the initial Scoping Plan with new strategies and expanded measures, and identifies opportunities to leverage existing and new funds to drive GHG emission reductions through strategic planning and targeted program investments. The first update to the AB 32 Scoping Plan was approved on May 22, 2014, by CARB.

As part of the proposed update to the Scoping Plan, the emissions reductions required to meet the 2020 statewide GHG emissions limit were further adjusted. The primary reason for adjusting the 2020 statewide emissions limit was based on the fact that the original Scoping Plan relied on the Intergovernmental Panel on Climate Change (IPCC) 1996 Second Assessment Report (SAR) to assign the GWPs of greenhouse gases. Recently, in accordance the United Nations Framework Convention on Climate Change (UNFCCC), international climate agencies have agreed to begin using the scientifically updated GWP values in the IPCC's Fourth Assessment Report (AR4) that was released in 2007. Because CARB has begun to transition to the use of the AR4 100-year GWPs in its climate change programs, CARB recalculated the Scoping Plan's 1990 GHG emissions level with the AR4 GWPs (CARB, 2014b).

CEQA Guidelines Revisions

In 2007, the State Legislature passed SB 97, which required amendment of the CEQA Guidelines to incorporate analysis of, and mitigation for, GHG emissions from projects subject to CEQA. The California Natural Resources Agency adopted these amendments on December 30, 2009, and they took effect on March 18, 2010, after review by the Office of Administrative Law and filing with the Secretary of State for inclusion in the CCR.

The Guidelines revisions include a new section (Section 15064.4) that specifically addresses the potential significance of GHG emissions. Section 15064.4 calls for a "good-faith effort" to "describe, calculate or estimate" GHG emissions; Section 15064.4 further states that the analysis of the significance of any GHG impacts should include consideration of the extent to which the project would increase or reduce GHG emissions; exceed a locally applicable threshold of significance; and comply with "regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions." The new Guidelines also state that a project may be found to have a less-than-significant impact on GHG emissions if it complies with an adopted plan that includes specific measures to sufficiently reduce GHG emissions (Section 15064(h)(3)). The Guidelines do not, however, require or recommend a specific analytical methodology or provide quantitative criteria for determining the significance of GHG emissions.

Local

SCAQMD

As an interim method for determining significance under CEQA until statewide significance thresholds are established, SCAQMD developed a draft tiered flowchart in 2008 for determining significance thresholds for GHGs for projects where SCAQMD is acting as the lead agency. The SCAQMD flowchart uses a tiered approach in which a proposed program is deemed to have a less-than-significant impact related to GHG emissions when any of the following conditions are met:

- GHG emissions are within GHG budgets in an approved regional plan.

- Incremental increases in GHG emissions due to the project are below the defined Significance Screening Levels, or mitigated to less than the Significance Screening Levels.
- Performance standards are met by incorporating project design features and/or implementing emission reduction measures.
- Carbon offsets are made to achieve target significance screening level.

County of Los Angeles General Plan

The 1980 County of Los Angeles General Plan does not address GHG emissions and climate change. However, the Conservation and Open Space Element contains policies that would contribute to the reduction of GHG emissions (County of Los Angeles, 1980). These are as follows:

Policy 1: Actively support strict air quality regulations for mobile and stationary sources, and continued research to improve air quality. Promote vanpooling, carpooling and improved public transportation.

Policy 2: Support the conservation of energy and encourage the development and utilization of new energy sources including geothermal, thermal waste, solar, wind and ocean-related sources.

Policy 3: Promote the use of solar energy to the maximum extent possible.

The Air Quality Element of the Draft 2014 County of Los Angeles General Plan summarizes air quality issues and outlines goals and policies that will improve air quality and reduce GHG emissions (County of Los Angeles, 2014a). The policies that are most relevant to GHG emissions include:

Policy AQ 1.2: Encourage the use of low or no volatile organic compound (VOC) emitting materials.

Policy AQ 3.1: Facilitate the implementation and maintenance of the Community Climate Action Plan to ensure that the County reaches its climate change and greenhouse gas emission reduction goals.

Policy AQ 3.2: Reduce energy consumption in County operations by 20 percent by 2015.

Policy AQ 3.3: Reduce water consumption in County operations.

Policy AQ 3.4: Participate in local, regional and state programs to reduce greenhouse gas emissions.

Policy AQ 3.5: Encourage maximum amounts of energy conservation in new development and municipal operations.

Policy AQ 3.6: Support and expand urban forest programs within the unincorporated areas.

County of Los Angeles Community Climate Action Plan

The County of Los Angeles released its Final Draft Community Climate Action Plan (CCAP) in July 2014, which serves to mitigate and avoid GHG emissions associated with community activities in unincorporated Los Angeles County. The CCAP addresses emissions from building energy, land use and transportation, water consumption, and waste generation. The measures and actions outlined in the CCAP ties together the County's existing climate change initiatives and provide a blueprint for a more sustainable future. Ultimately, the CCAP and associated GHG reduction measures will be incorporated into the Air Quality Element of the Los Angeles County General Plan 2035.

Specifically, the CCAP will identify emissions related to community activities, establish a GHG reduction target consistent with AB 32, and provide a roadmap for successfully implementing GHG reduction measures selected by the County. Based on the CCAP's estimated amount of GHG emissions generated by community activities in the County's unincorporated areas in 2010, it was determined that building energy use is the largest source of emissions (49 percent), followed by transportation emissions from on- and off-road vehicles (42 percent) and community waste generation (7 percent). The remaining GHG emissions sources are water conveyance and wastewater generation (2 percent), agriculture (0.4 percent), and stationary sources (0.02 percent). The CCAP comprises a variety of state and local actions to reduce GHG emissions within the unincorporated areas. The state actions considered in the CCAP include: the Renewables Portfolio Standard, Title 24 Standards for Commercial and Residential Buildings (Energy Efficiency and CALGreen), Pavley/Advanced Clean Cars (Vehicle Efficiency), the LCFS, and the California cap-and-trade program. These state actions generally do not require action from the County, but will result in local GHG reductions in the unincorporated areas. To supplement these statewide initiatives, the CCAP has identified 26 local actions to reduce GHG emissions in the unincorporated areas of the County. Specifically, these 26 local actions are grouped into five strategy areas: green building and energy; land use and transportation; water conservation and wastewater; waste reduction, reuse, and recycling; and land conservation and tree planting. Many of the local actions will also be implemented through General Plan policies or other County ordinances. These actions undertaken as part of the CCAP will result in important community co-benefits, including improved air quality, energy savings, and increased mobility, as well as enhancing the resiliency of the community in the face of changing climate conditions. Overall, the goal of the CCAP, which will be a component of the Los Angeles County General Plan, will be to reduce GHG emissions from community activities in the unincorporated areas of Los Angeles County in a manner that is consistent with statewide goals outlined under AB 32 (County of Los Angeles, 2014b). The Final Draft CCAP is anticipated to be adopted with the County's General Plan update.

City General Plans

The numerous cities encompassed by the Enhanced Watershed Management Program (EWMP) area all have their own respective city General Plans, some of which may contain policies that address GHG emissions and climate change. As implementation of the individual structural Best Management Practice (BMP) projects proceed, specific policies and objectives pertaining to GHG emissions and/or climate change from applicable city General Plans will be identified and evaluated on a project-by-project basis during subsequent CEQA environmental processes.

3.6.3 Impact Assessment

Thresholds of Significance

Based on Appendix G of the CEQA Guidelines, a project would have a significant effect on GHG emissions if it would:

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.
- Conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.

As noted, the increased concentration of GHGs in the atmosphere has been linked to global warming, which can lead to climate change. Construction of the structural BMPs would incrementally contribute to GHG emissions along with past, present and future activities. As such, impacts of GHG emissions are analyzed here on a cumulative basis.

Currently, LACFCD has not adopted any thresholds for GHG emissions. Additionally, while SCAQMD has issued proposed standards and guidelines, there is no adopted state or local standard for determining the cumulative significance of the proposed program's GHG emissions on global climate change. In December 2008, SCAQMD adopted a 10,000 metric tons of CO_2 equivalents ($MTCO_2e$)/year for industrial facilities, but only with respect to projects where SCAQMD is the lead agency. Additionally, SCAQMD has proposed, but not adopted, a 3,000 MT/year CO_2e threshold for mixed use developments, a 3,500 MT/year CO_2e threshold for residential developments, and a 1,400 MT/year CO_2e threshold for commercial developments. As an alternative to the aforementioned proposed thresholds for residential, commercial, and mixed-use developments, SCAQMD has also recommended the use of a single numerical threshold of 3,000 $MTCO_2e$/year for all non-industrial projects. These draft threshold options are being evaluated through the GHG Thresholds Working Group and have not been adopted as of this writing (SCAQMD, 2010).

For the purposes of this analysis, because the BMPs (structural and non-structural) associated with the proposed program are not residential, commercial, mixed-use, or industrial projects, the most appropriate threshold that would apply to the proposed program would be, although not formally adopted, the 3,000 $MTCO_2e$/year criteria recommended by SCAQMD.

Program Impact Discussion

Program-Generated GHG Emissions

Impact 3.6-1: The proposed program could generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.

Structural (Regional, Centralized, and Distributed) BMPs

The proposed program would primarily generate GHG emissions during construction of the proposed structural BMP projects in the EWMP areas. The amount of program-related construction that would occur on an annual basis cannot be determined with any certainty at this time. As such, it is expected that the construction activities for the structural BMPs in the EWMP areas would occur intermittently throughout the course of the program implementation period. Construction-related GHG emissions associated with each structural BMP development would be short-term in nature and limited to the period of time when construction activity is taking place for that particular development. Applying the same approach that was used for the program's air quality analysis in Section 3.2, *Air Quality*, of this PEIR, the maximum annual construction-related GHG emissions for the three structural BMP project types were estimated using the California Emissions Estimator Model (CalEEMod) based on general information provided for the structural BMP projects and CalEEMod default settings along with reasonable assumptions based on other similar types of projects (refer to Tables 3.2-4, 3.2-5, and 3.2-6 in Section 3.2, *Air Quality,* of this PEIR, for the modeling parameters used in CalEEMod for the representative distributed, centralized, and regional structural BMPs, respectively). **Tables 3.6-2**, **3.6-3** and **3.6-4** summarize the modeled worst-case annual GHG emissions that are estimated to occur for a representative distributed, centralized, and regional structural BMP project, respectively.

TABLE 3.6-2
ESTIMATED CONSTRUCTION-RELATED GREENHOUSE GAS EMISSIONS – PROPOSED DISTRIBUTED BMP PROJECT

Emission Source	Proposed Program Emissions CO_2e (MT/yr)
Construction	
Total	53.52
Construction (Amortized over 30 years)	1.78

NOTES: CO_2e= carbon dioxide equivalent; MT/yr = metric tons per year; see Appendix C for CalEEMod model outputs.

SOURCE: Modeling performed by ESA, 2013.

TABLE 3.6-3
ESTIMATED CONSTRUCTION-RELATED GREENHOUSE GAS EMISSIONS – PROPOSED CENTRALIZED BMP PROJECT

Emission Source	Proposed Program Emissions CO_2e (MT/yr)
Construction	
Total	335.33
Construction (Amortized over 30 years)	11.18

CO_2e= carbon dioxide equivalent;
MT/yr = metric tons per year;
see Appendix C for CalEEMod model outputs.

SOURCE: Modeling performed by ESA, 2013.

TABLE 3.6-4
ESTIMATED CONSTRUCTION-RELATED GREENHOUSE GAS EMISSIONS – PROPOSED REGIONAL BMP PROJECT

Emission Source	Proposed Program Emissions CO_2e (MT/yr)
Construction	
Total	2,227.89
Construction (Amortized over 30 years)	74.26

NOTES: CO_2e= carbon dioxide equivalent; MT/yr = metric tons per year; see Appendix C for CalEEMod model outputs.

SOURCE: Modeling performed by ESA, 2013.

As shown in Tables 3.6-2, 3.6-3, and 3.6-4, the total construction-related GHG emissions resulting from representative distributed, centralized, and regional structural BMP projects would be 53.52 $MTCO_2e$/year, 335.33 $MTCO_2e$/year, and 2,227.89 $MTCO_2e$/year, respectively. For construction GHG emissions, SCAQMD recommends that the total construction emissions for a project be amortized over 30 years and added to its operational emission estimates (SCAQMD, 2008). Based on the emissions presented in the tables above, when the highest annual GHG emissions for a representative regional structural BMP project (2,227.89 $MTCO_2e$/year) is amortized over 30 years, the resulting annual emissions would be 74.26 $MTCO_2$/year. Because this annual emissions amount only represents approximately 2.5 percent of the SCAQMD's recommended threshold of 3,000 $MTCO_2e$/year for non-industrial projects, the construction-related GHG emissions generated would be relatively minimal.

Additionally, although the number of pumps that may be installed for some of the centralized and regional structural BMPs is unknown at this juncture, it is not anticipated that the annual GHG emissions contribution from the operation of these pumps would, when added to the annual construction-related emissions at these applicable structural BMP sites, result in total GHG emissions that exceed 3,000 $MTCO_2e$/year at an individual BMP site. Furthermore, because the structural BMPs introduced into the EWMP areas under the program are not land use projects that would generate vehicle trips, GHG emissions would not be generated by motor vehicles traveling to and from the various structural BMP sites on a daily basis. As it is anticipated that only periodic worker trips to the structural BMP sites throughout the year would be required for inspection and maintenance activities, and the mobile GHG emissions generated by these worker trips would be negligible. Thus, because the total GHG emissions generated by the largest structural BMP projects (i.e., regional structural BMPs) under a worst-case scenario would not exceed the 3,000 $MTCO_2e$/year benchmark, impacts associated with GHG emissions generated by the structural BMPs in the EWMP areas under the proposed program would be less than significant.

Mitigation Measures: None required

Significance Determination: Less than significant

Non-Structural (Institutional) BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the construction of new facilities. Consequently, there would be no impacts related to program-generated GHG emissions.

Mitigation Measures: None required

Significance Determination: No impact

Consistency with GHG Emissions Reduction Plans or Policies

Impact 3.6-2: The proposed program could conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.

As discussed in the impact analysis, the GHG emissions generated by each of the structural BMPs associated with the proposed program would not exceed the SCAQMD's recommended threshold of 3,000 $MTCO_2e$ /year for non-industrial projects. The primary source of GHG emissions generated by the majority of the structural BMPs would occur only during construction, which would be temporary in nature. Additionally, as the structural BMPs are not land use projects, GHG emissions associated with mobile sources would only occur from periodic vehicle trips by workers to the structural BMP sites for inspection and maintenance purposes, which would not generate substantial emissions. The annual GHG emissions associated with the operation of pumps at some of the centralized and regional structural BMP sites would also be minimal relative to the GHG emissions generated during construction of these structural BMPs. Consequently, the implementation of these structural BMPs in the EWMP areas under the program would not generate substantial amounts of GHG emissions that would hinder the State's ability to achieve AB 32's goal of achieving 1990 levels of GHG emissions by 2020.

Consistency with CARB Scoping Plan

Out of the Recommended Actions contained in CARB's Scoping Plan (see Table 3.6-1), the actions that are most applicable to the proposed program would be Action W-4 (Reuse Urban Runoff), which aims to reduce urban runoff by capturing and treating the runoff. The program's BMPs would be implemented for this purpose, reducing and treating urban runoff throughout the County of Los Angeles to comply with the MS4 Permit. Implementation of the structural BMPs in the EWMP areas would serve as GHG emission reduction measures that are consistent with this recommended action from the Scoping Plan. Therefore, the program would not conflict with the CARB scoping plan, and this impact would be less than significant.

Consistency with County of Los Angeles Community Climate Action Plan

As discussed previously, the County released its Final Draft CCAP in July 2014 that serves to mitigate and avoid GHG emissions associated with community activities in unincorporated Los Angeles County. The CCAP establishes a GHG reduction target that is consistent with AB 32. As part of the CCAP, 26 local actions have been identified to reduce GHG emissions in the unincorporated areas of the County. In particular, Measure WAW-2 (Recycled Water Use, Water

Supply Improvement Programs, and Stormwater Runoff) from the CCAP specifically aims to promote recycled water use and policies to better manage stormwater to protect local groundwater supplies. A part of the goal for this measure is to manage stormwater and protect local groundwater supplies. A specific implementation step associated with this measure identified in the CCAP is to expand the Low Impact Development (LID) stormwater catchment to more facilities where feasible in the County. Thus, the structural BMPs that would be implemented as part of the proposed program would be consistent with this GHG reduction measure of the CCAP. Therefore, the program would not conflict with the County's CCAP, and this impact would be less than significant.

Mitigation Measures: None required

Significance Determination: Less than significant

Non-Structural (Institutional) BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the construction of new facilities. Consequently, there would be no conflicts with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.

Mitigation Measures: None required

Significance Determination: No impact

Cumulative Impact Discussion

As discussed previously, CEQA considers a project's impacts related to GHG emissions inherently cumulative. Therefore, the discussion presented above comprises the cumulative impact analysis related to global warming and climate change. As concluded, because the GHG emissions generated by the individual structural BMP projects in the EWMP areas would not exceed SCAQMD's recommended threshold of 3,000 MT CO_2e /year for non-industrial projects, the BMPs implemented under the proposed program would not result in substantial GHG emissions into the environment. Additionally, because the proposed BMPs under the program would serve to capture, treat, and manage stormwater runoff in the EWMP areas, the program would also be consistent with the applicable actions and measures of the CARB's Scoping Plan and County's CCAP, respectively. Overall, the proposed program would result in less than significant GHG and climate change cumulative impacts.

Mitigation Measures: None required

Significance Determination: Less than significant

3.6.3 Summary of Impact Assessment

Table 3.6-5 shows a summary of the structural BMPs requiring mitigation.

TABLE 3.6-5
SUMMARY OF GREENHOUSE GAS IMPACTS REQUIRING MITIGATION MEASURES

	Thresholds of Significance		
Structural BMPs	**GHG Emissions**	**Consistency with Plans**	**Cumulative Impacts**
Applicable Mitigation Measures:	**None Required**	**None Required**	**None Required**
Regional BMPs			
Regional Detention and Infiltration	No	No	No
Regional Capture, Detention and Use	No	No	No
Centralized BMP			
Bioinfiltration	No	No	No
Constructed Wetlands	No	No	No
Treatment/Low Flow Diversions	No	No	No
Creek, River, Estuary Restoration	No	No	No
Distributed BMPs			
Site Scale Detention	No	No	No
LID – Infiltration/Filtration BMPs – Porous Pavement, Green Streets, Bioswale/Filter Strips, downspout disconnects	No	No	No
LID – Green Infrastructure – Capture and Use – Cisterns, Rain Barrels, Green roofs, Planter Boxes	No	No	No
Flow through Treatment BMPs	No	No	No
Source Control Treatment BMPs (catch basin inserts/screens, hydrodynamic separators, gross solids removal devices)	No	No	No
Low Flow Diversions	No	No	No

NOTE: These conclusions are based on typical BMP size and location

3.7 Hazards and Hazardous Materials

Potential hazards addressed in this section include uses of hazardous materials during the construction and operation of the proposed program, hazardous materials in soil and groundwater from existing contaminated sites, and hazards related to schools, airports, emergency preparedness, and wildfires. Mitigation measures to reduce impacts to a less-than-significant level are identified, as needed.

3.7.1 Environmental Setting

Hazardous Materials and Hazardous Waste

A hazardous material is defined as any material that, because of quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment (Health and Safety Code §25501(o)). The term "hazardous materials" refers to both hazardous substances and hazardous wastes. Under federal and state laws, any material, including wastes, may be considered hazardous if it is specifically listed by statute as such or if it is toxic (causes adverse human health effects), ignitable (has the ability to burn), corrosive (causes severe burns or damage to materials), or reactive (causes explosions or generates toxic gases).

Hazardous wastes are hazardous substances that no longer have practical use, such as materials that have been spent, discarded, discharged, spilled, contaminated, or are being stored until they can be disposed of properly (22 California Code of Regulations [CCR] Section 66261.10). Soil that is excavated from a site containing hazardous materials is a hazardous waste if it exceeds specific 22 CCR criteria. While hazardous substances are regulated by multiple agencies, as described in the Regulatory Framework below, cleanup requirements of hazardous wastes are determined on a case-by-case basis according to the agency with lead jurisdiction over the project.

Preschools, schools, daycare centers, nursing homes, and hospitals are considered sensitive receptors for hazardous material issues because children and the elderly are more susceptible than adults to the effects of many hazardous materials. There are numerous sensitive receptors located throughout the proposed EWMPs or "program" service area.

Urban Runoff

Within the EWMP area, much of the environment has been developed, resulting in large areas of impervious surfaces that include rooftops, highways and roads, and other hardscapes. Stormwater and urban runoff from these impervious surfaces tends to pick up trash, sediment, and other pollutants including (US EPA, 2003):

- Sediment
- Fuels, oil, grease, and chemicals from motor vehicles and mechanized equipment
- Fertilizers, pesticides and herbicides from landscaping and gardens

- Viruses, bacteria, and nutrients from pet waste and failing septic systems
- Road salts
- Heavy metals from roof shingles, motor vehicles, and other sources

Impacted stormwater and urban runoff that is then directed to a structural Best Management Practices (BMPs) to retain and filter or infiltrate the runoff may accumulate concentrations of chemicals in the upper soils and/or filter media such as petroleum hydrocarbons (fuels, oils, and greases), metals (copper, lead and zinc), polycyclic aromatic hydrocarbons (created as combustion byproducts of gasoline and other fossil fuels), bacteria, nutrients (nitrogen, phosphorus, nitrate, and organic nitrogen), and pesticides.

Hazardous Material Sites

Hazardous materials are currently stored and used at numerous facilities and locations within the EWMP area for a variety of purposes. Some facilities within the area that use or store hazardous materials or hazardous wastes may have experienced unauthorized releases into soil or groundwater, and these releases may or may not have been reported to the appropriate agency or agencies.

In California, regulatory databases listing hazardous materials sites provided by numerous federal, state, and local agencies are consolidated in the "Cortese List" pursuant to Government Code Section 65962.5. The Cortese List is located on the website of the California Environmental Protection Agency (Cal EPA; http://www.calepa.ca.gov/sitecleanup/corteselist/) and is a compilation of the following lists:

- List of Hazardous Waste and Substances sites from Department of Toxic Substances Control (DTSC) EnviroStor database
- List of Leaking Underground Storage Tank Sites by County and Fiscal Year from the State Water Resources Control Board (SWRCB) GeoTracker database
- List of solid waste disposal sites identified by SWRCB with waste constituents above hazardous waste levels outside the waste management unit
- List of "active" Cease and Desist Orders and Cleanup and Abatement Orders from the SWRCB[1]
- List of hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the Health and Safety Code, identified by DTSC and listed on their EnviroStor database

The five databases cited above identify sites with suspected and confirmed releases of hazardous materials to the subsurface soil and/or groundwater. The SWRCB GeoTracker database includes

[1] This list contains many Cease and Desist Orders and Cleanup and Abatement Orders that do NOT concern the discharge of wastes that are hazardous materials. Many of the listed orders concern, for example, discharges of domestic sewage, food processing wastes, or sediment that do not contain hazardous materials, but the Water Boards' database does not distinguish between these types of orders. See more at: http://www.calepa.ca.gov/sitecleanup/corteselist/default.htm#sthash.oSjMvSw7.dpuf

leaking underground storage tanks (LUSTs), permitted underground storage tanks (USTs), and Spills, Leaks, Investigations, and Cleanup Database (SLIC) sites. The DTSC EnviroStor database includes federal and state response sites; voluntary, school, and military cleanups and corrective actions; and permitted sites. The reporting and statuses of these sites change as identification, monitoring, and cleanup of hazardous materials sites progress. Typically, a listed site is considered to no longer be of concern once it has been demonstrated that existing site uses combined with the levels of identified contamination present no significant risk to human health or the environment.

The Los Angeles County Fire Department (LACFD) is the designated Los Angeles County Certified Unified Program Agency (LAC CUPA), described further in the Regulatory Framework. The LAC CUPA is responsible for the regulatory oversight of aboveground storage tanks (ASTs) and USTs, county hazardous materials and waste programs, and the California Accidental Release Prevention (CalARP) Program. The LAC CUPA would be the primary source of information regarding hazardous materials use and hazardous waste disposal for facilities that are at or near proposed program within the EWMP area.

The DTSC delegated corrective action oversight authority to LAC CUPA under Chapter 6.5 of Division 20 of California Health and Safety Code to implement corrective action under consent agreement at LAC CUPA facilities within its jurisdiction.

Schools

Schools are considered sensitive receptors for hazardous materials because children are more susceptible than adults to the effects of hazardous materials. There are over a thousand public and private schools, colleges, and universities within Los Angeles County. The proximity of a proposed project to day care centers would also need to be considered.

Airports

Aviation safety hazards can result if projects are sited on or in the vicinity of airports. Specifically, the land use compatibility plans at airports have land use restrictions, such as height, distracting light or glare, and attractants to wildlife, such as birds. The Federal Aviation Administration (FAA) Advisory Circular No: 150/5200-33B provides guidance on development projects affecting aircraft movement near hazardous wildlife attractants (FAA, 2007). The following list indicates the minimum separation criteria for specific aircraft types:

- Airports Serving Piston-Powered Aircraft: Airports that do not sell Jet-A fuel normally serve piston-powered aircraft (propeller-powered). General aviation airports typically serve piston-powered aircraft. However, there are exceptions. For example, the Santa Monica Airport is a general aviation airport but does serve turbine-powered aircraft. The FAA recommends a separation distance of 5,000 feet at these airports for hazardous wildlife attractants. This distance is to be maintained between an airport's air operations area (AOA) and the hazardous wildlife attractant.
- Airports Serving Turbine-Powered Aircraft: Airports selling Jet-A fuel normally serve turbine-powered aircraft (jet- or turbo-prop-powered). The FAA recommends a

separation distance of 10,000 feet at these airports for hazardous wildlife attractants. This distance is to be maintained between an airport's AOA and the hazardous wildlife attractant.

- Protection of Approach, Departure, and Circling Airspace: For all airports, the FAA recommends a distance of 5 statute miles between the farthest edges of the airport's AOA and the hazardous wildlife attractant if the attractant could cause hazardous wildlife movement into or across the approach or departure airspace.

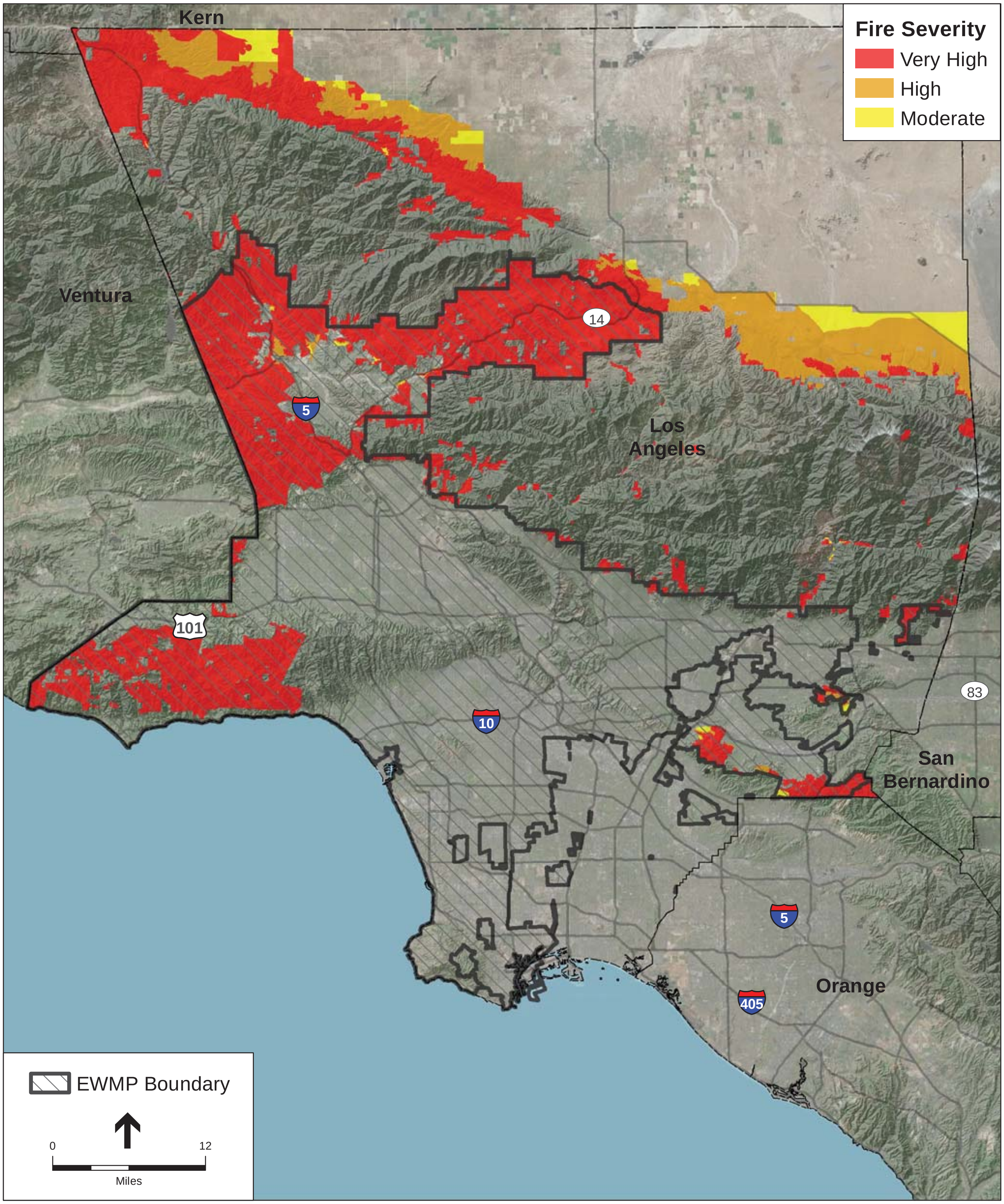
Specific information of the types of aircraft using a particular airport, airport land use compatibility plans, and land use maps for airports within Los Angeles County is available at the Los Angeles County Airport Land Use Commission website at http://planning.lacounty.gov/aluc/airports.

Emergency Preparedness

Los Angeles County Office of Emergency Management (LAC OEM) is the designated lead agency for emergency response and coordinates the development, maintenance, and implementation of the Los Angeles County Operational Area Emergency Response Plan (http://lacoa.org/oaerp.htm). This Plan serves as a guide for the County's response to emergencies/disasters in the County.

Wildfires

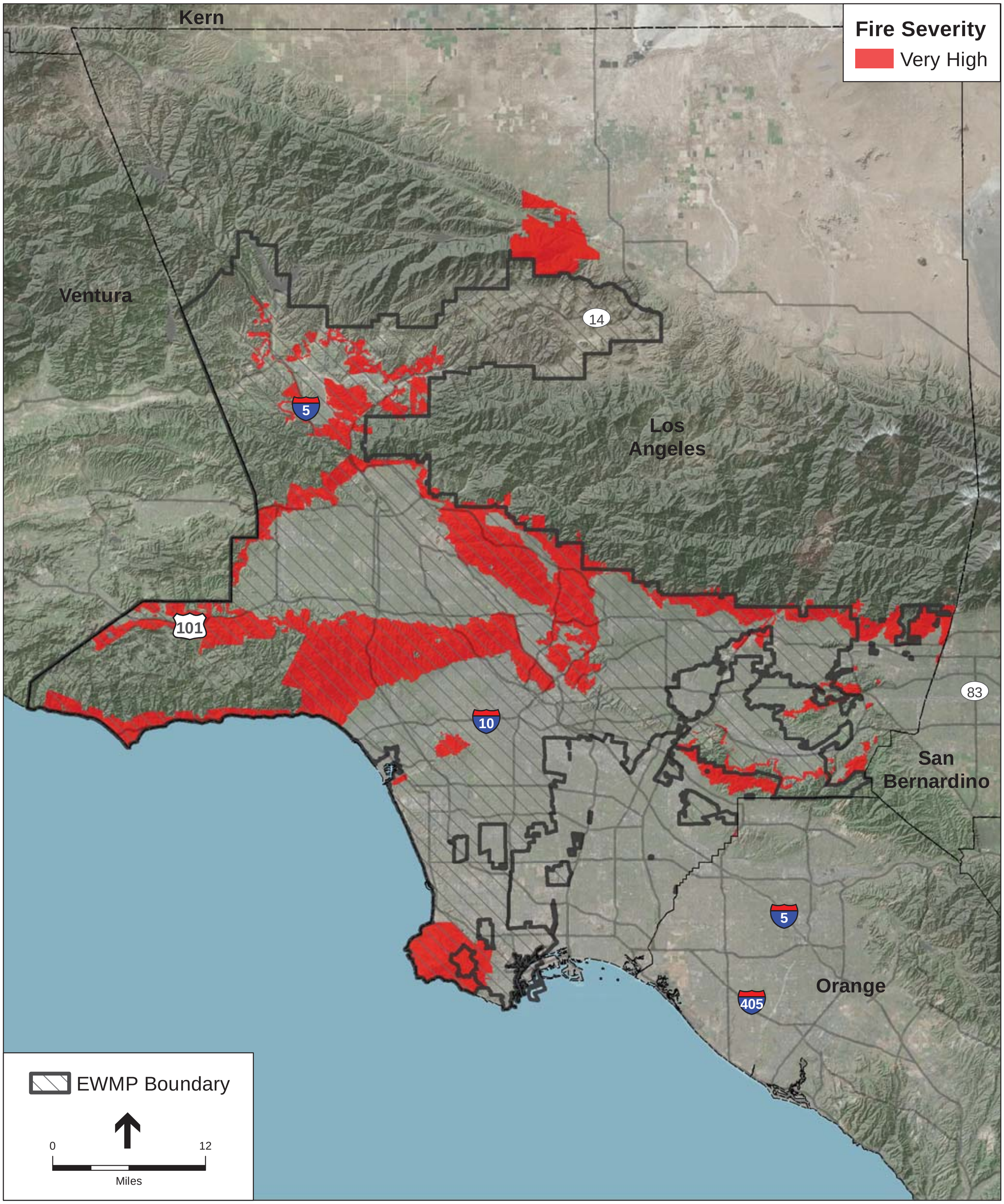
Both the State of California and the County of Los Angeles Fire Department map the Fire Hazard Severity Zones (FHSZs) within Los Angeles County. The FHSZs are based on an evaluation of fire history, existing and potential fuel, flame length, blowing embers, terrain, weather, and the likelihood of buildings igniting (California Department of Forestry and Fire Protection, 2012). **Figure 3.7-1** presents the countywide FHSZ map for the state responsibility areas. **Figure 3.7-2** presents the countywide FHSZ map for the county responsibility areas. The very high FHSZ areas tend to be outside of the urban developed areas in areas with flammable vegetation, such as brush.



SOURCE: ESRI, Cal Fire 2007

LA County PEIR EWMP . 140474

Figure 3.7-1
Los Angeles County Fire Hazard Severity Zone Map for State Responsibility Areas



SOURCE: ESRI, Cal Fire 2007

LA County PEIR EWMP . 140474

Figure 3.7-2

Los Angeles County Fire Hazard Severity Zone Map for County Responsibility Areas

3.7.2 Regulatory Framework

Hazards and hazardous materials are subject to numerous federal, state, and local laws and regulations intended to protect health, safety, and the environment. The U.S. Environmental Protection Agency (USEPA), the California DTSC, RWQCB, and the County of Los Angeles are the primary agencies enforcing these regulations. Local regulatory agencies enforce many federal and state regulations through the CUPA program. In 1997, LACFD Health Hazardous Materials Division became the LAC CUPA for the Hazardous Waste Generator Program, the Hazardous Materials Release Response Plans and Inventory Program, the CalARP Program, and the Aboveground Storage Tank Program and the Underground Storage Tank Program in Los Angeles County.

Federal

Primary federal agencies with responsibility for hazardous materials management include the USEPA, Department of Labor (Federal Occupational Health and Safety Administration [OSHA]), and Department of Transportation (DOT). Major federal laws and issue areas include the following statutes (and regulations promulgated there under):

- Resources Conservation and Recovery Act (RCRA) 42 USC 6901 et seq. – RCRA is the principal law governing the management and disposal of hazardous materials. RCRA is considered a “cradle to grave” statute for hazardous wastes in that it addresses all aspects of hazardous materials from creation to disposal. Federal regulations for USTs derive from RCRA. RCRA applies to this program because RCRA is used to define hazardous materials.
- Emergency Planning and Community Right-to-Know Act (EPCRA from SARA Title III) – EPCRA improved community access to information regarding chemical hazards and facilitated the development of business chemical inventories and emergency response plans. EPCRA also established reporting obligations for facilities that store or manage specified chemicals. EPCRA applies to this program because the contractors that construct the structural BMPs will be required to prepare and implement written emergency response plans to properly manage hazardous materials during construction and respond to accidental spills.
- DOT Hazardous Materials Transportation Act (49 USC 5101) – DOT, in conjunction with the USEPA, is responsible for enforcement and implementation of federal laws and regulations pertaining to safe storage and transportation of hazardous materials. The Code of Federal Regulations (CFR) 49, 171–180, regulates the transportation of hazardous materials, types of material defined as hazardous, and the marking of vehicles transporting hazardous materials. This Act applies to this program because contractors will be required to comply with its storage and transportation requirements that would reduce the possibility of spills.
- The Federal Motor Carrier Safety Administration (49 CFR Part 382) – The Federal Motor Carrier Safety Administration, a part of the DOT, issues regulations concerning highway routing of hazardous materials, the hazardous materials endorsement for a commercial

driver's license, highway hazardous material safety permits, and financial responsibility requirements for motor carriers of hazardous materials. This Act applies to this program because contractors will be required to comply with its storage and transportation requirements that would reduce the possibility of spills.

- Occupational Safety and Health Administration (OSHA; 29 USC 15) – OSHA is the federal agency responsible for ensuring worker safety. These regulations provide standards for safe workplaces and work practices, including those relating to hazardous materials handling. OSHA applies to this program because contractors will be required to comply with its hazardous materials management and handling requirements that would reduce the possibility of spills.
- The FAA Advisory Circular No: 150/5200-33B – The FAA Advisory Circular provides guidance on development projects affecting aircraft movement near hazardous wildlife attractants (FAA, 2007). This Circular applies to this program because BMPs will be required to comply with its restrictions if at or near airports.

State

The primary State agencies with jurisdiction over hazardous chemical materials management are the DTSC and the RWQCB. Other State agencies involved in hazardous materials management are the Department of Industrial Relations (State OSHA implementation), State Office of Emergency Services (OES)—CalARP implementation, California Air Resources Board (CARB), California Department of Transportation (Caltrans), State Office of Environmental Health Hazard Assessment (OEHHA—Proposition 65 implementation) and California Integrated Waste Management Board (CIWMB). Hazardous materials management laws in California include the following statutes and regulations promulgated there under.

- Hazardous Waste Control Act (HWCA; California Health and Safety Code, Section 25100 et seq.) – The HWCA is the state equivalent of RCRA and regulates the generation, treatment, storage, and disposal of hazardous waste. This act implements the RCRA "cradle-to-grave" waste management system in California but is more stringent in its regulation of non-RCRA wastes, spent lubricating oil, small-quantity generators, transportation and permitting requirements, as well as in its penalties for violations. HWCA applies to this program because contractors will be required to comply with its hazardous waste requirements that would reduce the possibility of spills.
- California Hazardous Materials Release Response Plans and Inventory Law of 1985 (Business Plan Act) – The Business Plan Act requires preparation of hazardous materials business plans and disclosure of hazardous materials inventories, including an inventory of hazardous materials handled, plans showing where hazardous materials are stored, an emergency response plan, and provisions for employee training in safety and emergency response procedures (California Health and Safety Code, Division 20, Chapter 6.95, Article 1). Statewide, DTSC has primary regulatory responsibility for management of hazardous materials, with delegation of authority to local jurisdictions that enter into agreements with the state. Local agencies are responsible for administering these regulations.

Several state agencies regulate the transportation and use of hazardous materials to minimize potential risks to public health and safety, including CalEPA and the California Emergency Management Agency. The California Highway Patrol and Caltrans enforce regulations specifically related to the transport of hazardous materials. Together, these agencies determine container types used and license hazardous waste haulers for hazardous waste transportation on public roadways.

The Business Plan Act applies to this program because contractors will be required to comply with its handling, storage, and transportation requirements that would reduce the possibility of spills, and to prepare an emergency response plan to respond to accidental spills.

- California Division of Occupational Safety and Health (Cal/OSHA) – Cal/OSHA is responsible for developing and enforcing workplace safety standards and assuring worker safety in the handling and use of hazardous materials. Among other requirements, Cal/OSHA requires many entities to prepare injury and illness prevention plans and chemical hygiene plans, and provides specific regulations to limit exposure of construction workers to lead. OSHA applies to this program because contractors will be required to comply with its handling and use requirements that would reduce the possibility of spills, and to prepare an emergency response plan to respond to accidental spills.
- California Vehicle Code Section 38366 – The California Vehicle Code, Section 38366, requires spark-arresting equipment on vehicles that travel off-road. This code applies to the program because the vehicles that construct structural BMPs in off-road areas will be required to have spark-arresting equipment to reduce the risk of wildfires.

Local

Certified Unified Program Agency

In 1993, Senate Bill (SB) 1082 was passed by the State Legislature to streamline the permitting process for those businesses that use, store, or manufacture hazardous materials. The passage of SB 1082 provided for the designation of a CUPA that would be responsible for the permitting process and collection of fees. The CUPA would be responsible for implementing at the local level the Unified Program, which serves to consolidate, coordinate, and make consistent the administrative requirements, permits, inspections, and enforcement activities for the following environmental and emergency management programs:

- Hazardous Materials Release Response Plans and Inventories (Business Plans)
- California Accidental Release Prevention (CalARP) Program
- Underground Storage Tank Program
- Aboveground Petroleum Storage Act Requirements for Spill Prevention, Control and Countermeasure (SPCC) Plans
- Hazardous Waste Generator and On-Site Hazardous Waste Treatment (tiered permitting) Programs

- California Uniform Fire Code: Hazardous Material Management Plans and Hazardous Material Inventory Statements

The CUPA in Los Angeles County is the LACoFD. As such, the Department is given the primary regulatory responsibility for implementing and managing the above-listed programs.

Los Angeles County Operational Area Emergency Response Plan

In 1998, the County of Los Angeles adopted the Los Angeles County Operational Area Emergency Response Plan, which provides emergency planning for the Los Angeles County Operational Area, an area that includes the project area. The purpose of this plan is to increase cooperation and coordination between relevant government agencies and jurisdictions in order to increase efficiency and minimize losses in the event of an emergency or disaster within the Operational Area (County of Los Angeles 1998).

Los Angeles County Fire Department Wildfire Action Plan

In 2009, the LACFD adopted a Wildfire Action Plan, which contains guidelines that recommend fire prevention measures such as creating defensible space and completing fire-resistive retrofits in homes (LACFD 2009). In addition, this plan provides residents with information regarding emergency preparedness and planning in the event of a wildfire.

Los Angeles County General Plan

A General Plan is a basic planning document that, alongside the zoning code, governs development in a city or county. The State requires each city and county to adopt a General Plan with seven mandatory elements: land use, open space, circulation, housing, noise, conservation, and safety, along with any number of optional elements as appropriate. The proposed EWMPs would be subject to local plans and policies of the areas in which they are located.

The County of Los Angeles is currently updating their General Plan from the element versions adopted in the 1980s and 1990s; the new comprehensive plan is expected to be complete by late 2014. Below are the relevant goals and policies from both the existing General Plan (County of Los Angeles, 1980, 1990) and the Draft General Plan 2035 (County of Los Angeles, 2014a) which relate to the EWMP.

Existing General Plan – Safety Element, Adopted 1990

Goal: Reduce threats to public safety and protect property from wildland and urban fire hazards.

Policy 16: Continue to coordinate firefighting efforts with State, Federal and local agencies in fire hazard areas; and review and update mutual and automatic aid agreements between the County and other fire protection agencies.

Policy 19: Promote improved watershed management practices to reduce the risk of damaging runoff and debris movement into urban areas.

Goal: Reduce threats to public safety and protect property from hazardous materials.

Policy 20: Review proposed development projects involving the use or storage of hazardous materials, and disapprove proposals which cannot properly mitigate unacceptable threats to public health and safety to the satisfaction of responsible agencies.

Policy 21: Promote the safe transportation of hazardous materials.

Policy 22: Encourage businesses and organizations which store and us hazardous materials to improve management and transportation of such materials.

Policy 24: Encourage improved, timely communication between businesses and emergency response agencies regarding hazardous materials/waste incidents.

Draft General Plan, 2014 – Conservation and Natural Resources Element

Goal – C/NR-5: Protected and useable local surface water resources.

Policy C/NR 5.6: Minimize point and non-point source water pollution.

Goal – C/NR-6: Protected and usable local groundwater resources.

Policy C/NR 6.5: Prevent stormwater infiltration where inappropriate and unsafe, such as in areas with high seasonal groundwater, on hazardous slopes, within 100 feet of drinking water wells, and in contaminated soils.

County of Los Angeles Low Impact Development Manual

The County of Los Angeles (County) prepared the 2014 Low Impact Development Standards Manual (LID Standards) to comply with the requirements of the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit for stormwater and non-stormwater discharges from the MS4 within the coastal watersheds of Los Angeles County (CAS004001, Order No. R4-2012-0175), referred to as the 2012 MS4 Permit (County of Los Angeles, 2014b). The LID Standards provide guidance for the implementation of stormwater quality control measures in new development and redevelopment projects in unincorporated areas of the County with the intention of improving water quality and mitigating potential water quality impacts from stormwater and non-stormwater discharges.

The November 2013 LID Ordinance became effective December 5, 2013, and requires that all Designated, Non-Designated, street and road construction, and single family hillside home projects comply with Los Angeles County Code Title 12, Chapter 84. The LID Standards were prepared to complement and be consistent with the November 2013 LID Ordinance requirements.

The LID Standards address the following objectives and goals:

- Lessen the adverse impacts of stormwater runoff from development and urban runoff on natural drainage systems, receiving waters, and other water bodies;

- Minimize pollutant loadings from impervious surfaces by requiring development projects to incorporate properly-designed, technically-appropriate BMPs and other LID strategies; and
- Minimize erosion and other hydrologic impacts on natural drainage systems by requiring development projects to incorporate properly-designed, technically appropriate hydromodification control development principles and technologies.

City of Los Angeles Low Impact Development Manual

In November 2011, the City of Los Angeles adopted the Stormwater Low Impact Development (LID) Ordinance #181899) with the stated purpose of:

- Requiring the use of LID Standards and practices in future developments and redevelopments to encourage the beneficial use of rainwater and urban runoff
- Reducing stormwater/urban runoff while improving water quality
- Promoting rainwater harvesting
- Reducing off-site runoff and providing increased groundwater recharge
- Reducing erosion and hydrologic impacts downstream
- Enhancing the recreational and aesthetic values in our communities

The City institutionalized the use of LID techniques for development and redevelopment projects. Subsequent to the adoption of the Stormwater LID Ordinance, the City prepared the *Development Best Management Practices Handbook, Low Impact Development Manual,* dated June 2011, to describes the required BMPs (City of Los Angeles, 2011).

Other Cities LID

Various other cities within the County also have LID standards or guidance. The goals, objectives, and content of the LID document are similar to that of the County and City of Los Angeles, and are not referenced here.

City General Plans

The numerous cities encompassed by the EWMP area all have their own respective city General Plans, some of which may contain policies that address hazards and hazardous materials. As implementation of the individual structural BMP projects proceed, specific policies and objectives pertaining to hazards and hazardous materials from applicable city General Plans will be identified and evaluated on a project-by-project basis during subsequent CEQA environmental processes.

3.7.3 Impact Analysis

The proposed program's potential impacts were assessed using the CEQA Guidelines Appendix G Checklist. The following sections discuss the key issue areas identified in the CEQA Guidelines with respect to the program's potential hazard and hazardous material impacts.

Thresholds of Significance

Implementation of the proposed program may result in a potentially significant impact if any one of the following conditions would occur:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.
- Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment.
- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area.
- For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area.
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.
- Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

Project Impact Discussion

Routine Hazardous Materials Transport, Storage, Use, and Disposal and Accidental Release of Hazardous Materials Related to Construction and Maintenance

Impact 3.7-1: The proposed program would create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or the accidental release during construction and maintenance activities.

Structural (Regional, Centralized, and Distributed) BMPs

Construction activities required for implementation of proposed program would potentially involve excavation, grading, drilling, trenching, and other ground-disturbing activities. Once constructed, the structural BMPs would require periodic maintenance activities such as channel clearing of sediment and vegetation maintenance that could include the use of chainsaws and weed- whackers that require fuel and oil. These anticipated construction and maintenance activities would likely require the transport, storage, use, and disposal of small amounts of hazardous materials, including fuels (e.g., gasoline, diesel), hydraulic fluids, oils and lubricants, paint, and other similarly related materials in varying quantities on each project site. The release of these materials could occur during routine transport, disposal, or use, and could potentially injure construction workers, contaminate soil, and/or affect habitats, surface water bodies, or groundwater. Impacts associated with release, although likely localized and short-term, could potentially create a significant hazard to the public or the environment.

The majority of BMPs are more likely to be smaller-scale, site- or parcel-specific distributed type BMPs that do not use chemicals for treatment. Distributed BMPs primarily use passive treatment techniques that capture stormwater and then reduce pollutant loads and stormwater volumes through containment, filtration, infiltration, and/or treatment techniques. Stormwater is directed to these BMPs and contained or stored to settle or filter out sediment and trash load (e.g., detention basins and ponds, debris booms and nets), and then allow the stormwater to infiltrate or filter through pervious surfaces that can be vegetated (e.g., bioswales, green streets, planter boxes, bioretention, bioswales, planter boxes, green streets).

The regional and centralized structural BMPs that include the construction of a smaller number of larger physical structures would use more equipment and materials, and could use larger volumes of potentially hazardous materials for longer periods of time. For example, low flow diversion structures may require chlorine treatment facilities rather than discharge to the sewer for treatment, in which case larger volumes of chlorine would be required to be stored on-site. However, the materials used would mostly be chemicals, fuels, oils, and lubricants, all of which are relatively common to store, transport, and handle. In the unlikely event of a spill, these petroleum products are relatively easy to clean up, treat, or biodegrade. Hazardous materials that are more difficult to treat, such as solvents and metals, would not be expected to be used or released in large quantities. Centralized structural BMPs that are treatment facilities may use treatment chemicals, such as chlorine depending on the treatment techniques (other options include ozone, ultraviolet, or electrocoagulation), and the structures may be painted. However, chlorination and dechlorination uses should consider proximity to residential areas for safety reasons, as well as access for chemical deliveries.

The implementing agency and construction contractor would be required to comply with all relevant and applicable federal, state, and local laws and regulations that pertain to the transport, storage, use, and disposal of hazardous materials and waste during construction of the proposed program. Because the implementing agency and its contractor would be required to comply with all relevant laws and regulations associated with the transport, storage, use, and disposal of hazardous materials and waste, the construction impacts would be less than significant.

Operation of proposed structural BMPs would generally require minimal to no transport, usage, or disposal of hazardous materials for activities such as maintaining detention basins, constructed wetlands, or infiltration galleries, which would require periodic transport and use of chemicals for purposes of operating equipment (e.g., weed-whackers), maintenance activities, and the transport of workers in vehicles. The implementing agency would be required to comply with all relevant and applicable federal, state, and local laws and regulations that pertain to the transport, storage, use, and disposal of hazardous materials and waste during operation of the proposed program.

Under the Unified Program, the CalARP Program requires facilities that use regulated substances to develop a Risk Management Plan (RMP). A RMP would be required for the proposed program that uses hazardous materials. The RMP would be kept on file with the LACFD, in addition to a Hazardous Materials Release Response Plan within a Hazardous Materials Business Plan (HMBP). Existing treatment plants that undergo expansion will require an updated RMP and HMBP to include new facilities and any associated hazardous material use, storage, or transport. These are public documents that reflect a facility's overall effort to manage and prevent risks associated with the storage, use, and/or processing of regulated substances.

The California Hazardous Materials Release Response Plans and Inventory Program (CCR Title 19, Division 2, Chapter 4) requires companies that store, use, and/or transport hazardous materials to prepare a HMBP that includes an inventory of hazardous substances and an Emergency Response Plan (ERP) to address emergencies such as accidental releases. For example, a contractor using fuels for chainsaws and weed-whackers to control vegetation at detention basins and infiltration galleries would be required to prepare and implement an HMBP and an ERP for their company activities. The ERP would include procedures for responding to accidental spills of fuels that might occur at any site they work at. The ERP would describe the cleanup procedures to be implemented in the event of an accidental release.

In addition, the transport of hazardous materials is regulated by Caltrans. Transporters of hazardous waste would be required to be certified by Caltrans. All hazardous materials would be tracked by Caltrans and delivery vehicles would be required to use roadways approved for transportation of hazardous materials and maintain the proper storage containers for hazardous materials.

Implementation of the RMP, HMBP, and ERP and compliance with existing regulations would reduce potential risks to the public and environment due to accidental release of hazardous materials to less than significant.

Mitigation Measures: None required

Significance Determination: Less than significant

Non-Structural (Institutional) BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the construction of new facilities. Consequently, there would be no new facilities that would require additional or new use of hazardous materials. While the non-structural BMPs would include a broad range of municipal practices such as street cleaning, landscape management, storm drain operation, and more, which does produce debris and trash for disposal, the materials collected are not considered hazardous waste or materials requiring hazardous waste disposal. Regular street sweeping is one of the most cost-effective non-structural BMPs used to remove sediment, metals, petroleum products, trash, and vegetation that accumulate on streets. Maintaining a regular street sweeping schedule reduces the buildup of trash on streets and prevents trash from entering catch basins and the storm drain system. The trash removed is disposed of in local landfills. Therefore, this program would have no impact relative to the routine use of hazardous materials.

Mitigation Measures: None required

Significance Determination: Less than significant

Accumulation of Potentially Hazardous Materials into BMPs

Impact 3.7-2: The proposed program could create a significant hazard to the public or the environment through the accumulation of potentially hazardous materials into BMPs.

Structural (Regional, Centralized, and Distributed) BMPs

The existing storm sewer systems convey stormwater and dry-weather flows to receiving waters that ultimately flow to the ocean. Operation of structural BMPs would not increase the potential for accidental releases of hazardous materials into the environment. Because of their function as water conveyance systems, the entire storm sewer system, as augmented by structural BMPs, would collect and retain sediment and chemicals from urban runoff, along with any accidental or illicit spills of hazardous materials. The introduction of hazardous materials into the storm sewer system could occur in large events as in a catastrophic spill, or could occur in small concentrations as in petroleum hydrocarbons and heavy metals picked up and carried by stormwater in urban runoff from the streets. Contaminants in the runoff water or as discrete concentrated spills could accumulate in the soils and vegetation of structural BMPs, as discussed below.

In the case of large spills that occur within the capture area of a BMP, regional BMPs would retain the spill and prevent any further contamination downstream since they would be designed to retain in-flow. Centralized BMPs, although generally designed to use flow-through or filter techniques, would still slow and retain much of the spill volume. Even distributed BMPs would slow and retain spills, although on a smaller scale. This retention would help to minimize impacts of large spills compared to existing conditions. Responding to major spills is the responsibility of local municipalities, usually led by the local fire department. Local jurisdictions prepare spill response plans that outline measures to contain and remediate spills of all kinds. The LAC OEM leads emergency response activities within Los Angeles County that would include responses to large hazardous spills. LAC OEM has prepared an Emergency Response Plan to coordinate response efforts. The responsibility for responding to and remediating spills would be similar to existing conditions.

All BMPs (regional, centralized, and distributed) would require cleanup following a spill event. Large spills could adversely affect the treatment systems including natural vegetation and filter matrices, including soil. Implementation of the BMPs would serve to add some protection against accidental or illicit spills compared with existing conditions. Cleanup of major spills would be coordinated through the LAC OEM in coordination with applicable regulations and regulatory agencies, specifically the RWQCB or the Department of Toxic Substance Control (DTSC).

In the case of small concentrations of contaminants either from small spills or the accumulation of contaminants from urban runoff, BMPs would collect and retain pollutants on site. Potential contaminants include typical urban runoff contaminants, such as fuels, oil and grease, pesticides, PCBs, PAHs, metals, and nutrients, as well as sediment that would clog filter media (e.g., soil) or reduce volume capacity of the receiving BMP. Over time, infiltration of stormwater runoff could increase contaminant loading in shallow soils and groundwater. Contaminants behave differently when filtered through native soils. Some contaminants (e.g., oil, grease, metals) adsorb onto surficial soils and remain within a few feet of the surface, while other more soluble contaminants (e.g., fuels, nitrate, and phosphate) may be entrained to deeper soils or migrate all the way to the groundwater. Over a long period of time, concentrations of these contaminants could increase resulting in contaminated soils and groundwater. Pretreatment of source water in areas with the potential for heavy contaminant loading would be implemented as a required design feature for regional and centralized BMPs to assist in reducing long-term loading. In addition, non-structural source control BMPs would help reduce contaminant loading over time. The LID Standards for the County of Los Angeles and the various cities participating in the EWMP provide protocols for designing regional and centralized BMPs that minimize the potential for contaminant loading. For example, the LID Manual requires a certain distance to groundwater to ensure that adequate soil filtration occurs prior to the percolating water reaching a drinking water aquifer.

Distributed BMPs, although on a smaller parcel or site scale, would also be designed to collect and treat stormwater to reduce the loading of the smaller amounts of contaminants transported by their relatively smaller receiving areas. This would reduce contaminant loading to receiving waters compared with existing conditions while capturing contaminants in filter media. The vegetation and microbial activity in soil would work to biodegrade the typical fuels, oil, and grease in local urban runoff.

To address the accumulation of contaminants in soil at BMPs, operations and maintenance plans for BMPs that might accumulate constituents in surface soils and media will be developed to include periodic removal and replacement of these potentially impacted surface materials to reduce the potential for long-term loading leading to hazardous concentrations in soils and groundwater. Implementation of **Mitigation Measure HAZ-1** would reduce the potential for impacts to less-than-significant levels.

Mitigation Measure:

HAZ-1: Implementing agencies shall prepare and implement maintenance practices that include periodic removal and replacement of surface soils and media that may accumulate constituents that could result in further migration of constituents to sub-soils and groundwater. A BMP Maintenance Plan shall be prepared by Implementing Agencies upon approval of the BMP projects ,that identifies the frequency and procedures for removal and/or replacement of accumulated debris, surface soils and/or media (to depth where constituent concentrations do not represent a hazardous conditions and/or have the potential to migrate further and impact groundwater) to avoid accumulation of hazardous concentrations and the potential to migrate further to sub-soils and groundwater. The BMP Maintenance Plan may consist of a general maintenance guideline that applies to several types of smaller distributed BMPs. For smaller distributed BMPs on private property, these plans may consist of a maintenance covenant that includes requirements to avoid the accumulation of hazardous concentrations in these BMPs that may impact underlying sub-soils and groundwater. Structural BMPs shall be designed to prevent migration of constituents that may impact groundwater.

Significance Determination: Less than significant with mitigation (The application of this mitigation measure to specific BMP types and categories are identified in Table 3.7-1.)

Non-Structural (Institutional) BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the construction of new facilities. As a result, there would be no new facilities that would require additional or new use of hazardous materials. Therefore, this impact would have no impact relative to the accidental release of hazardous materials.

Mitigation Measures: None required

Significance Determination: Less than significant

Hazardous Materials near Schools

Impact 3.7-3: The proposed program could emit hazardous emissions or handle hazardous or acutely hazardous material, substances, or waste within one-quarter mile of an existing school.

Structural (Regional, Centralized, and Distributed) BMPs

BMPs may be installed throughout the watersheds. Some facilities may be installed within one-quarter mile of a school. Because construction and operation activities could potentially involve hazardous materials, the proposed program would have the potential to emit hazardous emissions or handle hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. In addition, BMPs that are constructed on school properties may collect spills from off-site sources or accumulate contaminants from urban runoff in soil in the BMPs over time.

As discussed in Impact 3.7-1, individual BMP projects would be required to comply with regulations that would avoid or minimize the potential for releases of hazardous materials during the construction of the BMPs, in response to accidental spills either during the construction of the BMP, or as a result of the BMP collecting contaminants from an off-site spill. Air quality emissions are discussed in Section 3.2. Therefore, the potential impacts to nearby schools are considered less than significant.

As discussed in Impact 3.7-2, BMPs that use soil to filter contaminants from urban runoff may accumulate contaminants over time. Implementation of the Mitigation Measure HAZ-1 discussed above would reduce the potential for impacts to less than significant levels.

Mitigation Measure: HAZ-1

Significance Determination: Less than significant with mitigation (The application of this mitigation measure to specific BMP types and categories are identified in Table 3.7-1.)

Non-Structural (Institutional) BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the construction of new facilities. Consequently, there would be no new facilities that would require additional or new use of hazardous materials. Therefore, this impact would have no impact relative to schools.

Mitigation Measures: None required

Significance Determination: Less than significant

Hazardous Materials Sites

Impact 3.7-4: The proposed program could be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, could create a significant hazard to the public or the environment.

Structural (Regional, Centralized, and Distributed) BMPs

If a BMP were to be located on a hazardous materials site, construction workers could be exposed to hazardous materials during earth-moving activities. In addition, the earth-moving activities could mobilize hazardous materials to downslope or downgradient locations. If a BMP were to be located downslope or downgradient of a hazardous materials site, construction workers at the selected proposed project could be exposed to hazardous materials migrating from the nearby site. This could be considered a significant impact requiring mitigation.

As discussed in Section 3.7.1, information on the presence of known hazardous materials sites is provided within the databases that make up the Cortese List, which includes information on hazardous materials sites from five regulatory agency lists. In addition, the LACFD is the designated LAC CUPA and maintains a list of sites under its responsibility. Reviewing these lists would identify known hazardous materials sites. It is possible that a proposed project may be on an unknown hazardous materials site not yet included in the databases. Contaminated soil and/or groundwater could be encountered during excavation posing a health hazard to construction crews, the public, and the environment. Implementation of **Mitigation Measure HAZ-2** would reduce the potential impact to less than significant.

Mitigation Measure:

HAZ-2: Prior to the initiation of any construction requiring ground-disturbing activities in areas where hazardous material use or management may have occurred, the implementing agencies shall complete a Phase I Environmental Site Assessment (ESA) in accordance with American Society for Testing and Materials Standard E1527-13 for each construction site. Any recommended follow up sampling (Phase II activities) set forth in the Phase I ESA shall be implemented prior to construction. The results of Phase II studies, if necessary, shall be submitted to the local overseeing agency and any required remediation or further delineation of identified contamination shall be completed prior to commencement of construction.

Significance Determination: Less than significant with mitigation (The application of this mitigation measure to specific BMP types and categories are identified in Table 3.7-1.)

Non-Structural (Institutional) BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the construction of new facilities. Consequently, there would be no new facilities that would require additional or new use of hazardous materials. Therefore, this impact would have no impact relative to known hazardous materials sites.

Mitigation Measures: None required

Significance Determination: Less than significant

Hazards near Public or Private Airports and Airstrips

Impact 3.7-5: For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, for a project within the vicinity of a private airstrip, the project could result in a safety hazard for people residing or working in the project area.

Structural (Regional, Centralized, and Distributed) BMPs

Aviation safety hazards can result if projects are sited in the vicinity of airports. Specifically, the land use compatibility plans at airports have land use restrictions, such as height, distracting light or glare, and attraction of birds. The construction of an object high enough to intersect the flight path of aircraft would result in aircraft collision hazards and risks of death or injury to people in the aircraft and on the ground if the aircraft crashes. Similar hazards would be created if a proposed project were to result in distracting light or glare that could interfere with a pilot's ability to control the flight path of the aircraft, or if a proposed project were to create an attraction to wildlife, especially birds, that would pose hazards to aircraft.

The paved areas of airports (excluding the landing areas and taxiways, which have specific aircraft support requirements), and the undeveloped buffer zones around airports are potential sites for BMPs. Paved areas not used by aircraft could use permeable pavement and rainwater from buildings and paved areas could be routed to infiltration basins, bioswales, and subsurface infiltration galleries.

None of the proposed structural BMPs would result in the construction of structures of significant height or generating significant glare or distracting light. Larger regional or centralized BMPs, such as treatment facilities or larger aboveground detention basins would not be permitted within the landing and takeoff flight paths. However, some structural BMPs, such as detention basins that store water for a period of time or constructed wetlands that would increase or improve wildlife habitat, could be constructed on or near airports and could result in attracting wildlife. Deer and birds are known wildlife hazards to airports. If the proposed project is at or near an airport, this could increase hazards to aircraft from wildlife.

The FAA Advisory Circular No: 150/5200-33B provides specific guidance on development projects for new stormwater management facilities and artificial marshes. Implementation of **Mitigation Measure HAZ-3** for all BMPs that are within the airport land use plan area, regardless of whether the airport receives federal funding, would reduce the potential impact to less than significant.

Mitigation Measure:

HAZ-3: Implementing Agencies shall require that those BMPs that are within an airport land use plan area are compatible with criteria specified in FAA Advisory Circular No: 150/5200-33B (FAA, 2007). If the proposed BMP is within the minimum separation criteria, the Implementing Agency shall consult with the airport and collaboratively evaluate whether the potential increase in wildlife hazards can be mitigated.

Significance Determination: Less than significant with mitigation (The application of this mitigation measure to specific BMP types and categories are identified in Table 3.7-1.)

Non-Structural (Institutional) BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the construction of new facilities. Consequently, there would be no new facilities that would require additional or new use of hazardous materials. Therefore, this impact would have no impact relative to airports.

Mitigation Measures: None required

Significance Determination: Less than significant

Impact 3.7-6: The proposed program could impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

Structural (Regional, Centralized, and Distributed) BMPs

Construction activities associated with implementation of structural BMPs may include installations of pipelines or other infrastructure within roadway rights-of-way. These construction activities could potentially result in temporary lane or roadway closures or block access to roadways and driveways for emergency vehicles. Such construction-related impacts, although temporary, could potentially impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan. Impacts to access would be possible during the construction of larger scale regional or centralized BMPs, and less likely for the smaller-scale distributed BMPs.

Notification to emergency services providers would ensure that emergency responsiveness was not impaired. Once installed, the BMPs would have no effect on emergency response plans or evacuations plans.

Mitigation Measure: None required

Significance Determination: Less than significant

Non-Structural (Institutional) BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the construction of new facilities. Consequently, there would be no new facilities that would require additional or new use of hazardous materials. Therefore, this impact would have no impact relative to emergency response plans or emergency evacuation plans.

Mitigation Measures: None required

Significance Determination: Less than significant

Impact 3.7-7: The proposed program could expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

Structural (Regional, Centralized, and Distributed) BMPs

The grading of unimproved areas could require the use of mechanized equipment with internal combustion engines. The equipment would include excavators, backhoes, drilling rigs, and support trucks. Parts of the engines and exhaust systems could get hot enough to ignite dry vegetation and cause a wildfire and expose people or structures to significant risk.

Most of the BMPs are likely to be distributed BMPs constructed within developed urban areas with no possibility for wildfires. However, some regional and centralized BMPs could be constructed in rural undeveloped areas. Larger-scale centralized BMP treatment facilities could be built in previously undeveloped areas, since the urban areas are largely built out.

As discussed in the Setting section, the CAL FIRE fire hazard severity zone maps identify areas within the EWMP with high and very high fire hazard severity categories. Structural BMPs conducted within these areas would have the added potential of causing wildfires. However, the requirements of the DOT and California Vehicle Code for spark arrester protection on vehicles would reduce the potential risk. Therefore, adherence to federal and state regulations would reduce the potential impacts from wildfires to less than significant. No mitigation measures would be required.

Mitigation Measures: None required

Significance Determination: Less than significant

Non-Structural (Institutional) BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the construction of new facilities. As a result, there would be no new facilities that would have the potential to create a risk of wildfire. Therefore, this impact would have no impact relative to wildfires.

Mitigation Measures: None required

Significance Determination: Less than significant

Cumulative Impact Discussion

Structural (Regional, Centralized, and Distributed) BMPs

BMPs would be constructed throughout the watersheds. Most of the distributed BMPs would be small in scale and would not result in cumulatively significant impacts due to increased hazards from construction or operation. However, the combination of BMPs throughout the region would change the flow paths of stormwater and urban runoff that currently occurs in the region, resulting in the retention of pollutants generally within the soil of the BMPs that use soil for filtration and retention. Mitigation Measure HAZ-1 would reduce the potential for concentrations of these pollutants to result in localized hazardous conditions at individual BMP locations. Mitigation Measure HAZ-2 would mitigate the accumulation of contaminants in soil at BMPs. Cumulatively, throughout the region, the retention and treatment of pollutants within each watershed and the reduction of pollutant loading in waterways will substantially benefit water and sediment quality of the region's habitats, rivers, and beaches. Therefore, the project's potential contribution to cumulative effects on hazards and hazardous materials is considered beneficial.

Mitigation Measures: HAZ-1 and **HAZ-2**

Significance Determination: Less than significant with mitigation. (The application of this mitigation measure to specific BMP types and categories are identified in Table 3.7-1.)

Non-Structural (Institutional) BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the construction of new facilities. Consequently, there would be no new facilities that would contribute to cumulative impacts.

Mitigation Measures: None required

Significance Determination: Less than significant

TABLE 3.7-1
SUMMARY OF HAZARDS IMPACTS REQUIRING MITIGATION MEASURES

	Thresholds of Significance							
Structural BMPs	**Transport, use or disposal of hazardous materials**	**Accumulation of hazardous materials**	**Hazardous emissions near schools**	**Located on hazardous materials site**	**Vicinity of airport or airstrip**	**Impair implementation of emergency response plan**	**Exposure to wildland fires**	**Cumulative Impacts**
Applicable Mitigation Measures:	**None Required**	**HAZ-1**	**HAZ-1**	**HAZ-2**	**HAZ-3**	**None Required**	**None Required**	**HAZ-1 and HAZ-2**
Regional BMPs								
Regional Retention and Infiltration	No	Yes	Yes	Yes	Yes	No	No	Yes
Regional Capture, Detention and Use	No	Yes	Yes	Yes	Yes	No	No	Yes
Centralized BMP								
Bio-filtration	No	Yes	Yes	Yes	Yes	No	No	Yes
Constructed Wetlands	No	Yes	Yes	Yes	Yes	No	No	Yes
Treatment/Low-Flow Diversions	No	Yes	Yes	Yes	Yes	No	No	Yes
Creek, River, Estuary Restoration	No	Yes	Yes	Yes	Yes	No	No	Yes
Distributed BMPs								
Site-Scale Detention	No	Yes	Yes	Yes	Yes	No	No	Yes
LID – Infiltration/Filtration BMPs – Porous Pavement, Green Streets, Bioswale/Filter Strips, downspout disconnects	No	Yes	Yes	Yes	Yes	No	No	Yes
LID – Green Infrastructure – Capture and Use – Cisterns, Rain Barrels, Green roofs, Planter Boxes	No	Yes	Yes	Yes	Yes	No	No	Yes
Flow-through Treatment BMPs	No	Yes	Yes	Yes	Yes	No	No	Yes
Source-Control Treatment BMPs (catch basin inserts/screens, hydrodynamic separators, gross solids removal devices)	No	Yes	Yes	Yes	Yes	No	No	Yes
Low-Flow Diversion	No	Yes	Yes	Yes	Yes	No	No	Yes

NOTE: These conclusions are based on typical size and function of BMPs.

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3.8 Hydrology and Water Quality

This section describes the existing hydrology and water quality conditions within the project area and evaluates whether the proposed program would result in significant hydrology or water quality impacts.

3.8.1 Environmental Setting

Surface Water

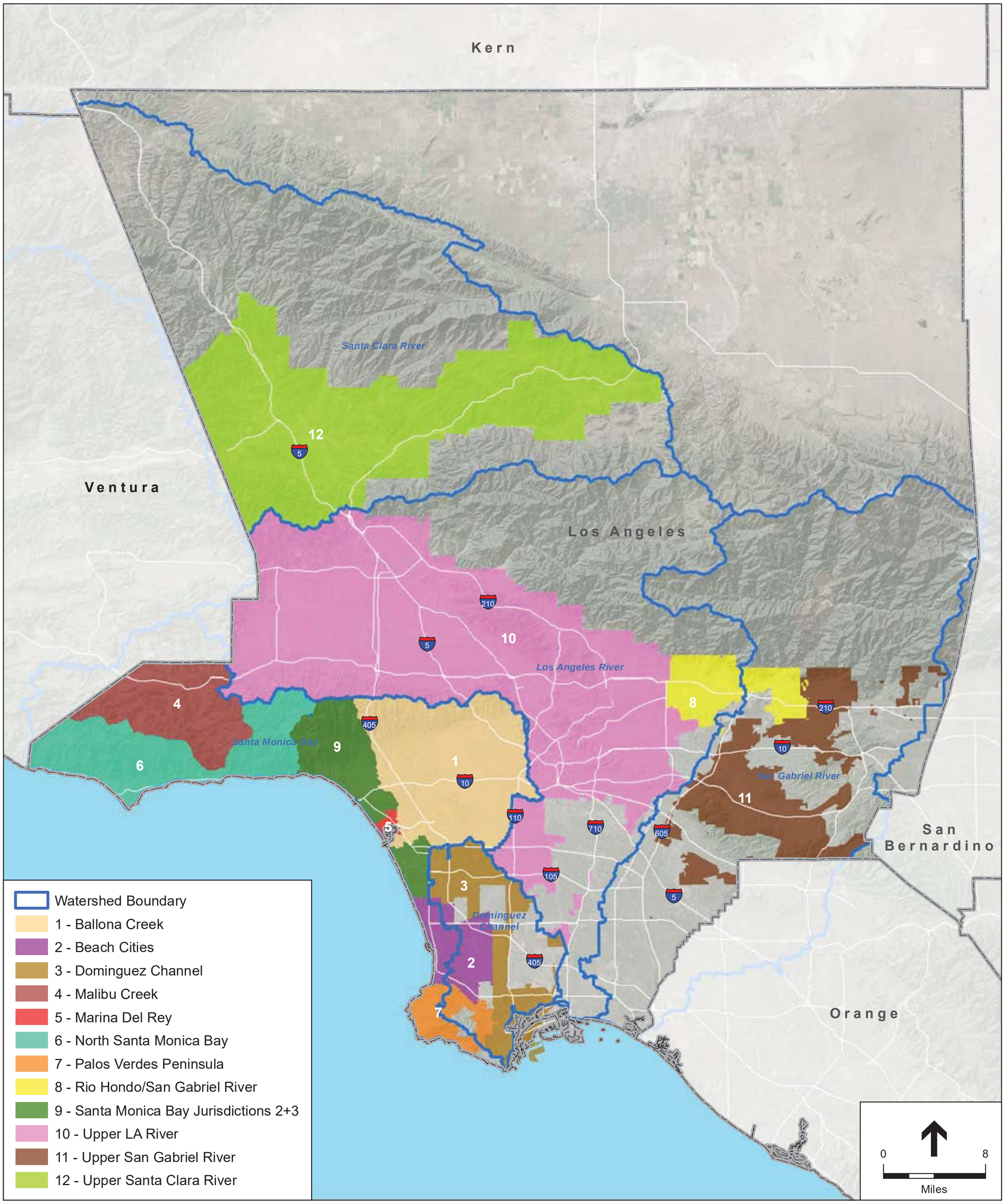
Climate and Precipitation

The 12 Enhanced Watershed Management Program (EWMP) Areas are located within Los Angeles County (County). The coastal mountains and plains within this region have a mediterranean climate with mild rainy winters and warm dry summers, while the inland slopes and basins tend to experience more extreme temperatures and less precipitation. These variations of climate within the region can be attributed to variable topography. Higher elevations generally receive more precipitation than nearby areas at lower elevations. Prevailing winds from the west and northwest carry moist air from the Pacific Ocean inland until it is forced upward by the Santa Monica, San Gabriel, or Santa Susanna Mountains. The resulting rainfall occurs mostly during discrete, episodic events between November and March.

Annual precipitation can vary significantly between drought and flood conditions; periodic and occasionally severe droughts and floods within the area are well-documented (LARWQCB, 1994), and the potential for extreme precipitation (maximum intensity of precipitation for periods of 12 hours or longer which might be expected at intervals of ten to 100 years) is greater in portions of the San Gabriel Mountains than practically anywhere else in the continental United States (WERC, 2014). Average annual rainfall within the Los Angeles Basin is approximately 14.5 inches, though local averages can vary considerably depending on location within the basin (WERC, 2012).

Los Angeles County Watersheds

As shown in **Figure 3.8-1**, the portion of Los Angeles County covered in this Program Environmental Impact Report (PEIR) is divided into distinct watersheds, including: the Los Angeles River, San Gabriel River, Rio Hondo, Santa Clara River north of the Santa Susana Mountains, Dominguez Channel, and coastal drainages stretching from Malibu to Palos Verdes, including Ballona Creek. The 12 EWMP areas were identified as portions of these greater watersheds that contain impaired water bodies needing structural Best Management Practices (BMPs) to comply with stormwater discharge permit requirements.



SOURCE: ESRI.

LA County PEIR EWMP . 140474

Figure 3.8-1
Watersheds and EWMP Groups

Los Angeles River

The 51-mile Los Angeles River stretches from its headwaters in the upper San Fernando Valley to its mouth in San Pedro Bay, draining the Santa Susana and San Gabriel Mountains and San Fernando Valley. Following several catastrophic and deadly floods in the early 1900s, the U.S. Army Corps of Engineers channelized and armored the river levees and numerous tributaries with concrete to mitigate future flooding concerns. The channelization of this stream, completed in the 1960s, ended ongoing flooding concerns and provided land for the construction of homes and businesses within the previous floodplain.

San Gabriel River

The San Gabriel River is bound by the San Gabriel Mountains to the north, San Bernardino to the east, Los Angeles River to the west, and Pacific Ocean to the south. The San Gabriel River flows 58 miles south until its confluence with the Pacific Ocean. Major tributaries to the San Gabriel River include Walnut Creek, San Jose Creek, Coyote Creek, and numerous storm drains entering from the 19 cities that the San Gabriel River passes through. Much of the channel above the Whitter Narrows is unlined. Storm flows are diverted from the riverbed into four different spreading grounds by dams for ground water recharge. The 10-mile segment below Whittier Narrows is a concrete-lined channel.

Rio Hondo

The Rio Hondo watershed is a subwatershed of the Los Angeles River watershed and is also linked to the adjacent San Gabriel River watershed. This link reflects both natural hydrologic processes and human intervention. Historically, the Los Angeles and San Gabriel Rivers were wide, shallow rivers consisting of a braided series of channels that would periodically intermingle following large storm events. Today, the rivers have been engineered into three channels created to bring water from the San Gabriel to the Rio Hondo, making the Rio Hondo serve as an outlet for the San Gabriel River.

Dominguez Channel

Named for the Juan Jose Dominguez family who owned a tract of 75,000 acres of land (Rancho San Pedro) from the Los Angeles River west to the Pacific Ocean in the late 1700s, the channel is a 15.7-mile-long waterway that drains a 110 square miles. The headwaters begin in Hawthorne and eventually empty into the East Basin of the Port of Los Angeles. Today, the Dominguez Channel watershed is 96 percent developed.

Santa Clara River

The Santa Clara River watershed encompasses approximately 1,030 square miles. The Upper Santa Clara River watershed is located primarily within both Ventura (243 square miles) and Los Angeles County (786 square miles), as well as a very small portion of Kern County. The Santa Clara River is one of the few natural river systems remaining in Southern California originating in the Angeles National Forest and flowing westward for approximately 84 miles to the Pacific Ocean. Throughout its length, the river crosses through farmland, undeveloped lands, and urban areas. The lower Santa Clara River watershed is located primarily within Ventura County and out of the study area for this project.

Coastal Drainages

All along the Los Angeles County coastline, distinct drainages flow from uplands to the ocean. In Malibu, these drainages within the Santa Monica Mountains are generally short, steep, and relatively natural channels. Malibu Creek drains a wide area that includes areas within and north of the Santa Monica Mountains. In the urbanized areas along Santa Monica Bay, the streams have been channelized.

Ballona Creek is a 9-mile-long waterway that drains the Santa Monica Mountains on the north and the Baldwin Hills on the south. Ballona Creek flows through Culver City until emptying into Santa Monica Bay between Marina del Rey and Playa del Rey. Following damaging flooding events, the Los Angeles County Flood Control District (LACFCD) concreted Ballona Creek and its tributaries during the 1930s. The Ballona Wetlands at the mouth of the creek are one of the last significant coastal wetland areas in Los Angeles County.

EWMP Groups

The proposed program has been divided into 12 EWMP Areas that have been organized by watershed groups that share comparable conditions. The key linkages that were used to distinguish the various EWMP groups were percentage of open space and urbanization, similar focus on the types and percentage of BMPs, and common hydrologic conditions. The following summaries are the general characteristics of the watersheds within the EWMP groups and the overall strategies for BMP implementation that reflect these characteristics. The 12 EWMPs are consolidated into six watershed areas that are grouped by similar watershed characteristics. This summary provides additional detail on the hydrologic features and strategies for the distribution and locations of potential and priority BMPs. Figures are referenced and provided for each of the six consolidated watershed areas and also provide hydrologic features and the locations and distribution of planned and priority regional/centralized BMPs. The priority BMPs are a subset of the planned BMPs and have been selected as priority projects based on a screening assessment of the planned projects. Priority projects will be implemented before additional planned projects. Distributed BMPs are planned to be implemented throughout the urbanized areas of the EWMPs. The following summaries of the six watershed areas also highlight the linkage between the BMP strategies with hydrologic conditions in these watersheds that provide a basis to assess potential environmental impacts presented in the assessment section.

1. **South Santa Monica Bay EWMP Watersheds (Figure 3.8-2)** (Marina del Rey, Ballona Creek, Beach Cites, South Santa Monica Bay Jurisdictional Group 2 and 3, and Peninsula Cities EWMP groups) – These watersheds are dominated by urbanized beach communities with high-density residential and commercial land uses throughout the watershed. Key BMP strategies in these watersheds are to address dry- and wet-weather flows that may impact beach water quality through bacteria loading. Other water quality priorities include trash, marine debris, metals, and toxics. The BMP strategy includes low-flow diversions (LFDs) to comply with dry-weather metals and bacteria Total Maximum Daily Loads (TMDLs). Although large regional and centralized retention and infiltration BMPs will be part of the pollutant load reduction strategy, the predominate structural BMP will be smaller distributed BMPs such as bioinfiltration, media filtration and flow-through BMPs located in street rights-of-way, parking lots, landscaped areas,

and as part of green streets and buildings. Due to the high ground water near the shore, capture and reuse regional projects or treatment BMP opportunities will be preferred. The receiving waters for the South Santa Monica Bay include the Pacific Ocean, the Ballona Creek, and the Marina del Rey Harbor. The Ballona Creek is channelized through the urbanized area of the Ballona Watershed. The Ballona Wetlands received muted tidal flow from Ballona Creek that is tidally influenced (see the photograph below).

Channelized Ballona Creek and Ballona Wetland

Marina del Rey EWMP – Because of the tidal influence of the marina to most of the watershed, regional projects will be located near the upstream end of the watershed, where groundwater depths are favorable. The tidally influenced areas will consist of mostly treatment distributed BMPs including bioinfiltration or tree wells.

Ballona Creek EWMP – Regional infiltration BMPs will be well distributed throughout the watershed and will be incorporated with distributed BMPs consisting mostly of treatment BMPs such as green streets. LFDs may also be pursued to comply with dry-weather TMDL requirements.

Beach Cities EWMP – The watershed includes a portion of the Beach Cities EWMP that drains to the Pacific Ocean. The Beach Cities will focus their efforts on regional projects near the outlet on the Beach similar to the Hermosa Beach Infiltration Trench or the Torrance infiltration basins. Where regional projects are infeasible, distributed projects such as green streets will be implemented.

Santa Monica Bay J2/3 – Many efforts have already been completed for the Santa Monica Bay J2/J3 watershed, including LFDs and reuse facilities. The group will investigate the possibility of more regional projects that are able to capture and reuse the flow. Remaining areas will be subject to distributed BMPs.

Peninsula Cities – The Peninsula Cities area (SMB J7) is mostly anti-degradation sites, so there will not be many control measures in this subwatershed.

2. **Northern Coastal EWMP Watersheds (Figure 3.8-3)** (Malibu Creek and North Santa Monica Bay Coastal Watershed EWMP groups) – These watersheds are characterized by lower-density development along the coast and the larger creeks with greater open space and park areas inland. There is increased development in the upper areas of the Malibu Creek watershed. Receiving waters in these watersheds are largely unlined and riparian corridors remain.

   Water quality priorities include bacteria, toxics, trash, and nutrients as well as benthic community impairments. Key BMP strategies are to address bacteria loading to the beaches and inland waters, but because of the lower development and largely decentralized infrastructure, LFDs are not the only strategy to address this priority issue. In addition to LFDs, larger centralized BMPs that include detention and infiltration and detention and filtration will be used for Municipal Separate Storm Sewer System (MS4) outfalls that are in close proximity to the receiving waters. Smaller distributed BMPs that include biofiltration, media filtration, green streets, and flow-through BMPs will be used in greater percentage than larger centralized BMPs and would be located in developed areas as retrofit BMPs.

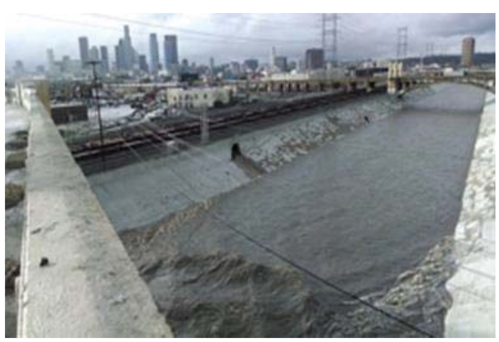
Marie Canyon Low-Flow Diversion – Malibu Creek

3. **Upper San Gabriel Watershed (Figure 3.8-4) –** This watershed is characterized by higher-density development in the lower watershed area and lower-density development and open space in the upper watersheds where the foothills to the San Gabriel Mountains begin. The priority pollutants in these watersheds include selenium in dry-weather flows and metals in storm flows in Coyote Creek. These watersheds are further differentiated by the importance of groundwater recharge basins that are supplied by a series of reservoirs further upstream in the mountains. The San Gabriel River is unlined in the upper watershed and conveys controlled non-storm and storm flows to recharge basins and downstream sections of the river.

Upper San Gabriel River

The BMP strategy in these watersheds focus more on regional and centralized retention and infiltration BMPs that take advantage of the favorable groundwater recharge characteristics of this area. These BMPs are located near or adjacent to the river. This watershed includes stream restoration that uses natural unlined tributaries and centralized bioinfiltration BMPs in parks and open spaces with favorable subsurface soils that promote higher infiltration rates. Distributed smaller BMPs are located in urbanized areas as retrofits in existing developments and streets.

4. **Upper Los Angeles River Watershed and Rio Hondo/San Gabriel Watershed (Figure 3.8-5)** – These watersheds traverse a large diverse area of the Los Angeles Basin with characteristics of Upper San Gabriel in the farthest upper reaches near the foothills, but, for most part, these watersheds are characterized by greater urbanization similar to the Ballona Creek watershed. The greater urbanization also results in additional priority pollutants compared to the Upper San Gabriel watershed and includes nutrients, trash, metals, bacteria, and sediment impacted by metals and organic compounds (DDT, PCBs, PAHs). The Rio Hondo/San Gabriel EWMP is characterized by increasing urbanization south of the foothills and industrial and commercial development along the I-210 corridor. The strategy for the locations and types of BMP is to use remaining available sites for retention and infiltration that takes advantage of the favorable infiltration rates of this area, including the existing groundwater recharge basins near the San Gabriel River.



Los Angeles River

The Los Angeles River is approximately 51 miles long, and five of six reaches lie within the Upper Los Angeles River EWMP. The natural hydrology of the Los Angeles River watershed has been altered by channelization and the construction of dams and flood control reservoirs. The Los Angeles River and many of its tributaries are lined with concrete for most or all of their length. Soft-bottom segments of the Los Angeles River occur where groundwater upwelling prevents armoring of the river bottom. Because of the greater extent and number of pollutant priorities, the BMP strategy in the Upper Los Angeles River watershed and Rio Hondo watershed includes well over a hundred planned regional and centralized retention and infiltration BMPs that take advantage of the favorable groundwater recharge characteristics in defined areas of the watershed. Also planned are centralized treatment wetlands and bioinfiltration BMPs in parks and open spaces with favorable subsurface soils that promote higher infiltration rates. The BMP strategy also includes distributed smaller BMPs located throughout the urbanized areas of the watershed as retrofits in existing developments and streets. LFDs to comply with dry-weather bacteria TMDLs will also be included.

5. **Dominguez Channel Watersheds (Figure 3.8-6)** (Dominguez Channel EWMP and Beach Cities EWMP– This watershed includes the Dominquez Channel EWMP and a portion of the Beach Cities EWMP that drains to Dominquez Channel. This watershed is differentiated by a larger area of industrial land use. Because of the high density of development and industrial land uses, large regional and centralized infiltration-type BMPs will be limited. The structural BMP strategy will be more LFDs, both large (centralized) and small (distributed), located at MS4 outfalls near the channelized Dominguez Chanel. The other BMP strategy is the use of smaller distributed BMPs that include the low-impact development (LID) type of BMPs, such as green streets and biofiltration BMPs. These distributed BMPs will be retrofit type BMPs that treat runoff from already developed properties and are located in street rights-of-way, parking lots, and limited open areas on public and private parcels. Distributed flow-through treatment BMPs will also be the other predominant BMP that will be retrofitted to the existing MS4 systems.

Dominquez Channel

6. **Upper Santa Clara River Watershed (Figure 3.8-7) –** The Santa Clara River watershed is distinctive in that it is predominantly open space—nearly 90 percent of the watershed is open space with approximately 88 percent being undeveloped. The watershed contains one of the last remaining natural rivers in Southern California. In years of significant rainfall, ephemeral springs and year-round flows exist in some tributaries and natural upstream areas. Flows in Santa Clara River reaches that pass through the EWMP area are predominantly stormwater runoff during wet-weather months and water reclamation plant effluent discharges in the drier months.

Upper Santa Clara River

Priority pollutants in this watershed are bacteria, nutrients, and chloride. In the source assessments for the nutrients TMDL and the chloride TMDL for the Santa Clara River, the storm drain system is not considered the primary source of these pollutants. Lake Elizabeth is also subject to a trash TMDL. The EWMP will evaluate potential MS4 nutrients and chlorides contributions and serve as the implementation plan for the bacteria TMDL. BMP strategies for this watershed are likely to include a focus more on regional and centralized detention and infiltration BMPs and less on filtration-type BMPs, which are not as effective at addressing bacteria.

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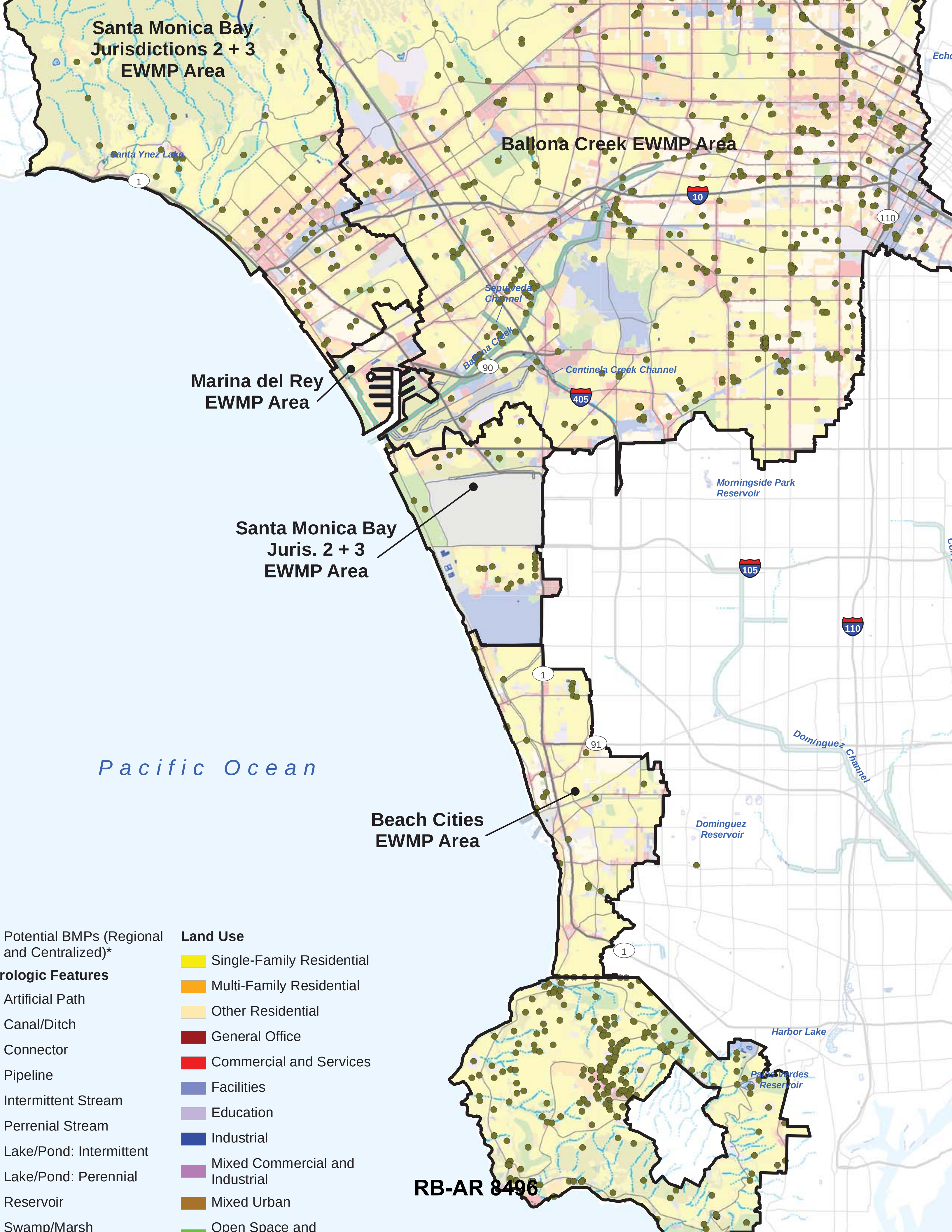


Santa Monica Bay Jurisdictions 2 + 3 EWMP Area
Ballona Creek EWMP Area
Marina del Rey EWMP Area
Santa Monica Bay Juris. 2 + 3 EWMP Area
Beach Cities EWMP Area
Pacific Ocean
Santa Ynez Lake
Sepulveda Channel
Ballona Creek
Centinela Creek Channel
Morningside Park Reservoir
Dominguez Channel
Dominguez Reservoir
Harbor Lake
Palos Verdes Reservoir
1
10
90
105
110
405
91
Potential BMPs (Regional and Centralized)*
rologic Features
Artificial Path
Canal/Ditch
Connector
Pipeline
Intermittent Stream
Perrenial Stream
Lake/Pond: Intermittent
Lake/Pond: Perennial
Reservoir
Swamp/Marsh
Land Use
Single-Family Residential
Multi-Family Residential
Other Residential
General Office
Commercial and Services
Facilities
Education
Industrial
Mixed Commercial and Industrial
Mixed Urban
Open Space and

RB-AR 8496

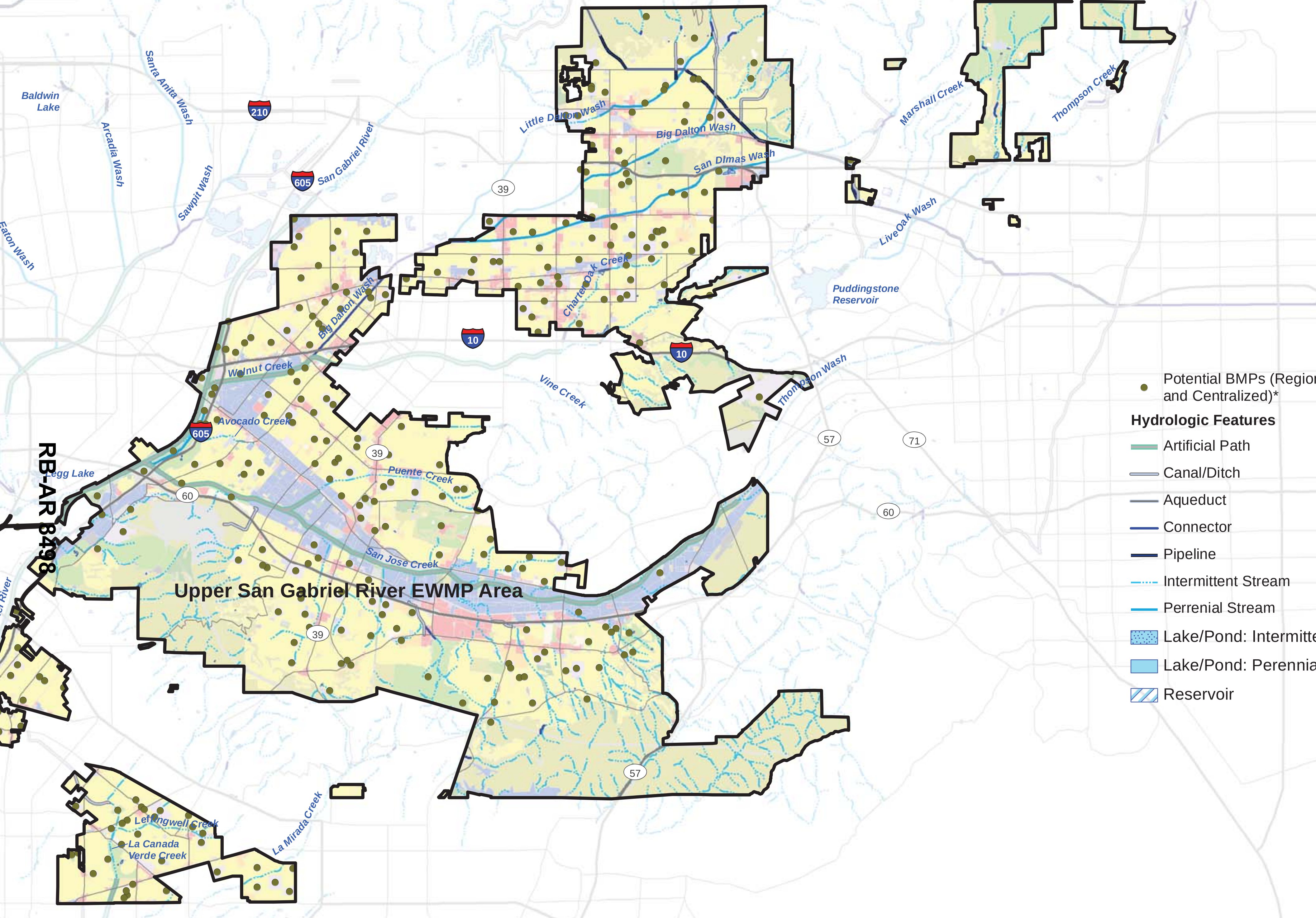
and Utilities

ntralized)*

tly located in urbanized areas

05 (land use)

Northern Coastal Watershed Area – Hydrologic Featu



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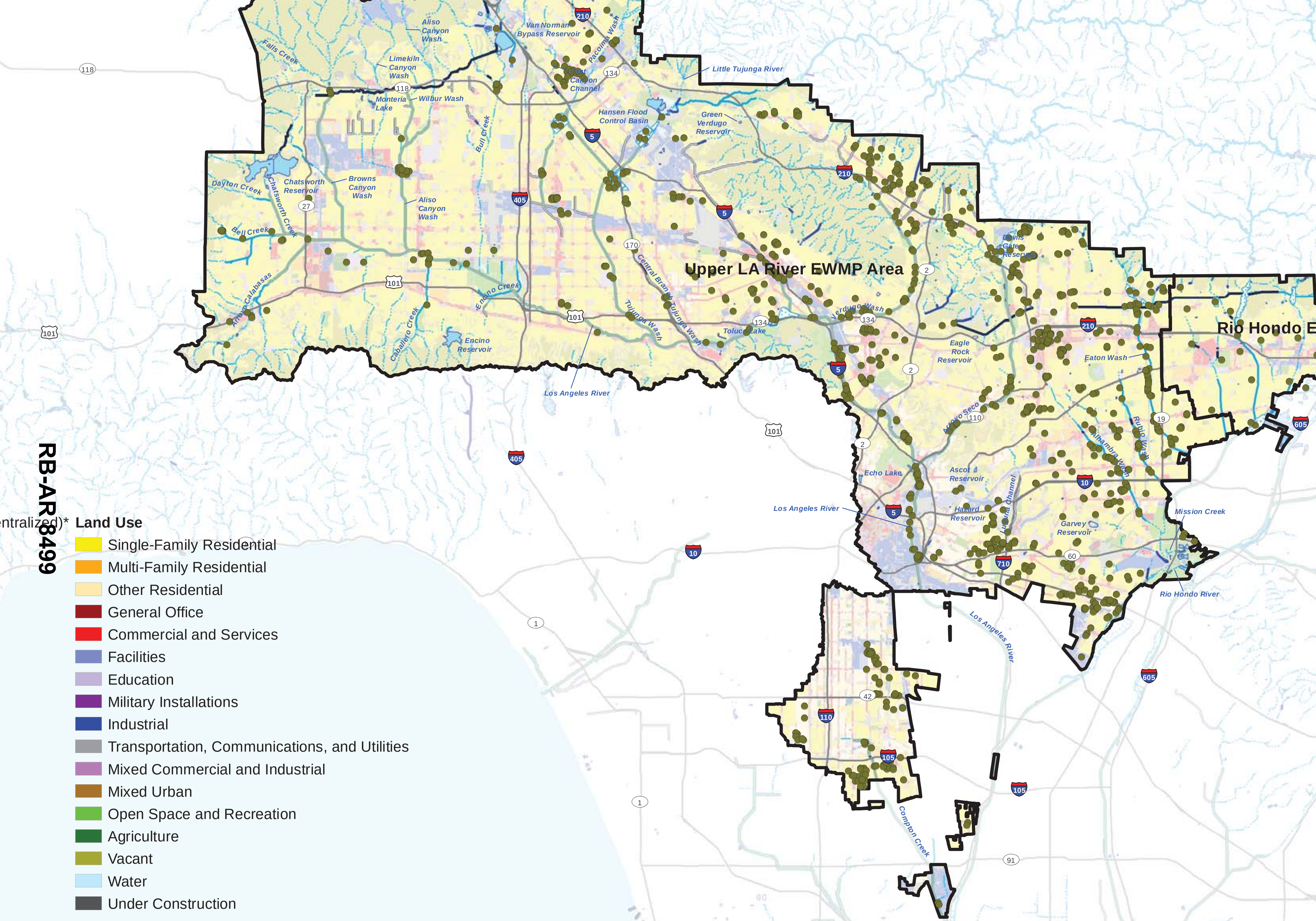
tly located in urbanized areas

05 (land use)

Upper San Gabriel Watershed Area – Hydrologic Featu



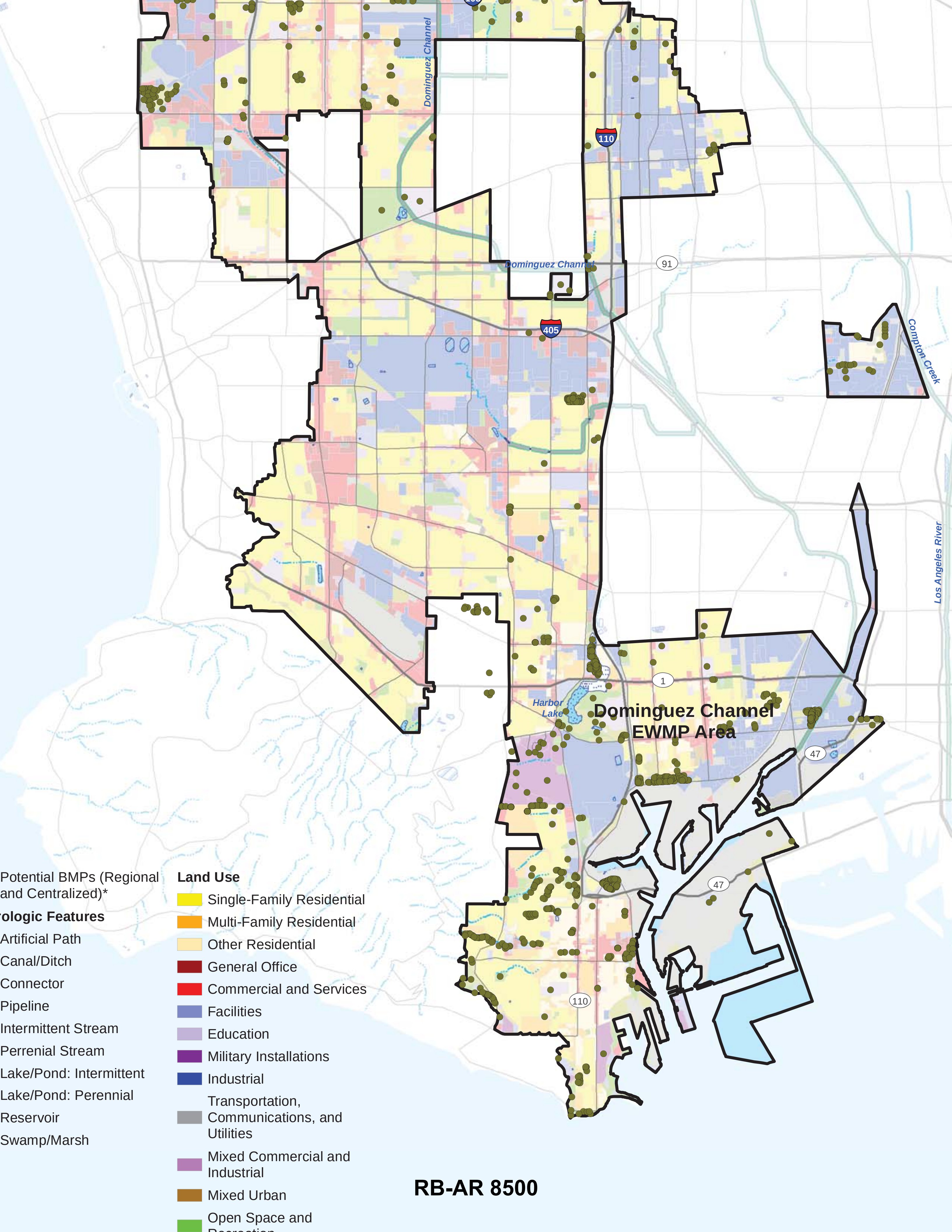
ntralized)*

RB-AR8499

tly located in urbanized areas

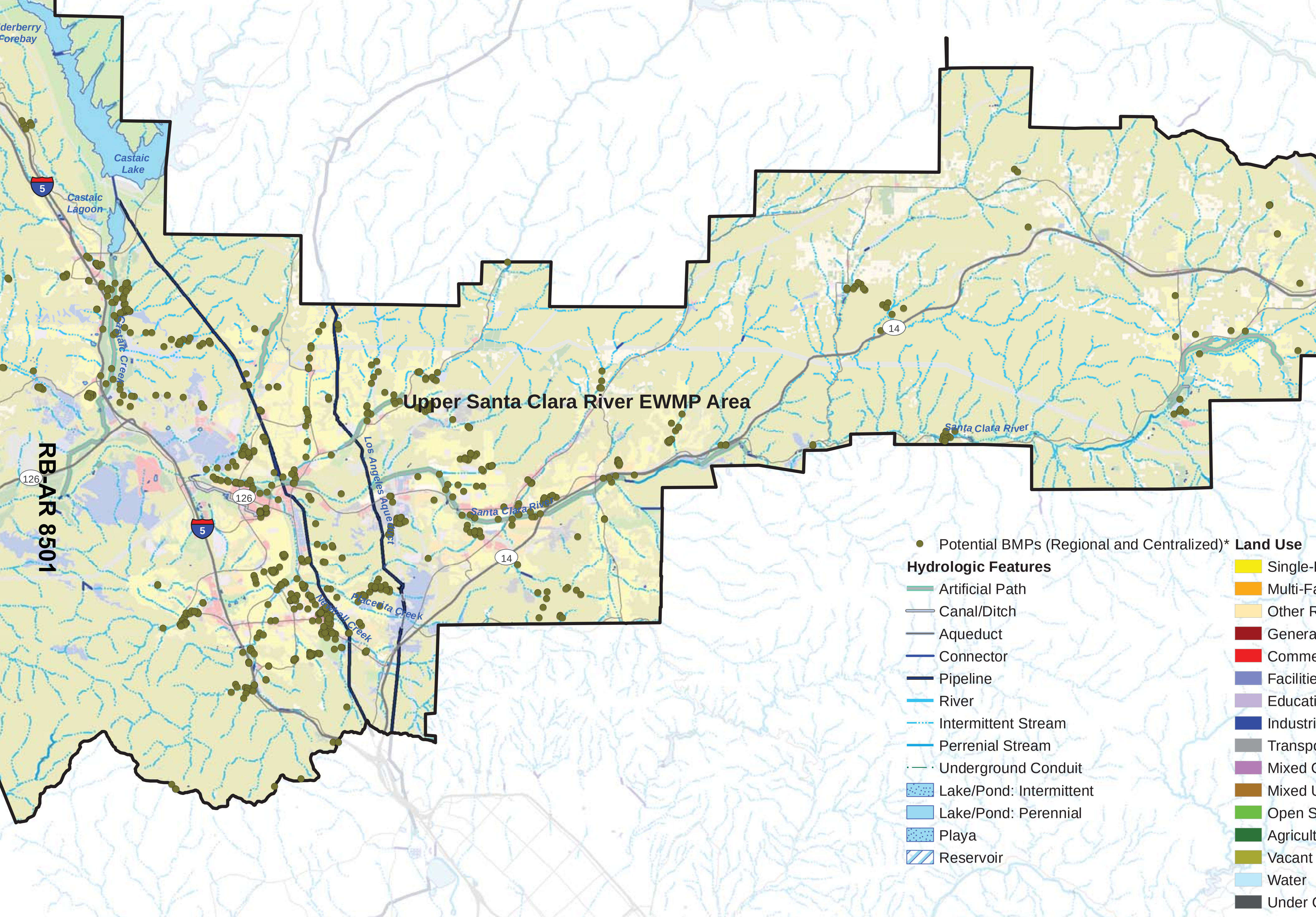
)5 (land use)

Upper Los Angeles and Rio Hondo/San Gabriel Watershed Area – Hydrol



Dominguez Channel
Dominguez Channel
110
91
405
Compton Creek
Los Angeles River
Harbor Lake
1
Dominguez Channel EWMP Area
47
47
110
Potential BMPs (Regional and Centralized)*
rologic Features
Artificial Path
Canal/Ditch
Connector
Pipeline
Intermittent Stream
Perrenial Stream
Lake/Pond: Intermittent
Lake/Pond: Perennial
Reservoir
Swamp/Marsh
Land Use
Single-Family Residential
Multi-Family Residential
Other Residential
General Office
Commercial and Services
Facilities
Education
Military Installations
Industrial
Transportation, Communications, and Utilities
Mixed Commercial and Industrial
Mixed Urban
Open Space and

RB-AR 8500



tly located in urbanized areas

05 (land use)

Upper Santa Clara Watershed Area – Hydrologic Featu

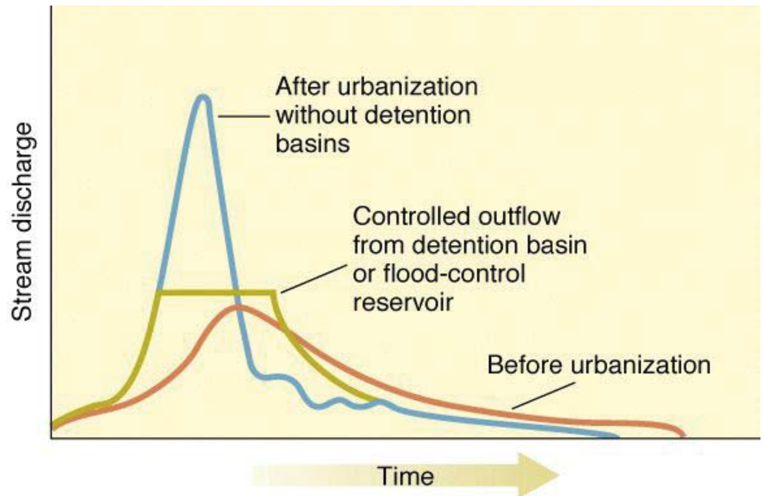
Effects of Urbanization on Streamflows

Prior to urbanization in the mid to late 1800s, surface water hydrology within the Los Angeles Basin was dominated by natural processes of watershed runoff and recharge. During the winter rainy season, runoff from the watershed would feed stream flows and recharge groundwater aquifers in the lower alluvial portions of the basin. As the intensity, frequency, and duration of winter rains decreased, stream flows would recede in response to decreased watershed runoff. In many locations, especially smaller streams, portions of streambeds would seasonally go dry (ephemeral), with surface flows only reestablished by the return of winter rains. In other streams, near-surface groundwater would maintain base flows throughout the summer, supporting wetland and floodplain habitats. During the summer, coastal streams would typically form freshwater-brackish lagoons at creek mouths behind sand berms built by summer wave action; these lagoons also supported seasonal aquatic habitats.

Pre-Development Hydrology is characterized by dry-weather flows fed by groundwater seepage fed by recharge during the rainy season. Some creeks and rivers are ephemeral and dry up in the dry season.

Most of the historic hydrologic processes have been fundamentally changed throughout the Los Angeles Basin due to urbanization. The replacement of native soils with largely impermeable surfaces such as concrete and asphalt has dramatically altered storm hydrographs (graph showing the flow rate in a stream or channel over the storm event) as shown in Figure 3.8-8, increasing runoff rates and flood volumes that have to be safely routed away from people, homes, businesses, and infrastructure. Floodplain and wetland habitats that formerly provided water quality treatment and groundwater recharge functions have been largely eliminated from the landscape, accelerating the transport of flows from higher to lower areas of the watersheds.

Figure 3.8-8 presents a comparison of the predevelopment and development conditions and impacts to hydrology. The effect that is shown in Figure 3.8-8 to the hydrograph from urbanization is called hydromodification. Hydromodification reduces base-flow (groundwater flow into streams) and increases peak discharge rates into streams and rivers. Figure 3.8-8 also shows the effect of the hydrograph when BMPs such as retention basin are implemented that capture urbanized storm flows and release these flows under reduced flows to return the hydrograph close to predevelopment conditions.

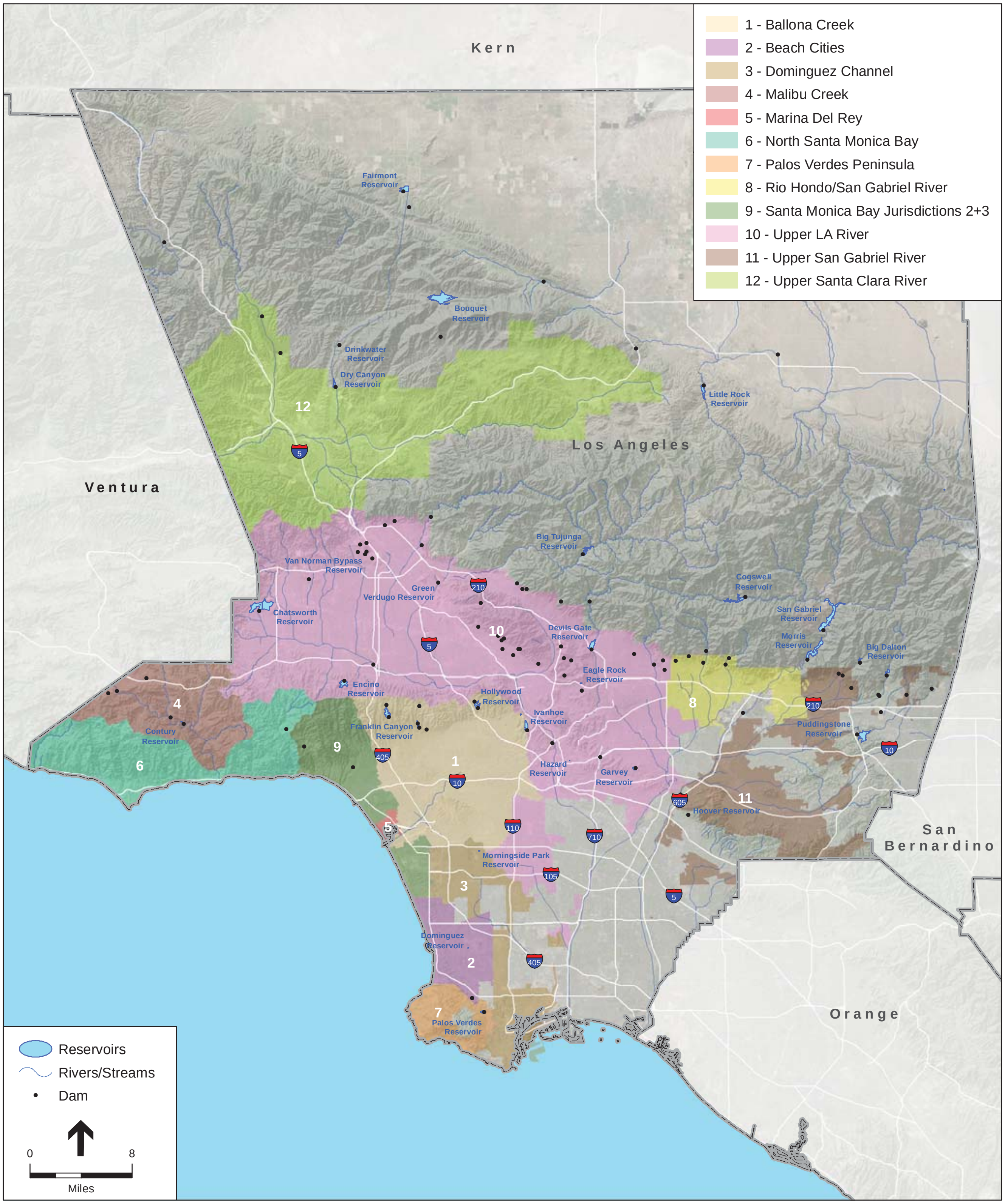


LA County PEIR EWMP . 140474

Figure 3.8-8
Effect of Urbanization on an Example Stream Hydrograph and Hydrograph after Implementation of Retention-Type BMP

In addition, urbanization can increase dry-weather flows in local streams that were historically ephemeral as a result of irrigation runoff and wastewater treatment plant discharges. Naturally occurring dry-weather flows in the San Gabriel River and Los Angeles River are also influenced by the management of upstream dams and reservoirs that impound flows from winter storm events and then distribute these flows to recharge basins and to treatment facilities as part of the water supply system. These flows are managed through periodic dam releases and downstream intake systems. **Figure 3.8-9** provides the locations of dams and reservoirs in the Los Angeles region.

Urban dry-weather flows from causes such as over-irrigation result in dry-weather flows in creeks and streams that historically are ephemeral.



SOURCE: ESRI; Los Angeles County GIS

LA County PEIR EWMP . 140474

Figure 3.8-9

System of Dams and Reservoirs in LA Basin

In the late 1990s, some Permittees along the Santa Monica Bay coast began to implement LFDs, which divert dry season flows from storm drains into the sanitary sewer system for treatment and disposal or reuse. Over 20 LFDs are currently in use within Los Angeles County; though most are along the SMB shorelineThe location of existing low flow diversions along the Santa Monica Bay coastline are shown on Figure 3.8-10. . Collectively, these LFDs divert a large volume of polluted urban runoff during each dry season, and they have proven to be one of the most effective tools for improving coastal water quality (LA Stormwater, 2014). The EWMPs include a suite of new LFDs and improvements to existing LFDs that will further increase the volume of dry-weather (and, in some cases, year-round) flows diverted for treatment. The installation/upgrades of these LFDs could potentially increase the amount of water available for recycling, reuse, and groundwater recharge.

Surface Water Quality

Surface water quality in Los Angeles is largely influenced by the intensive urban land uses of the region. Key sources of surface water contamination include landscape irrigation runoff conveying sediment, nutrients, pesticides, metals, oil and grease, and pathogens to receiving waters. Other dry-weather runoff from industrial activities can add organic compounds and petroleum hydrocarbons. The State Water Resources Control Board (SWRCB) has identified stream segments in each of the EWMP Areas that are considered impaired under the Clean Water Act (CWA) in the State Section 303d list. **Table 3.8-1** lists the major streams on the Section 303d list within the EWMP areas. A water body is placed on the State §303d list when the receiving water does not meet applicable water quality standards listed in the Basin Plan and determined not to be supporting the beneficial uses associated with the applicable water quality standard. Once placed on the State §303d list, the water body or segment is then subject to the development of a TMDL. Appendix F provides a list of the current TMDLs and the references to existing TMDL Implementation Plans.

TABLE 3.8-1
MAJOR IMPAIRED WATER BODIES IN THE STUDY AREA

Water Body/Reach Name	Pollutant/Stressor	Potential Source
Ballona Creek	Cadmium, Coliform Bacteria, Copper (dissolved), Cyanide, Lead, Selenium, Toxicity, Trash, Viruses (enteric), and Zinc	Unspecified or unknown point and nonpoint sources.
Dominguez Channel (lined portion above Vermont Avenue)	Ammonia, Copper, Diazinon, Indicator Bacteria, Lead, Toxicity, and Zinc	Unspecified or unknown point and nonpoint sources.
Dominguez Channel (unlined portion below Vermont Avenue)	Ammonia, Benthic Community Effects, Benzo(a)pyrene (3,4-Benzopyrene -7-d), Benzo[a]anthracene, Chlordane (tissue), Chrysene (C1-C4),Coliform Bacteria, DDT (tissue & sediment), Dieldrin (tissue), Lead (tissue), PCBs (Polychlorinated biphenyls), Phenanthrene, Pyrene, Sediment Toxicity, Zinc (sediment)	Unspecified or unknown point and nonpoint sources.
Los Angeles River (Reaches 1-6)	Ammonia, Cadmium, Coliform Bacteria, Copper (dissolved), Cyanide, Diazinon, Lead, Nutrients (algae), Oil, Trash, Zinc (dissolved), pH, and Selenium.	Urban Runoff, Unspecified or unknown point and nonpoint sources.

Water Body/Reach Name	Pollutant/Stressor	Potential Source
Malibu Creek	Benthic-Macroinvertabrate Bioassessments, Coliform Bacteria, Fish Barriers, Invasive Species, Nutrients (algae),Scum/Foam-unnatural, Sedimentation/Siltation, Selenium, Sulfates, Trash.	Urban Runoff, Unspecified or unknown point and nonpoint sources, Hydromodification, Waste Storage And Disposal, Recreation Areas And Activities, Groundwater Related, Atmospheric Deposition, Municipal Wastewater, and Agriculture
Rio Hondo (Reaches 1 and 2)	Coliform Bacteria, Copper, Lead, Toxicity, Trash, Zinc, pH, Cyanide	Urban Runoff, Unspecified or unknown point and nonpoint sources.
San Gabriel River (Reaches 1-3 and East Fork)	Coliform Bacteria, pH, Cyanide, Lead, Indicator Bacteria, Trash	Urban Runoff, Unspecified or unknown point and nonpoint sources
Santa Clara River (Reaches 1, 3, 5, 6, 7, and 11)	Toxicity, Ammonia, Chloride, Total Dissolved Solids (TDS), Coliform Bacteria, Iron, Chlorpyrifos, Copper, Diazinon, Boron, Specific Conductance, Sulfates.	

SOURCE: RWQCB, 2014. Available online at: http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml

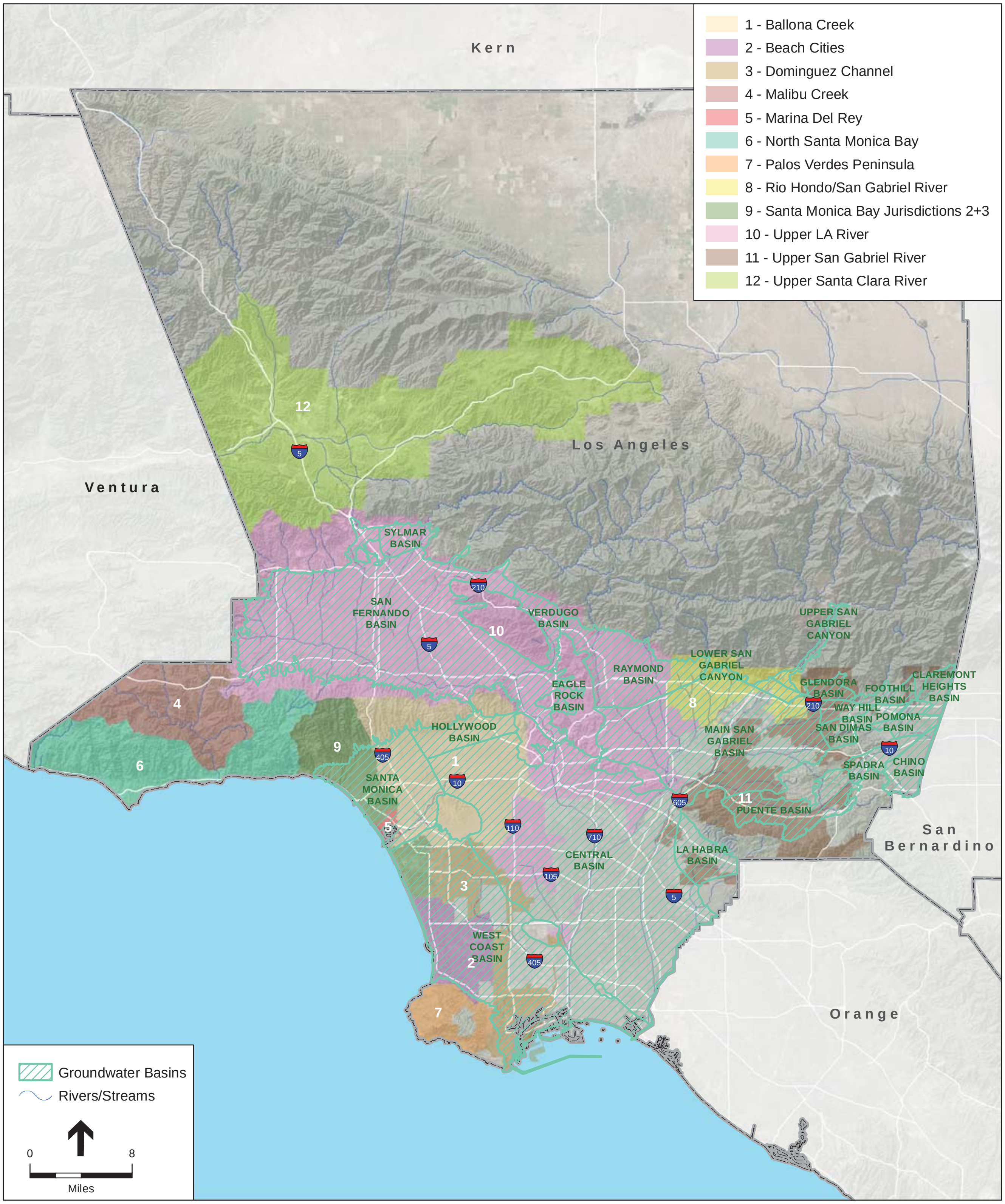
Existing Stormwater Recharge

In Southern California's arid climate, stormwater is increasingly viewed as a critical component of the region's water supply. The nexus between stormwater and groundwater has been recognized since the early 20th century, when groundwater recharge facilities began to be constructed along the San Gabriel River and other basins (see Groundwater, below). According to the Metropolitan Water District, approximately 55 percent of water supplies in Southern California are imported; 45 percent are supplied by local groundwater basins that are recharged naturally from rainfall and through constructed recharge facilities (MWD, 2010). As described further in this section, stormwater recharge facilities currently augment local groundwater supplies in the region by an estimated 477,000 acre-feet per year (MWD, 2014). One of the primary goals of the EWMP program is to increase the amount of stormwater that is recharged into groundwater, particularly in portions of the Central Basin that experience a high degree of hydraulic connectivity between surface water and groundwater. Infiltration BMPs proposed within the EWMPs are expected to increase the rates and amounts of groundwater recharge—the degree to which these increase is dependent upon project-specific attributes such as size, location, and the size of the contributing watershed.

Groundwater

Groundwater Basins

Los Angeles County is located in the South Coast Hydrologic Region (HR), as described by the Department of Water Resources Groundwater Bulletin 118 (2003). The South Coast HR is divided into numerous smaller groundwater basins and subbasins; the two largest and most critical among them are the Central Basin and the West Coast Basin. **Figure 3.8-10** displays the boundaries of these basins.



SOURCE: ESRI; Los Angeles County GIS

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Figure 3.8-10
Groundwater Basins within the EWMP Areas

The 140-square-mile West Coast Basin underlies much of the Beach Cities, Dominguez Channel, and Marina del Rey EWMP Areas. The 270-square-mile Central Basin underlies portions of the Los Angeles River, Upper San Gabriel, and SGR/Rio Hondo EWMP areas. The Central and West Coast Basins are characterized by aquifers that are generally confined by relatively impermeable clay layers over most of the area (DWR, 1961), with the exception of the Montebello and Los Angeles Forebays in the Central Basin.

Groundwater generally flows from east to west across the Main San Gabriel Basin, then southward into the Central Basin through the Montebello Forebay. Within all groundwater basins, groundwater flow directions are generally controlled by engineered recharge operations and groundwater pumping from the hundreds of wells distributed across the area (Shelton et al., 2001; Dawson et al., 2003). Stormwater recharge facilities currently augment local groundwater supplies in the region by an estimated 477,000 acre-feet per year (MWD, 2014). Due to the pumping depressions that exist in the Central and West Coast Basins, very little groundwater discharges or leaves the basins as subsurface outflow.

Recharge to the Central Basin occurs primarily by engineered recharge of stormwater, imported water, and reclaimed water along the upper reaches of the San Gabriel River and the Rio Hondo via the San Gabriel River Water Conservation System. This system is a series of dams, spreading grounds and instream recharge systems that facilitate groundwater recharge into the Main San Gabriel Basin and Montebello Forebay of the Central Basin. The system is comprised of four dams (Cogswell, San Gabriel, Morris, and Santa Fe) and three spreading grounds (San Gabriel Canyon, Sante Fe, and San Gabriel) on the San Gabriel River, as well as inflatable dams meant to pond water along the river's unlined stretch of the river. The system also includes one dam (Whittier Narrows) – and one spreading ground (Rio Hondo) along the Rio Hondo. Collectively, the Rio Hondo and San Gabriel River spreading grounds are referred to as the Montebello Forebay Spreading Grounds, or MFSG. Recycled water has been also delivered for recharge in the Montebello Forebay since 1962. Finally, the Central Basin includes one seawater intrusion barrier, the Alamitos Gap Seawater Intrusion Barrier (AGB), fed by treated imported water along with advanced water treatment recycled water.

Recharge to the West Coast Basin occurs primarily by injection of imported water and reclaimed water into wells of the seawater intrusion barrier and by underflow from the Central Basin. The Dominguez Channel Spreading Grounds (DGSG) are located along the Los Angeles River near the boundary between the West Coast and Central Basins. The sources of water for the spreading grounds are controlled flows from the Los Angeles River low-flow channel and uncontrolled flows from storm drains. The West Coast Basin includes two seawater intrusion barriers, the West Coast Basin Seawater Intrusion Barrier (WCBB) and Dominguez Gap Seawater Intrusion Barrier, also fed by treated imported water and advanced water treatment recycled water.

The EWMP areas overlie various groundwater basins as summarized in **Table 3.8-2**, most of which are adjudicated and managed by court-stipulated Watermasters. The Watermasters monitor groundwater production and participate in groundwater remediation programs.

TABLE 3.8-2
GROUNDWATER BASINS WITHIN THE EWMP AREAS

EWMP	Groundwater Basin	Adjudicated?	Watermaster
Ballona Creek	Santa Monica Basin Hollywood Basin Central Basin	No No Yes	None None CB
Beach Cities	West Coast Basin	Yes	WCB
Dominguez Channel	West Coast Basin	Yes	WCB
Malibu Creek	None	No	None
Marina Del Rey	Santa Monica Basin	No	None
North Santa Monica Bay	None	No	None
Palos Verdes Peninsula	None	No	None
San Gabriel and Rio Hondo	Main San Gabriel Basin	Yes	MSGB
Santa Monica Bay	Santa Monica Basin West Coast Basin	No Yes	None WCB
Upper Los Angeles River	San Fernando Basin Main San Gabriel Basin Central Basin	Yes Yes Yes	ULARA MSGB CB
Upper San Gabriel	Upper San Gabriel	Yes	MSGB
Upper Santa Clara River	East Subbasin	No	None

WCB – West Coast Basin Watermaster
CB – Central Basin Watermaster
MSGB – Main San Gabriel Basin Watermaster
ULARA – Upper Los Angeles River Area Watermaster

SOURCE: DWR, Bulletin 118

Groundwater Quality

In general, groundwater in the main producing aquifers of the West Coast and Central basins is of good quality. Localized areas of marginal to poor quality water exist, primarily at the basin margins where seawater intrusion occurred in the past and also in mostly shallow groundwater near environmental release sites. Groundwater has also been impacted by industrial activities that have introduced highly mobile man-made organic compounds such as solvents and fuel additives. These contaminated groundwater plumes are well documented. Areas of these contaminant plumes are designated to restrict recharge activities that may create an increased driver for contaminant migration.

Between the 1900s and 1950s, groundwater was an important factor in urbanization of the West Coast and Central basins. Excessive overpumping in the basins caused severe overdraft (i.e., lowered groundwater levels) and created a hydraulic gradient that resulted in seawater intrusion, which contaminated the coastal groundwater aquifers. To address this problem and halt the intrusion, three seawater intrusion barriers were constructed (discussed previously). While the water injection activities at the barriers were successful in halting further seawater intrusion, these efforts could not address the seawater that had already intruded into the Central and West Coast Basins before the barriers were constructed. These large plumes of saline water, referred to as “saline plumes,” are trapped inland of the injection wells, thereby degrading significant volumes of groundwater with high concentrations of chloride and total dissolved solids (TDS) and decreasing the ability of affected aquifers to provide groundwater storage.

Groundwater quality in the Central and West Coast Basins also reflects current and historical land uses. As a highly urban area, commercial and industrial activities have resulted in contamination due to leaking aboveground and underground storage tanks, leaking sewer and oil pipelines, spills, and illegal discharges. Many groundwater contamination plumes consist of priority contaminants such as petroleum fuels and additives (e.g., methyl tert-butyl ether), solvents (e.g., trichloroethylene and perchloroethylene), herbicides (e.g., atrazine, simazine, prometon), and other hazardous/toxic substances (e.g., arsenic, perchlorate). Groundwater contamination within the central, West Coast, and adjacent basins is discussed in depth in the California Groundwater Ambient Monitoring and Assessment's 2012 summary report (USGS and SWRCB, 2012). In general, contaminated plumes are typically found in shallow groundwater. However, as the aquifers and confining layers in these alluvial basins are typically interfingered,[1] the quality of groundwater in the deeper production aquifers is threatened by the migration of pollutants from the upper aquifers.

3.8.2 Regulatory Setting

Federal

Clean Water Act

The Federal Water Pollution Control Act (33 U.S.C. 1251 et. sec.) as amended by the Federal Water Pollution Control Act Amendments of 1972, also known as the CWA, states that the discharge of pollutants to waters of the United States from any point source is unlawful, unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. Amendments to the CWA added a section that established a framework for regulating municipal and industrial (M&I) stormwater discharges under the NPDES program. On November 16, 1990, the U.S. Environmental Protection Agency (USEPA) published final regulations, under the 1987 CWA Amendments, that establish application requirements for stormwater permits.

Clean Water Act Section 402

CWA Section 402 regulates discharges to surface waters of the United States through the NPDES program. In California, the USEPA authorizes the SWRCB to oversee the NPDES program through the Regional Water Quality Control Boards (RWQCBs). In September 2004, the RWQCB adopted Time Schedule Order No. R8-2004-0067, which requires the Sanitation District to achieve full secondary treatment by December 31, 2012. The Sanitation District has since carried out improvement projects of existing facilities and constructed new facilities to achieve secondary treatment standards by the year 2012 (RWQCB, 2004).

Stormwater discharges are also regulated under CWA Section 402.Construction activities disturbing one acre of land or greater must be covered under the SWRCB General Construction Activity Stormwater Permit. The permit requires preparation of a Stormwater Pollution

1 Interfinger means to grade or pass from one material (typically fine-grained) into another (typically coarse-grained) through a series of interpenetrating wedge-shaped layers. This can result in hydraulic connection between fine and coarse grounded layers.

Prevention Plan (SWPPP) for construction activities. A SWPPP prepared in compliance with the General Permit describes the site, erosion and sediment controls, runoff water quality monitoring, means of waste disposal, implementation of approved local plans, control of post-construction sediment and erosion control measures and maintenance responsibilities, and non-stormwater management controls. Dischargers are also required to inspect construction sites before and after storms to identify stormwater discharge from construction activity, and to identify and implement controls where necessary.

Clean Water Act Section 303(d)

Section 303(d) of the CWA requires that each state identify water bodies or segments of water bodies that are "impaired" (i.e., do not meet one or more of the water quality standards established by the state). These waters are identified in the Section 303(d) list as waters that are polluted and need further attention to support their beneficial uses. Once the water body or segment is listed, the state is required to establish TMDL for the pollutant. A TMDL is the maximum amount of a pollutant that a water body can receive and still meet the water quality standards. Typically, TMDL is the sum of the allowable loads of a single pollutant from all contributing point and nonpoint sources. On October 11, 2011, the USEPA approved a revised list of water quality limited segments (herein referred to as the 303(d) list) prepared by the RWQCB for California's 2008 through 2010. Table 3.8-1 summarizes the main impaired water bodies within the study area that are included on the RWQCB 2008 CWA Section 303(d) list that was revised on July 7, 2009.

Clean Water Act Section 401

Section 401 of the federal CWA requires that any activity, including the crossing of rivers or streams during road, pipeline, or transmission line construction, that might result in discharges of dredged or fill material into a state water body, be certified by the RWQCB. This certification ensures that the proposed activity does not violate state or federal water quality standards.

Clean Water Act Section 404

Wetlands are generally considered to be areas that are periodically or permanently inundated by surface water or groundwater, and support vegetation adapted to life in saturated soil. Wetlands are recognized as important features on a regional and national level due to their high inherent value to fish and wildlife, use as storage areas for storm and floodwaters, and water recharge, filtration, and purification functions. Technical standards for delineating wetlands have been developed by the ACOE which generally defines wetlands through consideration of three criteria: hydrology, soils, and vegetation. Under Section 404 of the CWA, the ACOE is responsible for regulating the discharge of dredged or fill material into waters of the United States. The term "waters of the United States" includes wetlands and non-wetland bodies of water that meet specific criteria as defined in the Code of Federal Regulations.

State

Porter-Cologne Water Quality Act

The Porter-Cologne Act (Division 7 of the California Water Code) provides the basis for water quality regulation within California and defines water quality objectives as the limits or levels of water constituents that are established for reasonable protection of beneficial uses. The SWRCB administers water rights, water pollution control, and water quality functions throughout the State, while the RWQCB conducts planning, permitting, and enforcement activities. The Porter-Cologne Act requires the RWQCB to establish water quality objectives, while acknowledging that water quality may be changed to some degree without unreasonably affecting beneficial uses. Beneficial uses, together with the corresponding water quality objectives, are defined as standards, per Federal regulations. Therefore, the regional plans form the regulatory standards for meeting State and federal requirements for water quality control. Changes in water quality are only allowed if the change is consistent with the maximum beneficial use designated by the State, does not unreasonably affect the present or anticipated beneficial uses, and does not result in water quality less than that prescribed in the water quality control plans.

California Ocean Plan

The SWRCB regulates water quality in the Pacific Ocean through regulatory standards and objectives outlined in the *Water Quality Control Plan, Ocean Waters of California* (commonly referred to the Ocean Plan) (SWRCB, 2012). The Ocean Plan identifies beneficial uses of ocean waters and provides water quality objectives that are protective of these uses. The plan provides objectives for bacteriological, physical, chemical, biological, and radioactive characteristics, as well as general requirements for the management of waste discharges to the Pacific Ocean. The USEPA relies upon the water quality objectives of the Ocean Plan for the purposes of regulating discharges from point sources that discharge into the Pacific (e.g. WWTP ocean outfalls) as well as the water quality of streams and channels that flow into the ocean.

In 1974, the SWRCB designated 34 regions along the coast of California as Areas of Special Biological Significance (ASBS) under Resolution Number 74-28 (SWRCB, 1974a). These ASBS are “areas designated by the SWRCB as ocean areas requiring protection of species or biological communities to the extent that alteration of natural water quality is undesirable” (SWRCB, 2012b). A portion of the Pacific off of the North Santa Monica Bay coastline from Laguna Point to Latigo Point offshore is designated as ASBS 24.

In March 2012, the SWRCB adopted the General Exception (SWRCB, 2012b), which exempts certain listed dischargers. The conditions in the General Exception are designed to protect beneficial uses of the receiving water, yet allow continuation of essential public services, such as flood control, slope stability, erosion prevention, maintenance of the natural hydrologic relationship between terrestrial and marine ecosystems, public health and safety, public recreation and coastal access, commercial and recreational fishing, navigation, and essential military operations (national security) (SWRCB, 2012b).

The General Exception designates the LACFCD, the City of Malibu and the California Department of Transportation (Caltrans) as dischargers to ASBS 24, and the California The General Exception authorizes these dischargers to discharge into ASBS 24, provided that it:

- Complies with the NPDES MS4 Permit.

- Includes an ASBS Compliance Plan that shall be included as part of the Permittees' primary policy, planning, and implementation documents for municipal NPDES Stormwater Permit compliance.

Proposed Trash Amendments to California Ocean Plan

The SWRCB has proposed to amend the California Ocean Plan and the forthcoming Inland Surface Waters, Enclosed Bays, and Estuaries Plan to address trash in waterways, including waterways regulated by the Los Angeles County MS4 (SWRCB, 2014). The proposed Trash Amendments would be incorporated into the MS4 Permit and:

- Establish a narrative water quality objective for trash.
- Establish a prohibition of discharge of trash.
- Provide implementation requirements for permitted stormwater dischargers and other discharges.
- Set a time schedule for compliance.
- Provide a framework for monitoring and reporting requirements.

A central element of the proposed Trash Amendments is a compliance approach that utilizes land use to target high trash generating areas (priority land uses), such as high-density residential, industrial, and commercial, mixed urban, and public transportation land uses. Within this land use- based approach, the SWRCB proposes two alternative compliance tracks (i.e., the Permittee must choose to comply with one of the tracks). Under Track 1, a Permittee could elect to install a network of full capture systems in the storm drains located in priority land uses for MS4s and the entire facility for IGP/CGP. Under Track 2, a Permittee could use any combination of controls (structural and/or institutional), as long as they can demonstrate that the combination of controls performs as well as Track 1. The SWRCB can extend this deadline by up to three years if Permittees implement regulatory source controls, such as product bans.

National Pollutant Discharge Elimination Program

The NPDES permit program is administered in the State of California by the RWQCBs, and was first established under the authority of the CWA to control water pollution by regulating point sources that discharge pollutants into waters of the United States. If discharges from industrial, municipal, and other facilities go directly to surface waters, those project applicants must obtain permits. An individual NPDES permit is specifically tailored to a facility. A general NPDES permit covers multiple facilities within a specific activity category such as construction activities. A general permit applies with same or similar conditions to all dischargers covered under the general permit.

General Dewatering Permit

The SWRCB also has issued General Waste Discharge Requirements (WDRs) under Order No. R8-2003-0061, NPDES No. CAG 998001 (Dewatering General Permit) governing non-stormwater construction-related discharges from activities such as dewatering, water line testing, and sprinkler system testing. The discharge requirements include provisions mandating notification, testing, and reporting of dewatering and testing-related discharges. The General

WDRs authorize such construction-related discharges so long as all conditions of the permit are fulfilled.

Construction General Permit

The Construction General Permit (CGP) requires the development and implementation of an SWPPP that includes specific BMPs designed to prevent pollutants from contacting stormwater and keep all products of erosion from moving off-site into receiving waters. The SWPPP BMPs are intended to protect surface water quality by preventing the off-site migration of eroded soil and construction-related pollutants from the construction area. Routine inspection of all BMPs is required under the provisions of the CGP. In addition, the SWPPP is required to contain a visual monitoring program, a chemical monitoring program for nonvisible pollutants, and a sediment monitoring plan if the site discharges directly to a water body listed on the 303(d) list for sediment.

In the project area, the CGP is implemented and enforced by the Los Angeles Regional Water Quality Control Board (LARWQCB), which administers the stormwater permitting program. Dischargers are required to electronically submit a Notice of Intent (NOI) and permit registration documents (PRDs) to obtain coverage under this CGP. Dischargers are responsible for notifying the LARWQCB of violations or incidents of noncompliance, as well as for submitting annual reports identifying deficiencies of the BMPs and how the deficiencies were corrected.

Municipal Stormwater Permitting (MS4)

The State’s Municipal Stormwater Permitting Program regulates stormwater discharges from Municipal Separate Storm Sewer Systems (MS4s). MS4 Permits were issued in two phases. Phase I was initiated in 1990, under which the RWQCBs adopted NPDES stormwater permits for medium (serving between 100,000 and 250,000 people) and large (serving more than 250,000 people) municipalities. As part of the Phase II, the SWRCB adopted a General Permit for small MS4s (serving less than 100,000 people) and non-traditional small MS4s including governmental facilities such as military bases, public campuses, and hospital complexes.

The Permittees’ 2012 MS4 Permit (Order No. R4-2012-0175; NPDES Permit No. CAS004001) requires Permittees to develop Enhanced Watershed Management Plans to ensure they are not causing or contributing to exceedances of water quality objectives or impairments of beneficial uses in the receiving waters of the Los Angeles region. The EWMPs are the subject of this PEIR.

Local Regulations

Los Angeles Regional Water Quality Control Plan

The preparation and adoption of water quality control plans (Basin Plans) is required by the California Water Code (Section 13240) and supported by the CWA. Section 303 of the CWA requires states to adopt water quality standards which “consist of the designated uses of the navigable waters involved and the water quality criteria for such waters based upon such uses.” According to Section 13050 of the California Water Code, Basin Plans consist of a designation or establishment for the waters within a specified area of beneficial uses to be protected, water quality objectives to protect those uses, and a program of implementation needed for achieving the objectives. Because beneficial uses, together with their corresponding water quality objectives, can be defined per Federal regulations as water quality standards, the Basin Plans are regulatory references for meeting the State and Federal requirements for water quality control. Beneficial uses for water bodies in the EWMP Areas are summarized in Appendix F.

County of Los Angeles Stormwater Pollution Control Requirements for Construction Activities

To comply with the Phase II General Construction Permit, the County of LA has established a set of BMPs with which all permitted construction activities on unincorporated county lands must comply. The BMPs, which are based on the state's Stormwater Best Management Practices Handbook (2003), are as follows:

- Eroded sediments and other pollutants must be retained on site and may not be transported from the site via sheetflow, swales, area drains, natural drainage courses or wind.
- Stockpiles of earth and other construction related materials must be protected from being transported from the site by the forces of wind or water.
- Fuels, oils, solvents and other toxic materials must be stored in accordance with their listing and are not to contaminate the soil and surface waters. All approved storage containers are to be protected from the weather. Spills must be cleaned up immediately and disposed of in a proper manner. Spills may not be washed into the drainage system.
- Non-stormwater runoff from equipment and vehicle washing and any other activity shall be contained at the project site.
- Excess or waste concrete may not be washed into the public way or any other drainage system. Provisions shall be made to retain concrete wastes on site until they can be disposed of as solid waste.
- Trash and construction related solid wastes must be deposited into a covered receptacle to prevent contamination of rainwater and dispersal by wind.
- Sediments and other materials may not be tracked from the site by vehicle traffic. The construction entrance roadways must be stabilized so as to inhibit sediments from being deposited into the public way. Accidental depositions must be swept up immediately and may not be washed down by rain or other means.
- Any slopes with disturbed soils or denuded of vegetation must be stabilized so as to inhibit erosion by wind and water.

The Los Angeles County Department of Public Works may identify and require additional BMPs, as appropriate.

City of Los Angeles Development Construction Model Program

The City of LA's Development Construction Model Program addresses NPDES Phase II requirements on construction sites within incorporated City lands. BMPs for construction (as well as source control and treatment) are detailed in the City's Reference Guide for Stormwater Best Practices (LADPW, 2000). The BMPs are consistent with those developed by the state and county, and include erosion and sedimentation control measures, site management practices, materials and waste management, and general preventive maintenance and inspection.

Stormwater Pollution Control Requirements for Other Cities in the County of Los Angeles

Other cities within the County also have stormwater pollution control requirements and associated BMPs; their content is similar to those described in this section for the County and City of Los Angeles.

County of Los Angeles Low Impact Development Manual

The County of Los Angeles (County) prepared the 2014 Low Impact Development Standards Manual (LID Standards Manual, County of Los Angeles, 2014b) to comply with the requirements of the 2012 MS4 Permit. The LID Standards Manual provides guidance for the implementation of stormwater quality control measures in new development and redevelopment projects in unincorporated areas of the County with the intention of improving water quality and mitigating potential water quality impacts from stormwater and non-stormwater discharges.

The LID Standards Manual addresses the following objectives and goals:

- Lessen the adverse impacts of stormwater runoff from development and urban runoff on natural drainage systems, receiving waters, and other water bodies.
- Minimize pollutant loadings from impervious surfaces by requiring development projects to incorporate properly-designed, technically-appropriate BMPs and other LID strategies.
- Minimize erosion and other hydrologic impacts on natural drainage systems by requiring development projects to incorporate properly-designed, technically appropriate hydromodification control development principles and technologies.

City of Los Angeles Low Impact Development Manual

In November 2011, the City of Los Angeles adopted the Stormwater Low Impact Development Ordinance #181899 with the stated purpose of:

- Requiring the use of LID standards and practices in future developments and redevelopments to encourage the beneficial use of rainwater and urban runoff
- Reducing stormwater/urban runoff while improving water quality
- Promoting rainwater harvesting
- Reducing off-site runoff and providing increased groundwater recharge
- Reducing erosion and hydrologic impacts downstream
- Enhancing the recreational and aesthetic values in our communities

The City of Los Angeles institutionalized the use of LID techniques for development and redevelopment projects. Subsequent to the adoption of the Stormwater LID Ordinance, the City prepared the *Development Best Management Practices Handbook, Low Impact Development Manual,* dated June 2011, to describes the required BMPs (City of Los Angeles, 2011).

Low Impact Development Manuals for Other Cities in the County of Los Angeles

Some of the other cities within the County also have LID ordinances and manuals. Their content is similar to the LID manuals described in this section for the County and City of Los Angeles.

City General Plans

The numerous cities encompassed by the EWMP project area all have their own respective city General Plans, some of which may contain policies that address water quality and hydrology. As implementation of the individual structural BMP projects proceed, specific policies and objectives pertaining to water quality and hydrology from applicable city General Plans will be identified and evaluated on a project-by-project basis during subsequent California Environmental Quality Act (CEQA) environmental processes.

3.8.3 Impact Analysis

The proposed project's potential impacts were assessed using the California Environmental Quality Act (CEQA) Guidelines Appendix G Checklist. The following sections discuss the key issue areas identified in the CEQA Guidelines with respect to the project's potential hydrology and water quality impacts.

Thresholds of Significance

For the purposes of this PEIR and consistency with Appendix G of the CEQA Guidelines, applicable local plans, and agency and professional standards, the project would have a significant impact on aesthetic resources if it would:

- Violate any water quality standards or waste discharge requirements.
- Otherwise substantially degrade water quality.
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).
- Substantially alter the existing drainage pattern of a site or area through the alteration of the course of a stream or river, or by other means, in a manner that would result in substantial erosion or siltation on- or off-site.
- Substantially alter the existing drainage pattern of a site or area through the alteration of the course of a stream or river or, by other means, substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site.
- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other authoritative flood hazard delineation map.
- Place within a 100-year flood hazard area structures that would impede or redirect flood flows.
- Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam.
- Expose people or structures to a significant risk of loss, injury, or death involving inundation by seiche, tsunami, or mudflow.

Program Impact Discussion

Water Quality Standards, Waste Discharge Requirements, and Further Degradation of Water Quality

Impact 3.8-1: The proposed project would violate water quality standards or waste discharge requirements or further degrade water quality.

Structural (Regional, Centralized, and Distributed) BMPs

Construction

Construction, demolition, and renovation activities associated with the installation of some BMPs, particularly larger centralized and regional BMPs, could lead to ground disturbance and polluted runoff. However, as described above, the NPDES CGP requires that any actions that disturb an acre or more of ground must develop an SWPPP to prevent the transport of polluted runoff. SWPPPs will most likely be necessary for the construction of regional and centralized BMPs, particularly those that are larger, multi-benefit projects such as greenway redevelopments. Projects under an acre in size, which will include most distributed BMPs, must comply with NPDES Phase II requirements and incorporate construction BMPs mandated by the jurisdiction within which the project falls. Compliance with the CGP would ensure that the construction of BMPs would have no temporary or permanent impact to water quality.

Operation

The structural BMPs are designed to reduce the transport of pollutants in stormwater, thereby helping Permittees improve water quality. The EWMP structural BMPs that have stormwater retention and infiltration as a function are designed to reverse the impacts from urbanization on the natural hydrograph and water quality. The widespread implementation of distributed BMPs with these functions in urban areas of all the EWMP groups will significantly reduce stormwater flow volumes and pollutant loading to creeks and rivers. The increased infiltration of stormwater from the widespread implementation of these projects will have the effect of increasing recharge to the groundwater, reducing peak storm flows and altering the hydrograph toward more natural conditions. By retaining stormwater flows and either infiltrating or releasing these flows closer to the natural conditions, the stream hydrographs will be less impacted by the urbanization. The increase in infiltration of stormwater from these BMPs will also raise groundwater levels and increase groundwater seepage to creeks and rivers following storm events. Runoff reduction measures and LFDs under the EWMP will significantly reduce dry-weather “nuisance” flows that have altered formerly ephemeral systems to perennial creeks and streams.

Distributed BMPs, although on a smaller parcel or site scale, would also be designed to collect and treat stormwater to reduce the loading of the smaller amounts of contaminants transported by their relatively smaller receiving areas. This would reduce contaminant loading to receiving waters compared with existing conditions while capturing contaminants in filter media. The vegetation and microbial activity in soil would work to biodegrade the typical fuels, oil, and grease in local urban runoff.

As discussed in the Project Description (Section 2.0), the identification of water quality priorities is required in Section VI.C.5.a of the MS4 permit as part of EWMP development. Appendix F provides a listing of the water quality priorities for each EWMP. As highlighted in this prioritization process, pollutants under a TMDL have higher priority and will be addressed under the timelines defined in the TMDLs. This highlights that the EWMP is a continuation of water quality improvement efforts by the Permittees under existing TMDLs through adopted TMDL Implementation Plans. BMP types that are assessed in this PEIR therefore include BMPs under various stages of implementation and planning to meet TMDL waste load allocations.

Once constructed, the structural BMPs would provide source control treatment of stormwater runoff prior to discharge to receiving waters whether on a site-specific (distributed structural BMPs), local (centralized structural BMPs), or regional (regional structural BMPs) basis. These structural BMPs would provide improved water quality through infiltration and treatment (e.g., filtration, settling, sedimentation, sorption, straining, and biological or chemical transformations) that would minimize the off-site transport of typical urban runoff pollutants. Implementation of the proposed BMPs would have no adverse impacts to surface water quality.

Mitigation Measures: None required

Significance Determination: Less than significant impact

Non-Structural (Institutional) BMPs

Non-structural BMPs policies, actions, and activities intended to prevent pollutants from entering stormwater runoff, thus eliminating the source of the pollutants. These BMPs would not involve any earthwork disturbance or construction activities, and similar to the Structural BMPs, once implemented, would aid in minimizing off-site discharge of urban runoff pollutants. As a result, they would have no adverse impact on water quality standards or waste discharge requirements.

Mitigation Measures: None required

Significance Determination: No impact

Groundwater

Impact 3.8-2: The proposed project would result in higher groundwater levels and could potentially affect groundwater quality.

Structural (Regional, Centralized, and Distributed) BMPs

Water Levels

Regional BMPs would recharge stormwater into the groundwater basin and could raise local groundwater levels following major storm events. Distributed infiltration BMPs would typically be too small to have a measureable effect on local groundwater levels. Groundwater basins in southern Los Angeles County are adjudicated and managed for beneficial uses. Increased capture of stormwater is a key element to integrated water supply planning in Southern California. The increased water supplies captured by the infiltration basins through the EWMP areas would be a beneficial impact of the projects.

In areas with shallow groundwater tables or impermeable soils, recharge could result in mounding that affects subsurface infrastructure such as building or bridge foundations. This would be a potential impact of regional BMPs that recharge large volumes of captured stormwater, but could also occur for distributed BMPs in areas with limited permeability. For example, the EWMP Areas of Malibu Creek, Northern Santa Monica Bay, and Palos Verdes are located in areas where no significant groundwater basin occurs. In addition, the West Coast Basin consists of a series of aquitards near the surface that prevent surface water percolation into the productive aquifers. Infiltration BMPs in these areas would result in shallow infiltration followed by lateral movement and seepage to nearby areas that could include creek cuts, areas of lower elevation, or basements and underground vaults. **Mitigation Measure HYDRO-1** requires Permittees to evaluate the suitability of BMP locations for groundwater recharge. Infiltration BMPs would not be suitable in areas of low permeability where subsurface structures could be adversely affected by groundwater mounding.

Groundwater Quality

Infiltration of stormwater runoff could increase contaminant loading in shallow soils and groundwater. Some contaminants found in stormwater runoff (e.g., oil, grease, metals) adsorb onto surficial soils and remain within a few feet of the surface, while other more soluble contaminants (e.g., fuels, nitrate, phosphate) may be entrained to deeper soils or migrate all the way to the groundwater. Over a long period of time, concentrations of these contaminants could increase resulting in contaminated soils and groundwater. Pre-treatment of source water in areas with the potential for heavy contaminant loading would be implemented as a required design feature for regional and centralized BMPs to assist in reducing long-term loading. In addition, non-structural source control BMPs would help reduce contaminant loading over time. The LID standards for the County of Los Angeles and the various cities participating in the EWMP provide protocols for designing regional and centralized BMPs that minimize the potential for contaminant loading. Compliance with these protocols and implementation of **Mitigation Measure HYDRO-2** which would require the implementing agencies to evaluate the need for pretreatment at each infiltration BMP, impacts to groundwater quality would be less than significant.

Proposed projects that recharge the shallow aquifers have the potential to mobilize shallow contamination and alter groundwater flow directions. Within the urbanized areas of the County, legacy groundwater contamination is prevalent resulting from overlying uses such as industrial operations and underground storage of fuels. A few major contamination areas have rendered the groundwater basins unusable for potable uses. In particular, groundwater contamination plumes exist in the southeast corner of the San Fernando Groundwater Basin, the Main San Gabriel Basin, and the East Subbasin in Santa Clarita. Each of these areas are undergoing remedial actions to improve groundwater quality.

The infiltration of large volumes of water in certain areas could modify these existing contaminant plumes. If these infiltration facilities were located over contaminated groundwater plumes, groundwater flow patterns could be modified such that contaminated groundwater migrates into areas that are not currently contaminated or pushed away from existing treatment systems. **Mitigation Measure HYDRO-3** would require that infiltration BMPs would be required to evaluate site conditions and the existence of contaminated groundwater plumes during planning stages prior to construction of infiltration galleries, trenches, and basins.

Mitigation Measures:

HYDRO-1: Prior to approving an infiltration BMP, the Permittee shall conduct an evaluation of the suitability of the BMP location. Appropriate infiltration BMP sites should avoid areas with low permeability where recharge could adversely affect neighboring subsurface infrastructure.

HYDRO-2: Prior to approving an infiltration BMP, the Permittee shall identify pretreatment technologies, type, and depth of filtration media; depth to groundwater; and other design considerations necessary to prevent contaminants from impacting groundwater quality. The design shall consider stormwater quality data within the BMP's collection area to assess the need and type of treatment and filtration controls. Local design manuals and ordinances requiring minimum separation distance to groundwater shall also be met as part of the design.

HYDRO-3: Prior to the installation of an infiltration BMP, the Permittee shall conduct a database review for contaminated groundwater sites within a quarter mile of the proposed infiltration facility. The Permittee shall identify whether any contaminated groundwater plumes are present and whether coordination with the local and state environmental protection overseeing agency and responsible party is warranted prior to final design of infiltration facility.

Significance Determination: Less than significant with mitigation (The application of these mitigation measures to specific BMP types and categories are identified in Table 3.8-3.)

Non-Structural (Institutional) BMPs

Non-structural BMPs policies, actions, and activities are primarily intended to prevent pollutants from entering stormwater runoff, thus eliminating the source of the pollutants. However, within Planning and Land Use Programs, there would be encouragement for implementation of LID strategies which not only improve water quality but also include on-site infiltration which can increase groundwater levels. Most non-structural institutional BMPs are implemented to meet

Minimum Control Measure (MCM) requirements in the MS4 permit. As discussed above, increased infiltration from local LID drainage features are not as likely to result in substantive increases in groundwater levels and therefore would have a less than significant impact on groundwater supplies.

Mitigation Measures: None required

Significance Determination: Less than significant

Drainage Pattern Alteration Resulting in Erosion or Siltation

Impact 3.8-3: The proposed project could substantially alter the existing drainage pattern of a site or area through the alteration of the course of a stream or river, or by other means, in a manner that would result in substantial erosion or siltation on- or off-site.

Structural (Regional, Centralized, and Distributed) BMPs

The proposed structural BMPs would be designed to minimize off-site discharge of urban runoff pollutants including siltation and sedimentation. Many of the structural BMPs would include on-site infiltration of stormwater runoff which would also be effective in minimizing erosion or transport of sedimentation into receiving waters. Through increased infiltration prior to discharge into receiving waters, flows within existing streams or rivers would receive reduced stormwater flow volumes thereby decreasing flow energies. As a result, the potential for erosion or siltation within existing streams or rivers would be reduced and the potential impact less than significant.

Mitigation Measures: None required

Significance Determination: Less than significant

Non-Structural (Institutional) BMPs

Non-structural BMPs policies, actions, and activities are primarily intended to prevent pollutants from entering stormwater runoff largely through the use of drainage features that either infiltrate or detain stormwater runoff on-site. Drainage patterns would change through implementation of these non-structural institutional BMPs that are implemented to meet Minimum Control Measure (MCM) requirements in the MS4 permit. MCMs are considered a subset of institutional BMPs. These BMPs are not constructed, but within Planning and Land Use policies there would be encouragement for implementation of LID strategies which include on-site infiltration and/or detaining peak flows that would minimize off-site flows as well as the potential for erosion and off-site siltation. As discussed previously, increased infiltration from local LID drainage features minimize the potential for erosion and therefore there would be a less than significant impact related to erosion and siltation.

Mitigation Measures: None required

Significance Determination: Less than significant

Drainage Pattern Alteration Resulting in Flooding

Impact 3.8-4: The project could substantially alter the existing drainage pattern of a site or area through the alteration of the course of a stream or river or, by other means, substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site.

Structural (Regional, Centralized, and Distributed) BMPs

The proposed structural BMPs include features that would increase stormwater retention and encourage on-site infiltration to reverse the impacts from urbanization on the natural hydrograph. The widespread implementation of distributed BMPs with these functions in urban areas of all the EWMP groups will significantly reduce stormwater flow volumes especially during peak storm flow events as indicated by the figure shown in Impact 3.8-3. Larger retention and infiltration regional and centralized BMPs will also have a beneficial effect on regional hydrology through delayed discharge to avoid the spike in peak flows currently experienced. By retaining stormwater flows and either infiltrating or releasing these flows closer to the natural hydrograph, the change in drainage patterns would result in reduced peak flows and as a result a reduced potential for flooding on- or off-site. Therefore, the potential impact would be less than significant.

Mitigation Measures: None required

Significance Determination: Less than significant

Non-Structural (Institutional) BMPs

Non-structural BMPs policies, actions, and activities are primarily intended to prevent pollutants from entering stormwater runoff and include drainage features that infiltrate or detain stormwater runoff on-site. Drainage patterns would change through implementation of these non-structural institutional BMPs, however implementation of LID strategies which include on-site infiltration that would minimize off-site flows as well as the potential for erosion and off-site siltation. As discussed above, increased infiltration from local LID drainage features are minimize the potential for erosion and therefore would be a *less than significant impact*.

Mitigation Measures: None required

Significance Determination: Less than significant

Stormwater Drainage Systems

Impact 3.8-5: The proposed project could create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

Structural (Regional, Centralized, and Distributed) BMPs

The proposed structural BMPs whether regional, centralized or distributed would have an overall effect of reducing off-site stormwater flows through on-site infiltration and detention. As a result of having a net effect of reducing stormwater runoff volumes, there would be a less-than-significant effect on the capacity of existing or planned stormwater drainage systems. The structural BMPs would also provide improvements to water quality of receiving waters as that is the primary purpose of these BMPs and have proven effective in reducing potential sources of polluted runoff for a less than significant impact.

Mitigation Measures: None required

Significance Determination: Less than significant

Non-Structural (Institutional) BMPs

The non-structural BMPs would similarly provide the policies, actions, and activities to encourage the use of drainage features that either infiltrate or detain stormwater runoff on-site. Drainage patterns would change through implementation of these non-structural institutional BMPs but would be designed to improve water quality and reduce stormwater flow volumes. Therefore, the potential impact to the capacity of drainage systems would be less than significant as well as the potential to provide additional sources of polluted runoff.

Mitigation Measures: None required

Significance Determination: Less than significant

Flood Hazards: Housing

Impact 3.8-6: The project could place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other authoritative flood hazard delineation map.

Structural (Regional, Centralized, and Distributed) BMPs

The proposed structural BMPs would not include the construction of any housing and therefore there would be no impact related to placement of housing in a flood hazard area.

Mitigation Measures: None required

Significance Determination: No impact

Non-Structural (Institutional) BMPs

Similar to above, the non-structural BMPs would not include the construction of any housing and therefore there would be no impact related to placement of housing in a flood hazard area.

Mitigation Measures: None required

Significance Determination: No impact

Flood Hazards: Structures

Impact 3.8-7: The project could place within a 100-year flood hazard area structures that would impede or redirect flood flows.

Structural (Regional, Centralized, and Distributed) BMPs

In general, the majority of the structural BMPs would consist of either features with a very low profile in terms of having any effect on flood flows (e.g., drainage swales, infiltration trenches, galleries, ponds, planter boxes and pervious pavement) or features that are subterranean (e.g., cisterns, detention basins, dry wells). However, structural BMPs could include above ground detention basins. Above ground detention basins would be required to adhere to any local flood zone construction permitting requirements such that they would not be impede or redirect flood flows. As a result, the impact of structural BMPs would *be less than significant*.

Mitigation Measures: None required

Significance Determination: Less than significant

Non-Structural (Institutional) BMPs

Non-structural BMPs would not include the construction of any structures and therefore there would be no impact related to impeding or redirecting flood flows.

Mitigation Measures: None required

Significance Determination: No impact

Flood Hazards: Levee or Dam Failure

Impact 3.8-8: The proposed project could expose structures to a significant risk of loss, including flooding as a result of the failure of a levee or dam.

Structural (Regional, Centralized, and Distributed) BMPs

The majority of the structural BMPs would consist of features with a very low profile and would be designed to aid in the conveyance of runoff and high flows. Structural BMPs could also include above ground detention basins. Above ground detention basins would not be staffed and not likely to be susceptible to substantive damage in the event of a catastrophic failure of a levee or dam based on the general characteristics of how above ground detention basins are constructed. As a result, the impact of structural BMPs would be less than significant.

Mitigation Measures: None required

Significance Determination: Less than significant

Non-Structural (Institutional) BMPs

Non-structural BMPs would not include the construction of any structures and therefore there would be no impact related to failure of a levee or dam.

Mitigation Measures: None required

Significance Determination: No Impact

Tsunami, Seiche or Mudflow

Impact 3.8-9: The proposed project could place structures in areas subject to inundation by seiche, tsunami, or mudflow.

Structural (Regional, Centralized, and Distributed) BMPs

The project area includes coastal areas and areas that are adjacent to enclosed bodies of water that could be subject to seiche, tsunami, or mudflow. As described above the majority of these BMP facilities consist of either subterranean improvements or low profile features that are generally not considered susceptible to substantive damage from these hazards. Larger above ground improvements such as centralized or regional detention basins, could be located in areas that are within seiche, tsunami, or mudflow hazard areas. However, these structures would not be staffed and any potential damage that they might incur would likely be relatively easily repaired. As a result, the potential impact to structures subject to inundation by seiche, tsunami, or mudflow would be less than significant.

Mitigation Measures: None required

Significance Determination: Less than significant

Non-Structural (Institutional) BMPs

Non-structural BMPs would not include the construction of any structures and therefore there would be no impact related to inundation by seiche, tsunami, or mudflow.

Mitigation Measures: None required

Significance Determination: No impact

Cumulative Impact Discussion

Structural (Regional, Centralized, and Distributed) BMPs

The EWMPs span numerous watersheds within Los Angeles County. Implementation of the proposed structural BMPs, together with past, present, and other reasonably foreseeable future projects across the different watersheds of the region would result in improved stormwater quality and reduced non storm flows. As BMPs are incrementally installed, the Los Angeles region will experience reduced dry-weather runoff, a more natural hydrology, and improved receiving water quality. In addition, new infiltration projects will incrementally augment groundwater drinking water supplies. Although the increased infiltration projects may increase pollutant loads to groundwater aquifers, pretreatment systems coupled with regional groundwater management lead by the local Watermasters will ensure that the beneficial uses of groundwater basins are not significantly impaired. Implementation of the EWMPs will beneficially impact local surface water quality and groundwater supplies.

Mitigation Measures: None required

Significance Determination: Less than significant

3.8.4 Summary of Impact Assessment

Table 3.8-3 on the following page shows a summary of the structural BMPs requiring mitigation.

TABLE 3.8-3
SUMMARY OF HYDROLOGICAL RESOURCE IMPACTS REQUIRING MITIGATION MEASURES

	Thresholds of Significance						
Structural BMPs	**Surface Water Quality**	**Groundwater**	**Erosion**	**Storm Drain System**	**Flood Hazards**	**Tsunami, Seiche, Mudflows**	**Cumulative Impacts**
Applicable Mitigation Measures:	**None Required**	**HYDRO-1; HYDRO-2; HYDRO-3**	**None Required**	**None Required**	**None Required**	**None Required**	**None Required**
Regional BMPs							
Regional Detention and Infiltration	No	Yes	No	No	No	No	No
Regional Capture, Detention and Use	No	Yes	No	No	No	No	No
Centralized BMP							
Bioinfiltration	No	Yes	No	No	No	No	No
Constructed Wetlands	No	Yes	No	No	No	No	No
Treatment/LFDs	No	Yes	No	No	No	No	No
Creek, River, Estuary Restoration	No	Yes	No	No	No	No	No
Distributed BMPs							
Site Scale Detention	No	Yes	No	No	No	No	No
LID – Infiltration/Filtration BMPs – Porous Pavement, Green Streets, Bioswale/Filter Strips, downspout disconnects	No	Yes	No	No	No	No	No
LID – Green Infrastructure – Capture and Use – Cisterns, Rain Barrels, Green roofs, Planter Boxes	No	No	No	No	No	No	No
Flow-through Treatment BMPs	No	No	No	No	No	No	No
Source Control Treatment BMPs (catch basin inserts/screens, hydrodynamic separators, gross solids removal devices)	No	No	No	No	No	No	No
Low-Flow Diversions	No	No	No	No	No	No	No

NOTE: These conclusions are based on typical size and locations of BMPs.

3.9 Land Use and Agriculture

This section describes and discusses existing land uses and agricultural resources that may be affected by the proposed program in the Enhanced Watershed Management Program (EWMP) areas of Los Angeles County (County) and considers the compatibility of the proposed program with relevant land use plans and policies. The analysis identifies potential impacts that may result from implementing the proposed program and evaluates their significance. Applicable plans and policies related to land use and agriculture are presented and potential impacts and mitigation measures, if needed, are identified.

3.9.1 Environmental Setting

Regional Setting

The proposed program is located in Los Angeles County, which covers an area of about 4,083 square miles and comprises 88 cities and approximately 2,650 square miles of unincorporated areas. The majority of the County is highly urbanized and consists of several cities, communities and unincorporated areas. The proposed projects are located in multiple jurisdictions of Los Angeles County; these include Los Angeles County Flood Control District (LACFCD), the County of Los Angeles, and the following cities: Los Angeles, Beverly Hills, Culver City, Inglewood, Santa Monica, West Hollywood, Hawthorne, El Segundo, Lomita, Baldwin Park, Covina, Glendora, Industry, La Puente, Malibu, Calabasas, Agoura Hills, Westlake Village, Hidden Hills, Santa Clarita, Rancho Palos Verdes, Palos Verdes Estates, Rolling Hills Estates, Redondo Beach, Hermosa Beach, Torrance, Manhattan Beach, Arcadia, Azusa, Bradbury, Duarte, Monrovia, Sierra Madre, Alhambra, Burbank, Glendale, Hidden Hills, La Cañada Flintridge, Montebello, Monterey Park, Pasadena, Rosemead, San Gabriel, San Marino, South Pasadena, and Temple City (see Figure 1-1). Each of these jurisdictions have independent planning documents that guide the development of urban, agricultural, and other land uses within their jurisdictional boundaries.

Existing Land Use Characterization

Land uses within the County are widely varied and include open space, residential, commercial, mixed-use, public and semi-public, and industrial land uses. The proposed program would be located in various watersheds across Los Angeles County that span multiple jurisdictions with varying land use regulations. The existing land uses within each watershed are summarized in this section by EWMP group and are based upon information from the Southern California Association of Government (SCAG) and the EWMP Work Plans. The EWMP agencies have no jurisdiction over the land that is owned by the State of California (i.e., California Department of Fish and Wildlife, the State Lands Commission, and the California Department of Transportation) or the U.S. Government.

Ballona Creek

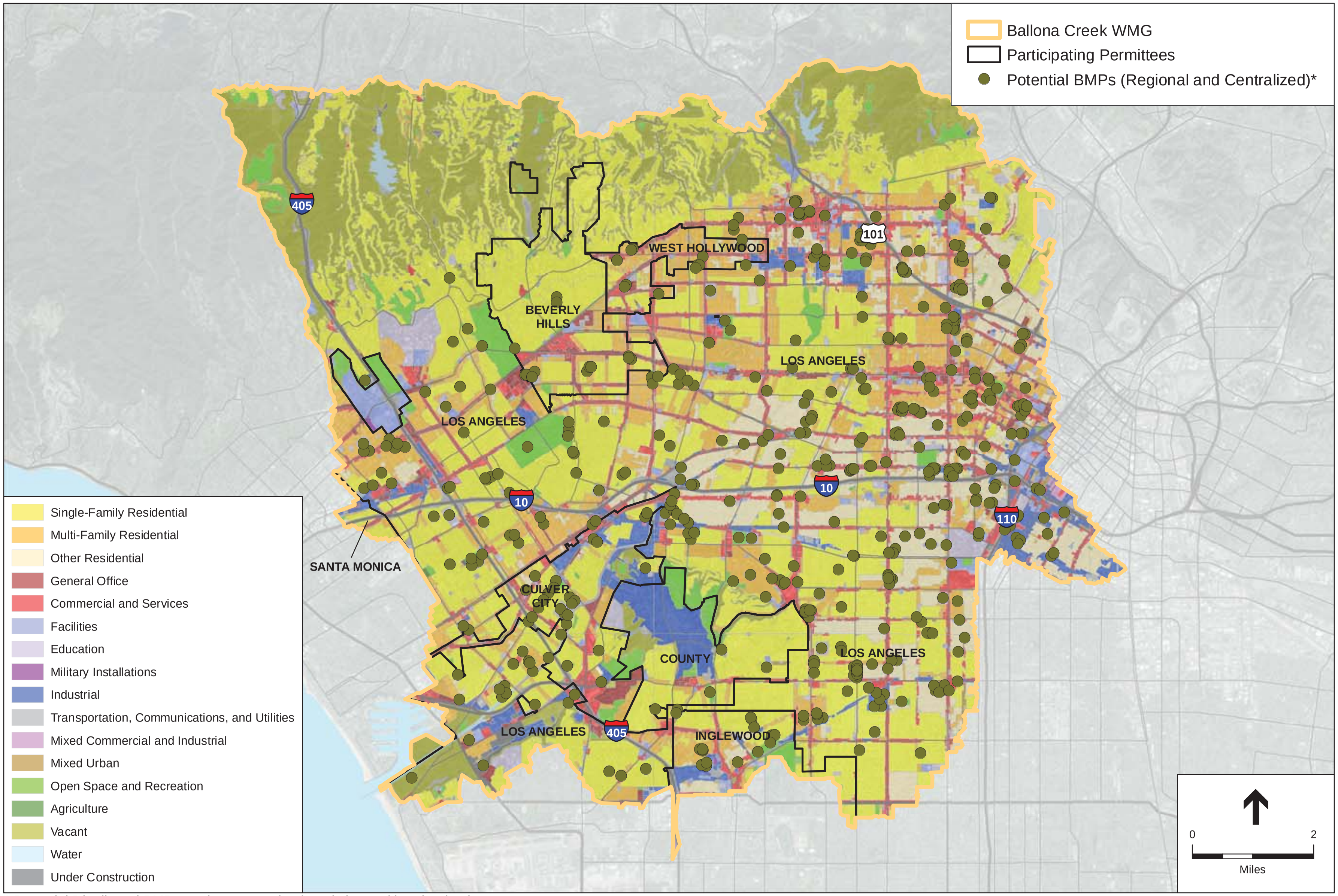
The Ballona Creek EWMP area covers the Ballona Creek Watershed. The Permittees within this EWMP are: the Cities of Beverly Hills, West Hollywood, Los Angeles, Inglewood, Culver City, Santa Monica; the County of Los Angeles; and LACFCD. The Ballona Creek Watershed comprises the cities of Beverly Hills, Culver City, and West Hollywood and parts of Inglewood, Los Angeles and Santa Monica as well as small unincorporated areas of Los Angeles County. Collectively, the Municipal Separate Stormwater Sewer Systems (MS4) Permittees in the Ballona Creek Watershed have jurisdiction over 123 square miles or 96 percent of the total watershed area. A breakdown of areas by MS4 Permittees is provided in **Table 3.9-1**.

TABLE 3.9-1
BALLONA CREEK WATERSHED LAND AREA DISTRIBUTION

Agency	Land Area (Acres)	Percent of EWMP Area
City of Los Angeles	65,272.89	83.21%
County of Los Angeles	3,164.76	4.03%
City of Beverly Hills	3,618.95	4.61%
City of Culver City	3,125.00	3.98%
City of Inglewood	1,907.72	2.43%
City of West Hollywood	1,135.00	1.45%
City of Santa Monica	217.31	0.28%
Total	**78,441.63**	**100.00%**

SOURCE: Ballona Creek EWMP Work Plan, 2014.

The population in the Ballona Creek Watershed is approximately 1.6 million people (LADPW, 2004). The predominant land use in the Ballona Creek Watershed is residential, representing 63.7 percent of the total land area, including multi-family residential uses covering 18 percent of the area. Although open space areas represent 16.7 percent, this category may include parks and other open areas not generally open to the public, including vacant land and golf courses (LADPW, 2004). Commercial, public, light industrial, other urban and unknown land uses represents 19.6 percent of the total land area. **Figure 3.9-1** shows land uses in the Ballona Creek Watershed and the location of planned and priority regional/centralized Best Management Practices (BMPs). The location of distributed BMPs would be throughout the urbanized areas of the watershed.



* Potential Distributed BMP not shown - predominantly located in urbanized areas

SOURCE: ESRI; SCAG

LA County PEIR EWMP . 140474

Figure 3.9-1
Land Use in the Ballona Creek Watershed Management Group

Beach Cities

The Beach Cities EWMP area covers portions of two watersheds: Santa Monica Bay Watershed (Jurisdictional Group [JG] 5 and JG6) and the Dominguez Channel Watershed. The Permittees within this EWMP are: the Cities of Redondo Beach, Manhattan Beach, Hermosa Beach, and Torrance; and the LACFCD. **Figure 3.9-2** shows land uses in the Beach Cities EWMP area and the location of planned and priority regional/centralized BMPs. The location of distributed BMPs would be throughout the urbanized areas of the watershed.

The western portion of the Beach Cities EWMP area consists of approximately 7,840 acres of land that drains to Santa Monica Bay. This accounts for 38.4 percent of the total Beach Cities Watershed Management Group area, and includes portions of the cities of Manhattan Beach, Redondo Beach, and Torrance and the entirety of the City of Hermosa Beach.

The northeastern portion of the Beach Cities EWMP area is tributary to Dominguez Channel (including the Torrance Carson Channel) and comprises approximately 7,380 acres of land. This watershed accounts for 36.1 percent of the total Beach Cities EWMP area, and includes portions of the cities of Manhattan Beach, Redondo Beach, and Torrance. Storm drains from the Cities of Manhattan Beach and Redondo Beach drain through the City of Lawndale before discharging to Dominguez Channel. Torrance's MS4 discharges directly to the Dominguez Channel and Torrance Carson Channel (Torrance Lateral).

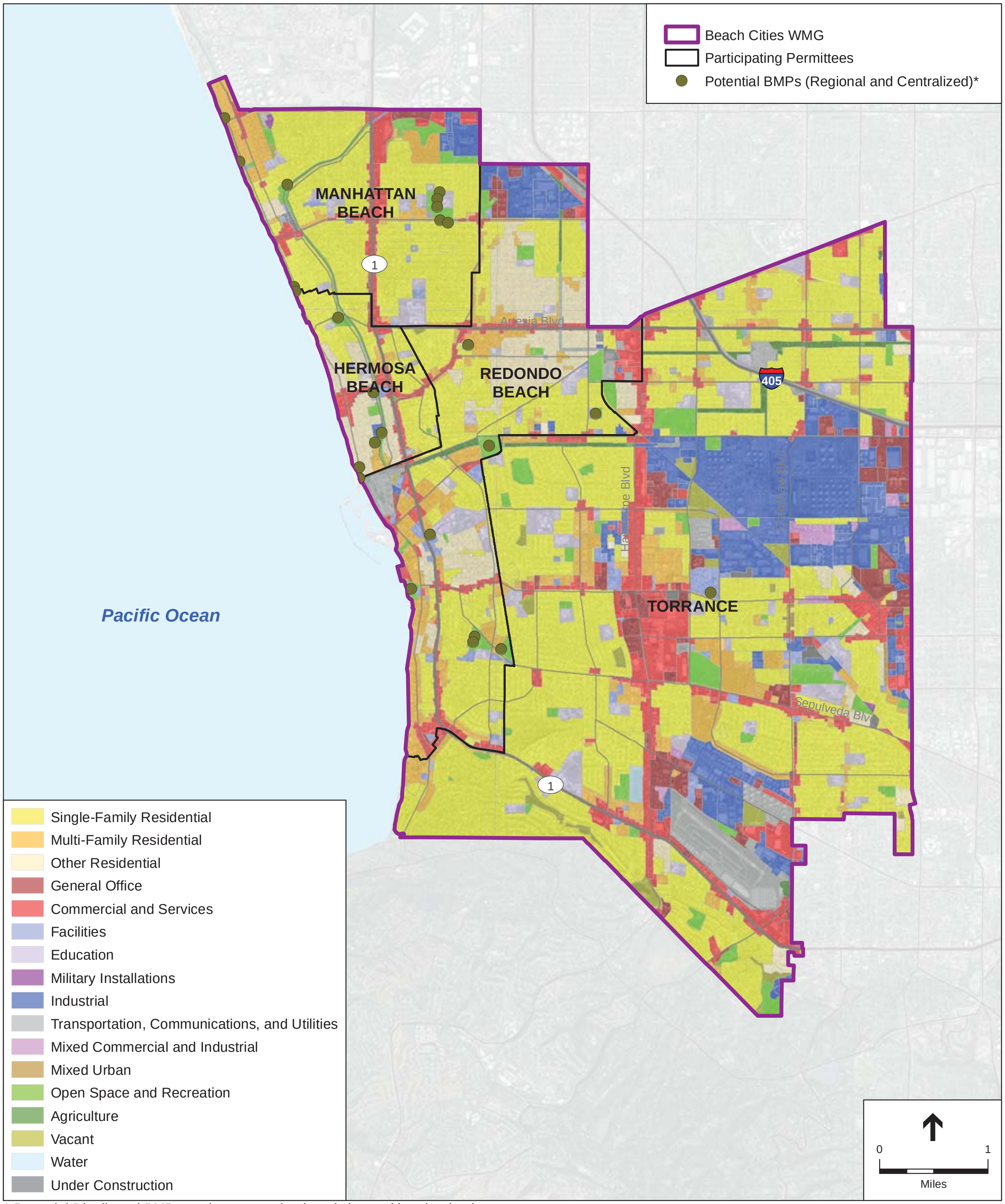
The southeastern portion of the Beach Cities EWMP area is tributary to Machado Lake (including Wilmington Drain) and comprises approximately 5,182 acres of land. This watershed accounts for 25.5 percent of the total Beach Cities EWMP area. All but 1.2 acres (0.02 percent) of this area is within the City of Torrance. The City of Redondo Beach owns the remainder of the area, though no Redondo Beach catch basins or MS4 are tributary to Machado Lake. LACFCD is not responsible for land within the Beach Cities EWMP area, but does own and maintain infrastructure within all three watersheds. A breakdown of areas by MS4 Permittee is provided in **Table 3.9-2**.

TABLE 3.9-2
BEACH CITIES WATERSHED LAND AREA DISTRIBUTION

Agency	SMB Watershed (acres)	Dominguez Channel Watershed (acres)	Machado Lake Watershed (acres)	Total EWMP Area (acres)	Percent of EWMP Area
Redondo Beach	2,614	1,217	1	3,832	19%
Manhattan Beach	2,078	350	-	2,428	12%
Hermosa Beach	832	-	-	832	4%
City of Torrance	2,314	5,812	5,181	13,307	65%
Total	**7,837**	**7,379**	**5,182**	**20,399**	**100%**

SOURCE: Beach Cities EWMP Work Plan, 2014.

RB-AR 8532



** Potential Distributed BMP not shown - predominantly located in urbanized areas*

SOURCE: ESRI; SCAG

LA County PEIR EWMP . 140474

Figure 3.9-2
Land Uses in the Beach Cities Watershed Management Group

Dominguez Channel

The Dominguez Channel EWMP area covers portions of the Dominguez Channel Watershed and the Machado Lake and the Los Angeles/Long Beach Harbor subwatersheds. The Dominguez Channel EWMP addresses approximately 36,410 acres, or 47.45 percent of the total 133-square-mile watershed. The Permittees within this EWMP are: the Cities of El Segundo, Hawthorne, Inglewood, Lomita, and Los Angeles; the County of Los Angeles; and the LACFCD. A breakdown of areas by MS4 Permittee and other agencies is provided in **Table 3.9-3**. **Figure 3.9-3** shows land use in the Dominguez Channel EWMP area and the location of planned and priority regional/centralized BMPs. The location of distributed BMPs would be throughout the urbanized areas of the watershed. **Table 3.9-4** provides the land use breakdown within the Dominguez Channel EWMP.

TABLE 3.9-3
DOMINGUEZ CHANNEL WATERSHED LAND AREA DISTRIBUTION

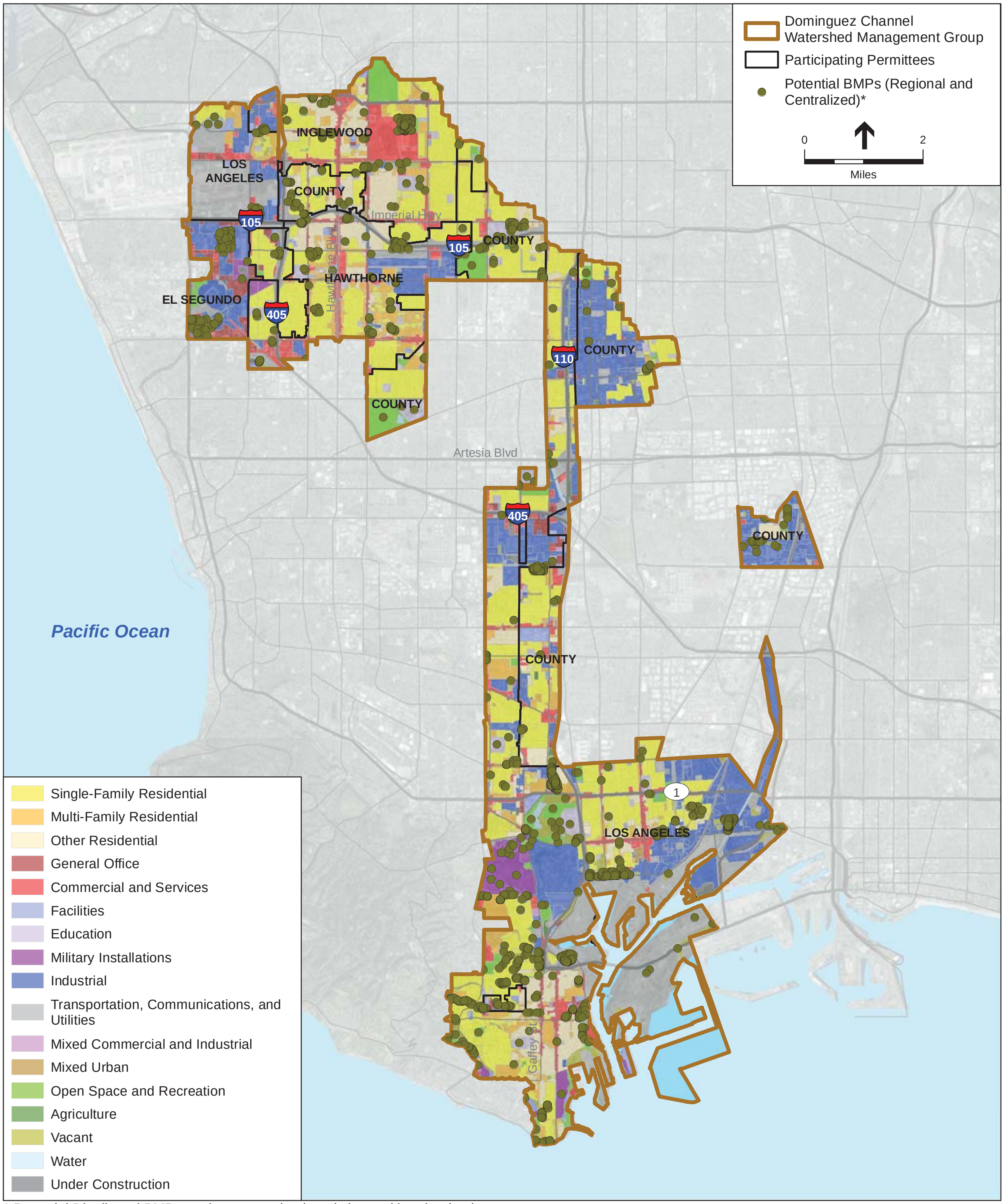
Agency	Area in Machado Lake Watershed (acres)	Area in Dominguez Channel Watershed (acres)	Area in LA/LB Harbors Watershed (acres)	Total Area in EWMP (acres)	Percent of EWMP Area
City of El Segundo	0	1,252.18	0	1,252.18	3.44%
City of Hawthorne	0	3,891.91	0	3,891.91	10.69%
City of Inglewood	0	3,884.28	0	3,884.27	10.67%
City of Lomita		1,227.70			3.26%
City of Los Angeles	1,998.42	19,243.25	11,258.12	19,243.20	52.85%
Los Angeles County	1,250.87	6,755.77	134.23	8,140.87	22.36%

SOURCE: Dominguez Channel EMWP Work Plan and Notice of Intent, 2014.

TABLE 3.9-4
DOMINGUEZ CHANNEL WATERSHED LAND USE

Agency	Total Area (acres)	Percent of EWMP Area
Agriculture	0.2	0.3%
Commercial	10.7	18.4%
Industrial	9.1	15.7%
Multi-Family Residential	8.3	14.2%
Single Family Residential	16.1	27.7%
Open	4.6	7.8%
Other Urban	9.3	15.9
Total	**58.3**	**100%**

SOURCE: Dominguez Channel EMWP Work Plan, 2014.



** Potential Distributed BMP not shown - predominantly located in urbanized areas*

SOURCE: ESRI; SCAG

LA County PEIR EWMP . 140474

Figure 3.9-3

Land Use in the Dominguez Channel Watershed Management Group

RB-AR 8535

Malibu Creek

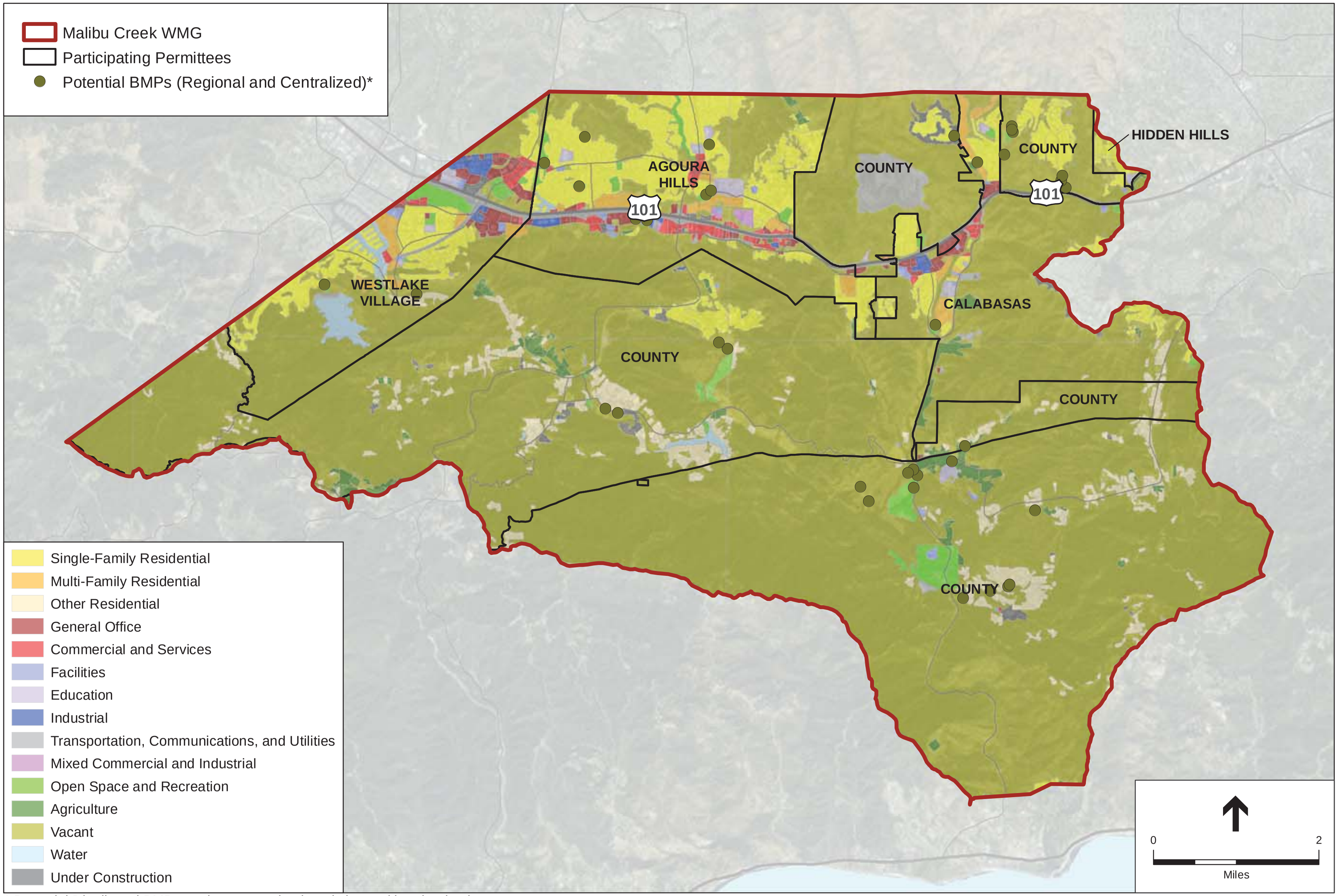
The Malibu Creek Watershed EWMP area covers the majority of the Malibu Creek Watershed. The Permittees within this EWMP are: the Cities of Agoura Hills, Calabasas, Hidden Hills, and Westlake Village; the County of Los Angeles; and the LACFCD.

Malibu Creek Watershed land uses are 81 percent vacant, 11 percent residential, 2 percent open space and recreation, 2 percent commercial and public, 1 percent transportation and utilities, and 1percent mixed-use (LADPW, 2005a). The Malibu Creek Watershed EWMP area is approximately 32,992 acres, which is approximately 46.7 percent of the total area in the Malibu Creek Watershed. A breakdown of areas by MS4 Permittee and other agencies is provided in **Table 3.9-5**. **Figure 3.9-4** shows land use in the Malibu Creek Watershed EWMP area and the location of planned and priority regional/centralized BMPs. The location of distributed BMPs would be throughout the urbanized areas of the watershed.

TABLE 3.9-5
MALIBU CREEK WATERSHED LAND AREA DISTRIBUTION

Agency	Total Area (acres)	Percent of EWMP Area
City of Agoura Hills	5,178	15.7%
City of Calabasas	4,941	15.0%
City of Hidden Hills	105	0.3%
City of Westlake Village	3,540	10.7%
County of Los Angeles	19,228	58.3%

SOURCE: Malibu Creek EMWP Work Plan, 2014.



* Potential Distributed BMP not shown - predominantly located in urbanized areas

SOURCE: ESRI; SCAG

LA County PEIR EWMP . 140474

Figure 3.9-4
Land Use in the Malibu Creek Watershed Management Group

Marina del Rey

The Marina del Rey EWMP area covers the Marina del Rey Watershed. The Permittees within this EWMP are: the Cities of Los Angeles and Culver City; the County of Los Angeles; and LACFCD.

Land uses within the Marina del Rey Watershed are 52 percent residential, 46 percent commercial and 2 percent open space (LADPW, 2014a). A breakdown of areas by MS4 Permittee and other agencies is provided in **Table 3.9-6**. **Figure 3.9-5** shows land use in the Marina del Rey Watershed EWMP area and the location of planned and priority regional/centralized BMPs. The location of distributed BMPs would be throughout the urbanized areas of the watershed. **Table 3.9-7** provides the land use breakdown within the Marina del Rey Watershed.

TABLE 3.9-6
MARINA DEL REY WATERSHED LAND AREA DISTRIBUTION

Agency	Total Area (acres)	Percent of EWMP Area
City of Los Angeles	971.3	69%
City of Culver City	42.2	3%
County of Los Angeles	395.7	28%
Total	**1,409**	**100%**

SOURCE: Marina del Rey EMWP Work Plan, 2014.

TABLE 3.9-7
MARINA DEL REY WATERSHED LAND USE

Agency	City of Culver (acres)	City of Los Angeles (acres)	County of Los Angeles (acres)	Total Area (acres)
Single-Family Residential	6.8	230.6	0.3	237.7
Multi-Family Residential	0	229.4	156.9	386.3
Institutional/Public Facilities	0	83.7	4.2	87.9
Commercial and Services	24.3	122.3	122.0	268.6
Industrial/Mixed with Industrial	0	27.7	0	27.7
Transportation/Road	11.1	246.4	39.8	297.3
Developed Recreation/Marina Parking	0	0.9	43.3	44.2
Beach	0	0	8.2	8.2
Water	0	30.3	13.5	43.8
Vacant	0	0	7.6	7.6
Total	**42.2**	**971.3**	**395.7**	**1,409**

SOURCE: Marina del Rey EMWP Work Plan, 2014.

SOURCE: ESRI; SCAG

LA County PEIR EWMP . 140474

Figure 3.9-5
Land Use in the Marina del Rey Watershed Management Group

North Santa Monica Bay

The North Santa Monica Bay EWMP area covers the north region of the Santa Monica Bay Watershed (JG1 and JG4 and a portion of JG9) within the city of Malibu's borders. The Permittees within this EWMP are: the City of Malibu; County of Los Angeles; and LACFCD. The North Santa Monica Bay EWMP area encompasses 55,121 acres. The North Santa Monica Bay EWMP area is over 93 percent vacant land. The EWMP Group land use breakdowns by JG and watershed are shown in **Table 3.9-8**. **Figure 3.9-6** shows land uses in the North Santa Monica Bay EWMP area and the location of planned and priority regional/centralized BMPs. The location of distributed BMPs would be throughout the urbanized areas of the watershed.

TABLE 3.9-8
NORTH SANTA MONICA BAY WATERSHED LAND USE

Agency	JG1/Zuma Canyon	JG1/Solstice Canyon	JG1/Santa Monica Beach	JG1/Garapito Creek	JG1 & 4 Arroyo Sequit	Cold Creek-Malibu Creek	Total Area (acres)
Vacant	89.0%	87.7%	91.7%	94.9%	96.5%	95.8%	93.1%
Agricultural	1.9%	0.7%	0.0%	0.6%	0.9%	0.7%	0.8%
Commercial	0.5%	0.6%	0.8%	0.2%	0.2%	0.2%	0.4%
Single Family Residential	7.7%	8.8%	7.0%	4.1%	2.2%	3.0%	5.0%
Multi-Family Residential	0.5%	0.7%	0.4%	0.2%	0.1%	0.2%	0.3%
Industrial	0.1%	0.1%	0.0%	0.0%	0.0%	0.2%	0.1%
Education	0.3%	1.4%	0.0%	0.1%	0.0%	0.0%	0.3%

SOURCE: North Santa Monica Bay EMWP Work Plan, 2014.

RB-AR 8541

tly located in urbanized areas

Land Use

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Peninsula Cities

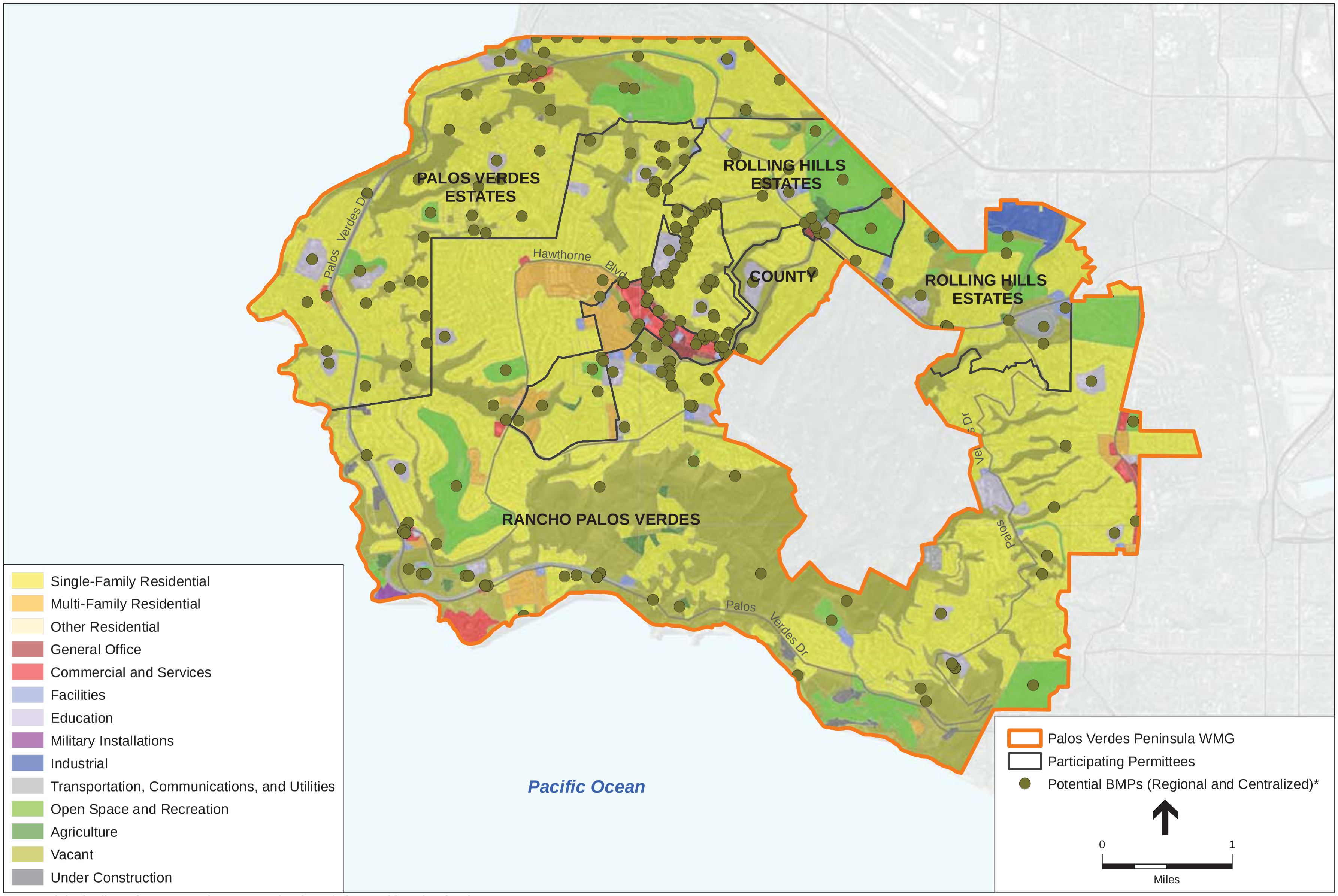
The Peninsula Cities EWMP area covers most of the Santa Monica Bay Watershed JG7, the Los Angeles/Long Beach Harbor Watershed, and the Machado Lake Watershed. The Permittees within this EWMP are: the Cities of Rancho Palos Verdes, Palos Verdes Estates, and Rolling Hills Estates; the County of Los Angeles; and LACFCD.

The Santa Monica Bay Watershed accounts for 63 percent (14.2 square miles) of the total Peninsula watershed management group area, and includes portions of the cities of Palos Verdes Estates, Rancho Palos Verdes, and Rolling Hills Estates. The Los Angeles Harbor subwatershed accounts for 15 percent (3.4 square miles) of the total Peninsula watershed management group area, and includes portions of the cities of Rancho Palos Verdes and Rolling Hills Estates. The Machado Lake subwatershed accounts for 22 percent (4.9 square miles) of the total Peninsula watershed management group area, and includes portions of the cities of Palos Verdes Estates, Rancho Palos Verdes, and Rolling Hills Estates and the County of Los Angeles. **Table 3.9-9** provides the Peninsula EWMP area identified by watershed and agency. **Figure 3.9-7** shows land uses in the Palos Verdes Peninsula EWMP area and the location of planned and priority regional/centralized BMPs. The location of distributed BMPs would be throughout the urbanized areas of the watershed.

TABLE 3.9-9
PALOS VERDES PENINSULA LAND AREA DISTRIBUTION

Agency	Santa Monica Bay (Square Miles)	Machado Lake (Square Miles)	Los Angeles Harbor (Square Miles)	Total EWMP Area
Rancho Palos Verdes	9.35	1.07	3.02	13.5
Palos Verdes Estates	4.35	0.39	0	4.8
Rolling Hills Estates	0.46	2.78	0.34	3.6
County of Los Angeles	0	0.70	0	0.7
Total	**14.2**	**4.9**	**3.4**	**22.6**

SOURCE: Palos Verdes Peninsula EMWP Work Plan, 2014.



** Potential Distributed BMP not shown - predominantly located in urbanized areas*

SOURCE: ESRI; SCAG

LA County PEIR EWMP . 140474

Figure 3.9-7

Land Uses in the Palos Verdes Peninsula EWMP Agencies

RB-AR 8544

Rio Hondo/San Gabriel River

The Rio Hondo/San Gabriel River EWMP area covers portions of the Los Angeles and San Gabriel River watersheds. The Permittees within this EWMP are: the Cities of Arcadia, Azusa, Bradbury, Duarte, Monrovia, and Sierra Madre; the County of Los Angeles; and LACFCD.

Table 3.9-10 provides the size and percentage of each participating member's jurisdiction within the group and the percent contribution to the Los Angeles River and/or San Gabriel River Watersheds. The area included in the Rio Hondo/San Gabriel River EWMP encompasses approximately 41 square miles of predominately residential and open space land use and excludes areas in the Angeles National Forest. Of the total Los Angeles River and San Gabriel River Watershed areas, the Rio Hondo/San Gabriel River EWMP members have jurisdiction over 4 and 3 percent of the total watersheds, respectively. **Table 3.9-11** depicts the watershed land use categories within the Rio Hondo/San Gabriel River EWMP area. **Figure 3.9-8** shows land uses in the Rio Hondo/ San Gabriel River EWMP area and the location of planned and priority regional/centralized BMPs. The location of distributed BMPs will be throughout the urbanized areas of the watershed.

TABLE 3.9-10
RIO HONDO/SAN GABRIEL RIVER LAND AREA DISTRIBUTION

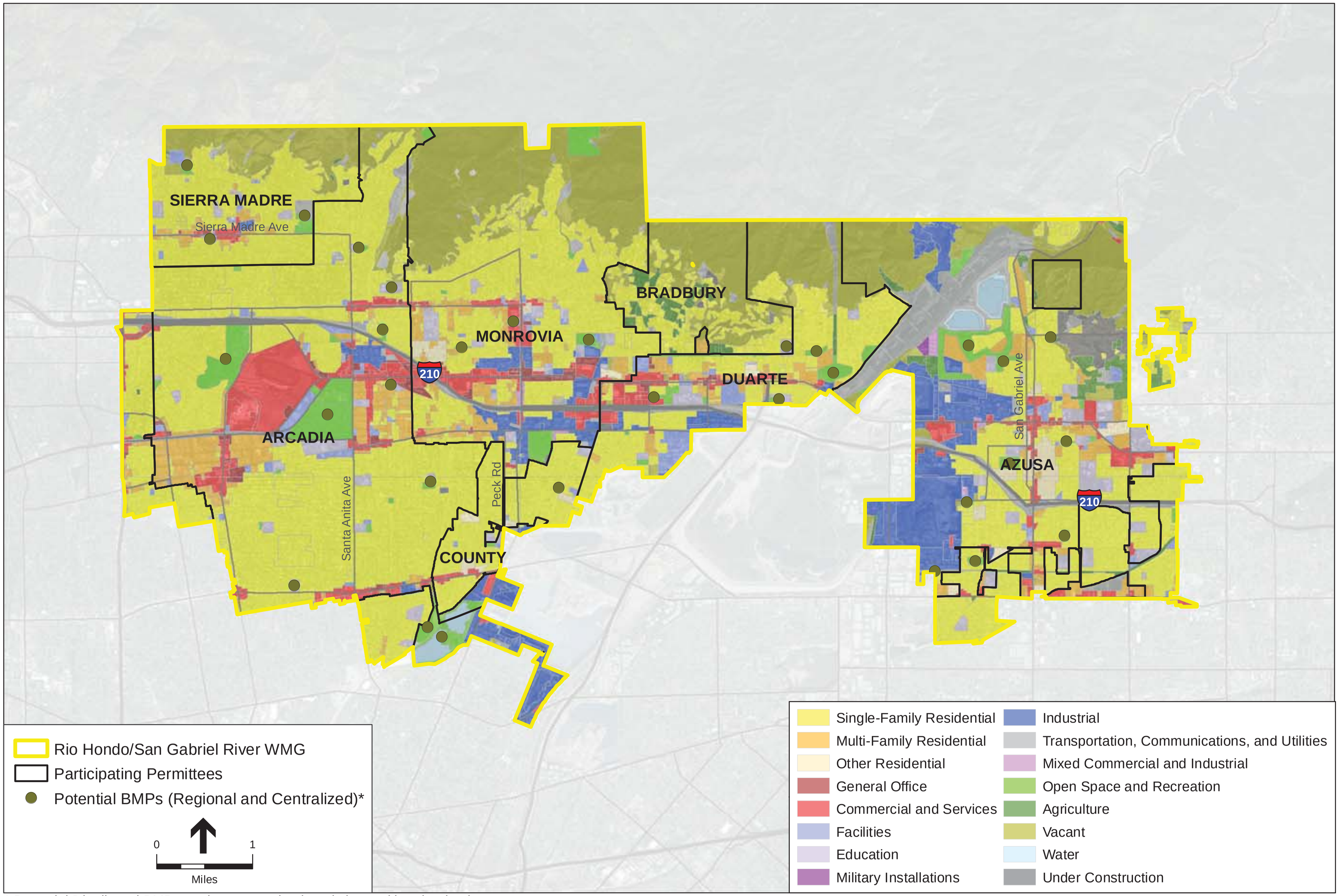
Agency	Area Inside Rio Hondo/ San Gabriel River (square miles)	Percent in Rio Hondo/ San Gabriel River Watershed	Percent in Los Angeles River Watershed	Percent in San Gabriel River Watershed
Arcadia	11	27	99	1
Azusa	9	22	0	100
Bradbury	2	5	41	59
Duarte	4	0	37	63
Monrovia	8	19	99	1
Sierra Madre	3	7	100	0
Los Angeles County	4	10	54	46

SOURCE: Rio Hondo/San Gabriel River EMWP Work Plan, 2014.

TABLE 3.9-11
RIO HONDO/SAN GABRIEL RIVER WATERSHED LAND USE

Agency	Area (square miles)	Percentage
Vacant	9.9	3
Agricultural	1.1	8
Commercial	3.5	3
Single Family Residential	19.3	7
Multi-Family Residential	2.8	7
Industrial	2.8	47
Education	1.1	1
Transportation	0.7	24
Total	**41.2**	**100**

SOURCE: Rio Hondo/San Gabriel River EMWP Work Plan, 2014.



** Potential Distributed BMP not shown - predominantly located in urbanized areas*

SOURCE: ESRI; SCAG

LA County PEIR EWMP . 140474

Figure 3.9-8

Land Uses in the Rio Hondo / San Gabriel River Watershed Management Group

Santa Monica Bay Jurisdictional Groups 2 & 3

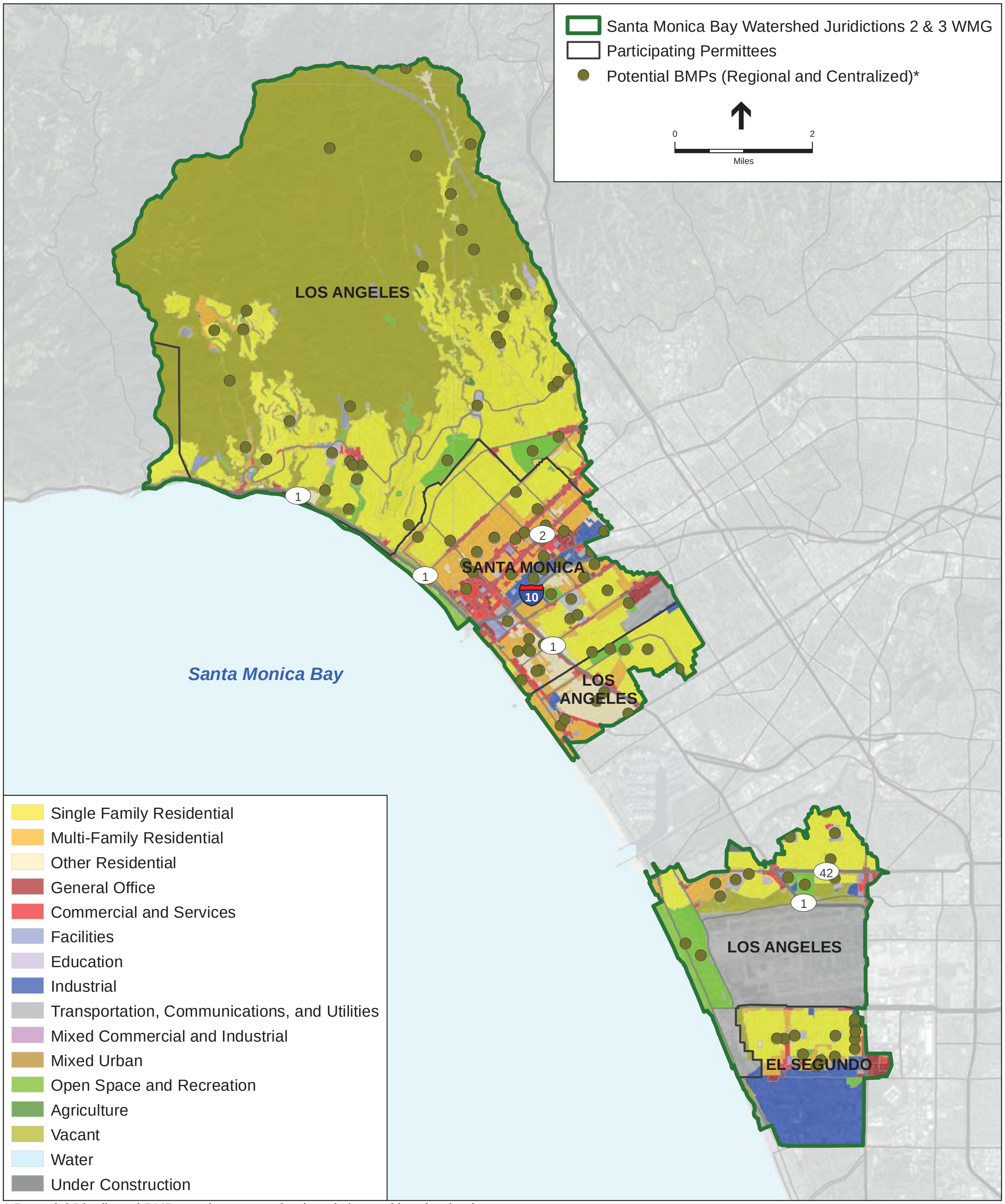
The Santa Monica Bay EWMP area covers the central region of the Santa Monica Bay Watershed (JG2 and JG3) and includes the urbanized Dockweiler and Santa Monica subwatersheds, as well as natural open space located in the Castle Rock, Pulga Canyon, Temescal Canyon, and Santa Monica Canyon subwatersheds. The Permittees within this EWMP include the Cities of Los Angeles, Santa Monica, and El Segundo; the County of Los Angeles; and LACFCD.

The Santa Monica Bay EWMP Group area covers 34,362 acres. Approximately 49 percent of the Santa Monica Bay EWMP Group area is open space, and approximately 93 percent of the open space is located the northern subwatersheds and approximately 7 percent is located in the Dockweiler subwatershed. Approximately 67 percent of the Santa Monica Bay EWMP Group area is pervious according to geographic information system (GIS) data from the Los Angeles County Department of Public Works, the large majority of which comes from the northern-most subwatersheds of Castle Rock, Pulga Canyon, Temescal Canyon, and Santa Monica Canyon. **Table 3.9-12** provides the size and percentage of each participating member's jurisdiction within the watershed. **Figure 3.9-9** shows land uses in the Santa Monica Bay EWMP area and the location of planned and priority regional/centralized BMPs. The location of distributed BMPs would be throughout the urbanized areas of the watershed.

**TABLE 3.9-12
SANTA MONICA BAY LAND AREA DISTRIBUTION**

Agency	Land area (acres)	Percent of EWMP Area
City of Los Angeles	18,934.64	75.02%
City of Santa Monica	4,987.47	19.76%
City of El Segundo	1,185.63	4.70%
Los Angeles County	130.40	0.52%

SOURCE: Santa Monica Bay EMWP Work Plan, 2014.



** Potential Distributed BMP not shown - predominantly located in urbanized areas*

SOURCE: ESRI; SCAG

LA County PEIR EWMP . 140474

Figure 3.9-9

Land Use in the Santa Monica Bay Watershed Jurisdictions 2 and 3 Watershed Management Group

Upper Los Angeles River

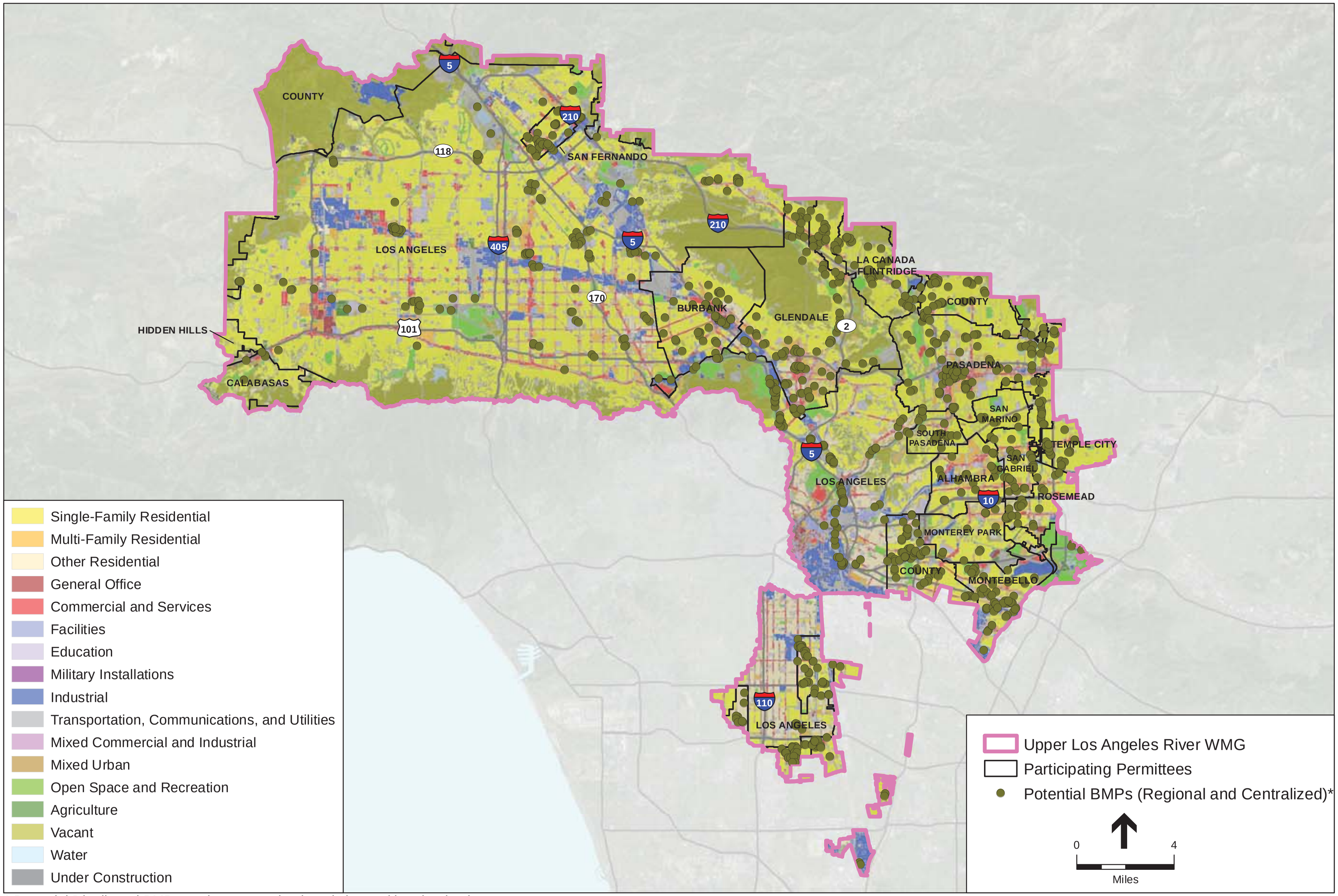
The Upper Los Angeles River EWMP area covers the upper reaches of the Los Angeles River Watershed. The Permittees within this EWMP are: the Cities of Alhambra, Burbank, Calabasas, Glendale, Hidden Hills, La Cañada Flintridge, Los Angeles, Montebello, Monterey Park, Pasadena, Rosemead, San Gabriel, San Marino, South Pasadena, and Temple City; the County of Los Angeles; and LACFCD.

The area included in the Upper Los Angeles River Watershed EWMP is approximately 479 square miles, or 57.43 percent of the total watershed area. **Table 3.9-13** provides the size and percentage of each participating member's jurisdiction within the watershed. **Figure 3.9-10** shows land uses in the Upper Los Angeles River EWMP area and the location of planned and priority regional/centralized BMPs. The location of distributed BMPs would be throughout the urbanized areas of the watershed.

TABLE 3.9-13
UPPER LOS ANGELES RIVER LAND AREA DISTRIBUTION

Agency	Land area (acres)	Percent of EWMP Area
City of Los Angeles	18,934.64	75.02%
City of Alhambra	4,884.31	1.60%
City of Burbank	11,095.20	3.62%
City of Calabasas	4,005.68	1.31%
City of Glendale	19,587.50	6.40%
City of Hidden Hills	961.03	0.31%
City of La Canada Flintridge	5,534.46	1.81%
City of Montebello	5,356.38	1.75%
City of Monterey Park	4,951.51	1.62%
City of Pasadena	14,805.30	4.84%
City of Rosemead	3,310.87	1.08%
City of San Gabriel	2,644.87	0.86%
City of San Marino	2,409.64	0.79%
City of South Pasadena	2,186.20	0.71%
City of Temple City	2,576.50	0.84%
Los Angeles County	40,553.34	13.25%

SOURCE: Upper Los Angeles River EMWP Work Plan, 2014.



* Potential Distributed BMP not shown - predominantly located in urbanized areas

SOURCE: ESRI; SCAG

LA County PEIR EWMP . 140474

Figure 3.9-10

Land Use in the Los Angeles River Watershed
Watershed Management Group

RB-AR 8550

Upper San Gabriel River

The Upper San Gabriel River EWMP area covers portions of the San Gabriel River Watershed. The Permittees within this EWMP are: the Cities of Baldwin Park, Covina, Glendora, Industry, and La Puente; the County of Los Angeles; and LACFCD.

Table 3.9-14 provides the size and percentage of each participating member's jurisdiction within the watershed. **Figure 3.9-11** shows land uses in the Upper San Gabriel River EWMP area.

**TABLE 3.9-14
UPPER SAN GABRIEL RIVER LAND AREA DISTRIBUTION**

Agency	Land area (acres)	Percent of EWMP Area
City of Baldwin Park	4,335	6.3%
City of Covina	4,481	6.5%
City of Glendora	9,307	13.5%
City of Industry	7,647	11.1%
City of La Puente	2,207	3.2%
Los Angeles County	40,812	59.4%

SOURCE: Upper San Gabriel River EMWP Work Plan, 2014.

Upper Santa Clara River

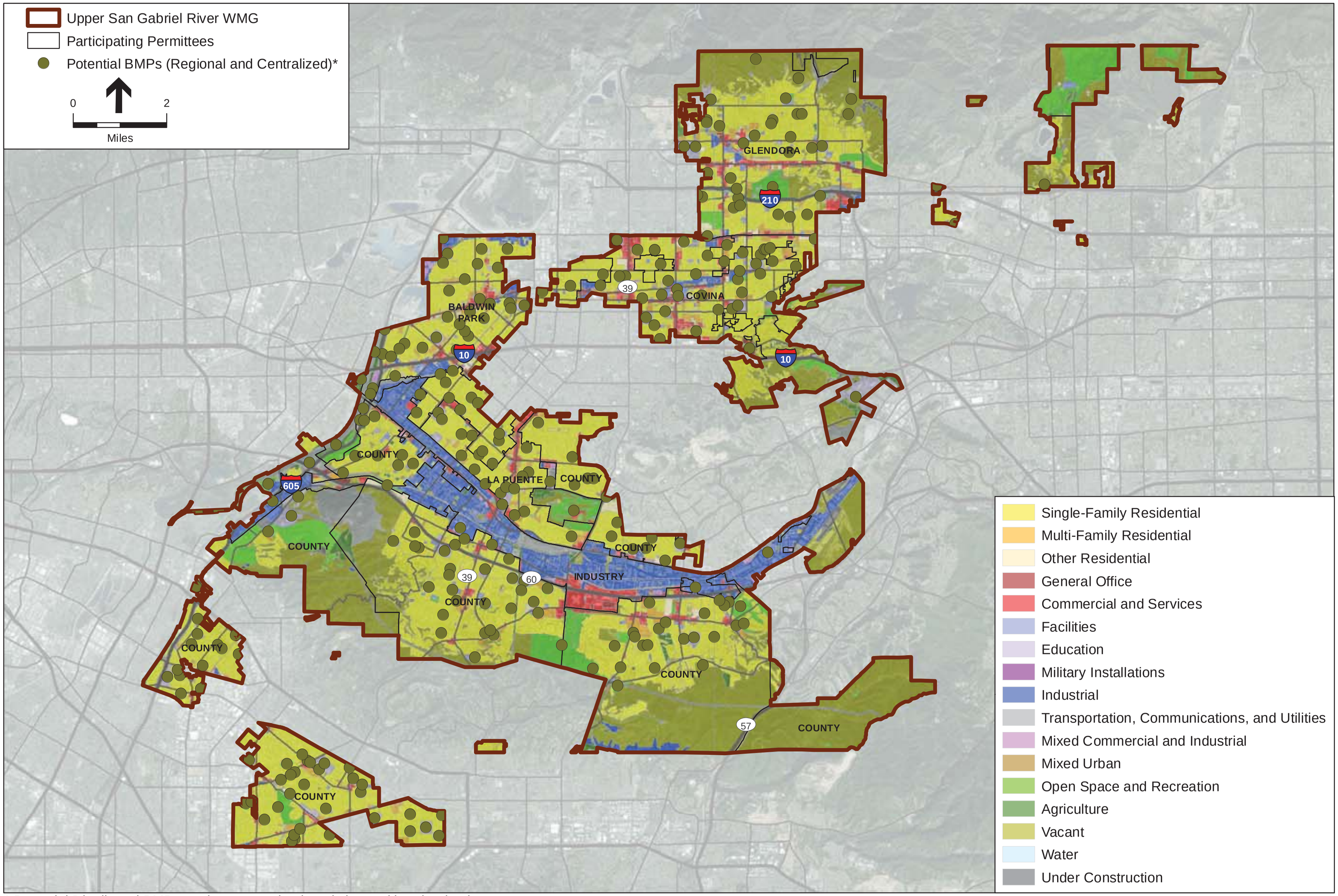
The Upper Santa Clara River EWMP area covers approximately 121,423 acres the Upper Santa Clara River Watershed. The Permittees within this EWMP are the City of Santa Clarita; the County of Los Angeles; and LACFCD.

Land uses within the Santa Clara River Watershed include residential, commercial, agricultural and undeveloped land (LADPW, 2014b). Within the 500-year river flood plain, the most prevalent land use is open space (62 percent), followed by agriculture (29 percent). The remaining land uses can be considered developed and/or urbanized and make up less than 10 percent of the total (LADPW, 2005b). Of the total watershed area, the City of Santa Clarita and County of Los Angeles have jurisdiction over 46 percent of the land area. **Table 3.9-15** provides the size and percentage of each participating member's jurisdiction within the watershed. **Figure 3.9-12** shows land uses in the Upper Santa Clara River Watershed EWMP area.

**TABLE 3.9-15
UPPER SANTA CLARA RIVER LAND AREA DISTRIBUTION**

Agency	Land area (acres)	Percent of EWMP Area
City of Santa Clarita	39,451	32.5%
Los Angeles County	81,972	67.5%
Total EWMP Area	**121,423**	**100%**

SOURCE: Upper Santa Clara River EMWP Work Plan, 2014.

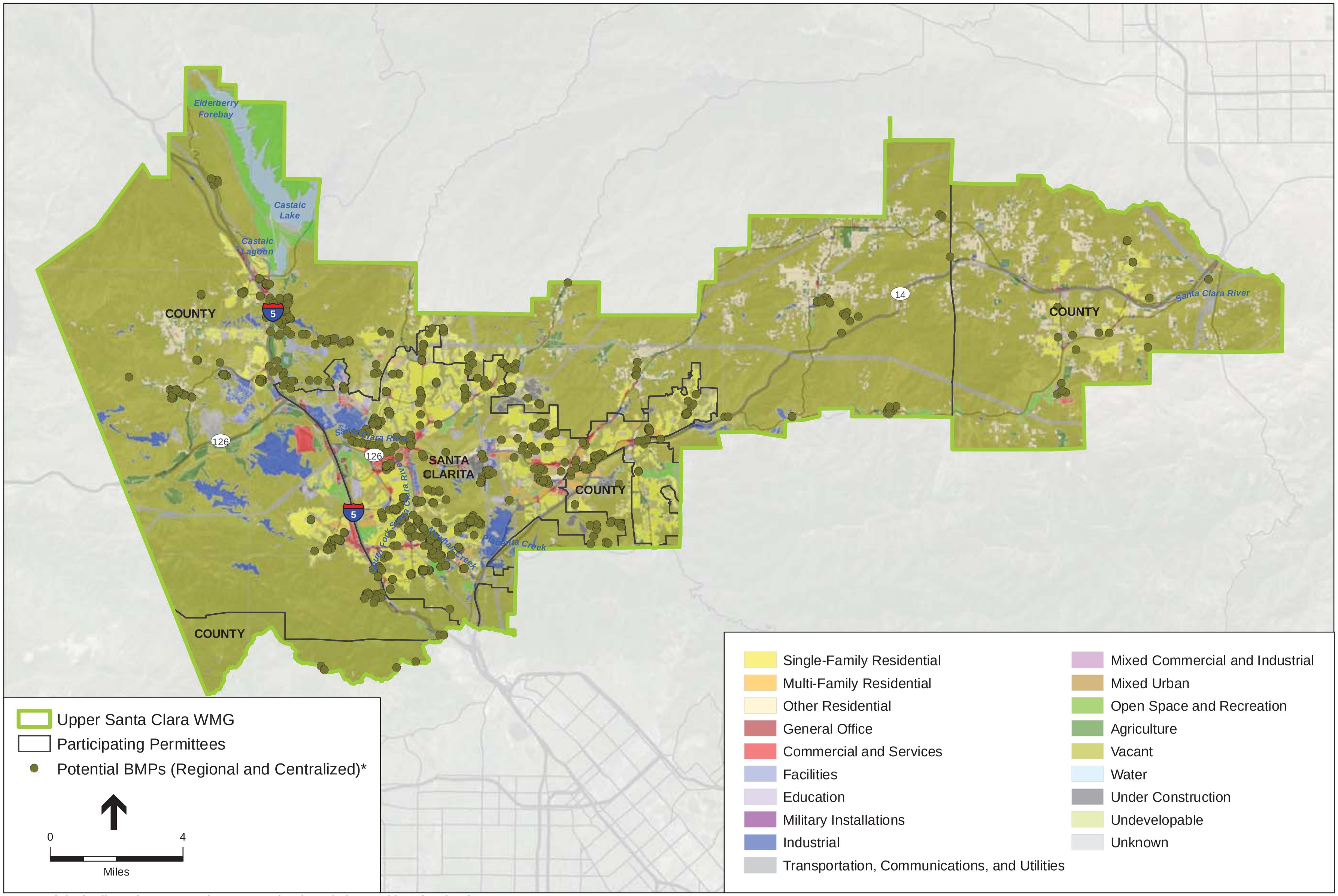


* Potential Distributed BMP not shown - predominantly located in urbanized areas

SOURCE: ESRI; SCAG

LA County PEIR EWMP . 140474

Figure 3.9-11
Land Use in the Upper San Gabriel River Watershed Management Group



* Potential Distributed BMP not shown - predominantly located in urbanized areas

SOURCE: ESRI

LA County PEIR EWMP . 140474

Figure 3.9-12
Land Use in Upper Santa Clara River Watershed Management Group

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Habitat Conservation Plan

There is one adopted habitat conservation plan area within the EWMP watershed areas: the Palos Verdes Peninsula Natural Communities Conservation Plan (NCCP)/Habitat Conservation Plan (HCP). The Palos Verdes Peninsula NCCP/HCP is within the Palos Verdes Peninsula EWMP area. The Palos Verdes Peninsula NCCP/HCP covers the city of Rancho Palos Verdes, which is approximately 8,600 acres. The Rancho Palos Verdes City Council adopted the NCCP/HCP in 2004.

The City of Rancho Palos Verdes NCCP Subarea Plan (Subarea Plan) was prepared to maximize benefits to wildlife and vegetation communities while accommodating appropriate economic development within the city and region pursuant to the requirements of the NCCP Act and Section 10(a) of the Endangered Species Act (URS, 2004). The Subarea Plan provides for the comprehensive management and conservation of multiple species. The subarea is unique in that it contains healthy concentrations of coastal sage scrub habitat (approximately 1,000 acres) and a number of coastal sage scrub species that are not found in other Southern California coastal sage scrub communities.

Agriculture

The County of Los Angeles contains very little agricultural or forest land, as the majority of the land is urbanized. The watersheds in the northwestern corner of the County along the coast contain land designated as Farmland of Local Potential by the California Department of Conservation. This type of land is primarily located in the North Santa Monica Bay Coastal and the Malibu Creek Watersheds, with some located within the Upper Los Angeles River Watershed and the Upper Santa Clara River Watershed. The Upper Santa Clara River Watershed, covering the northwestern and northernmost borders of the County, contains large areas of Grazing Land and Farmland of Local Potential, and tiny pockets of Prime Farmland, Farmland of Statewide Importance, and Unique Farmland.

The only Williamson Act contracts in effect in Los Angeles County are for land on Santa Catalina Island (Los Angeles County, 2014), which is not located within the EWMP group areas.

To the north of the Los Angeles River EWMP group is the Angeles National Forest, which offers outdoor activities such as hiking trails, campgrounds, and picnic areas. Angeles National Forest covers approximately 1,024 square miles just outside of the highly urbanized cities of Los Angeles County. While it is very close, it is not inside the Los Angeles River EWMP group boundary.

3.9.2 Regulatory Setting

State

California Coastal Commission

The California Coastal Commission (CCC) is a state agency that works in conjunction with local cities and counties to plan and regulate the use of land and water in the coastal zone. The coastal zone covers the entire shoreline of California and varies in width depending on the region. The CCC regulates development activities in the coastal zone. The CCC was established by the California Coastal Act of 1976. Local Coastal Programs (LCPs) are approved by the CCC to allow local jurisdictions to guide development in the coastal zone. LCPs require a Coastal Development Permit (CDP) for development in the coastal zone.

Southern California Association of Governments Regional Comprehensive Plan

SCAG is the federally mandated Metropolitan Planning Organization representing six counties: Los Angeles, Imperial, Orange, Riverside, San Bernardino, and Ventura. The SCAG Regional Comprehensive Plan addresses important regional issues such as housing, traffic/transportation, water, and air quality and serves as an advisory planning document to support and encourage local agencies in their planning efforts.

California Farmland Mapping and Monitoring Program

The California Department of Conservation, under the Division of Land Resource Protection, has established the Farmland Mapping and Monitoring Program. The Farmland Mapping and Monitoring Program monitors the conversion of the state's farmland to and from agricultural use and reports on the amount of land converted from agricultural to non-agricultural use. The Farmland Mapping and Monitoring Program maintains an inventory of state agricultural land and updates its "Important Farmland Series Maps" every 2 years (California Department of Conservation, 2007). Important farmlands are divided into the following five categories on Farmland Mapping and Monitoring Program maps based on their suitability for agriculture:

- **Prime Farmland.** Prime Farmland is land with the best combination of physical and chemical characteristics able to sustain long-term production of agricultural crops. This land has produced irrigated crops at some time within the four years prior to the mapping date.
- **Farmland of Statewide Importance.** Farmland of Statewide Importance is land that meets the criteria for Prime Farmland but with minor shortcomings such as greater slopes or lesser soil moisture capacity.
- **Unique Farmland.** Unique Farmland has even lesser quality soils and produces the state's leading agricultural crops. This land is usually irrigated but also includes non-irrigated orchards and vineyards.

- **Farmland of Local Importance.** Farmland of Local Importance is land that is important to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee.
- **Grazing Land.** Grazing Land is land on which the existing vegetation is suited to the grazing of livestock.

Local

County of Los Angeles Low Impact Development Manual

The County of Los Angeles (County) prepared the 2014 Low Impact Development Standards Manual (LID Standards) to comply with the requirements of the National Pollutant Discharge Elimination System (NPDES) MS4 Permit for stormwater and non-stormwater discharges from the MS4 within the coastal watersheds of Los Angeles County (CAS004001, Order No. R4-2012-0175), referred to as the 2012 MS4 Permit (County of Los Angeles, 2014b). The LID Standards provide guidance for the implementation of stormwater quality control measures in new development and redevelopment projects in unincorporated areas of the County with the intention of improving water quality and mitigating potential water quality impacts from stormwater and non-stormwater discharges. The November 2013 LID Ordinance became effective December 5, 2013.

City of Los Angeles Low Impact Development Manual

In November 2011, the City of Los Angeles adopted the Stormwater Low Impact Development (LID) Ordinance #181899) with the stated purpose of:

- Requiring the use of LID standards and practices in future developments and redevelopments to encourage the beneficial use of rainwater and urban runoff
- Reducing stormwater/urban runoff while improving water quality
- Promoting rainwater harvesting
- Reducing offsite runoff and providing increased groundwater recharge
- Reducing erosion and hydrologic impacts downstream
- Enhancing the recreational and aesthetic values in our communities

The City of Los Angeles institutionalized the use of LID techniques for development and redevelopment projects. Subsequent to the adoption of the Stormwater LID Ordinance, the City prepared the *Development Best Management Practices Handbook, Low Impact Development Manual,* dated June 2011, to describe the required BMPs (City of Los Angeles, 2011).

Other Cities LID

Various other cities within the County also have LID standards or guidance. The goals, objectives, and content of the LID document are similar to that of the County and City of Los Angeles, and are not referenced here.

County of Los Angeles General Plan

A General Plan is a basic planning document that, alongside the zoning code, governs development in a city or county. The State requires each city and county to adopt a General Plan with seven mandatory elements: land use, open space, circulation, housing, noise, conservation, and safety, along with any number of optional elements as appropriate. The proposed EWMPs would be subject to local plans and policies of the areas in which they are located. Because this is a high-level assessment of projects spanning the entire County, this Program Environmental Impact Report (PEIR) will only discuss County-level goals and policies relating to the overall program.

The County of Los Angeles is currently updating their General Plan from the version adopted in 1980; the new comprehensive plan is expected to be complete by late 2014. Below are land use and agriculture goals and policies from both the existing General Plan and the Draft General Plan 2035 (as of August 2014) which relate to the proposed program.

Existing General Plan, Adopted 1980

Goal – Conserve Resources and Enhance Environmental Quality: Increasing pressures for urban expansion into outlying areas of significant ecological and scenic resources require that effective measures be taken to conserve and enhance our most valuable natural assets.

Policy 20: Establish land use controls that afford effective protection for significant ecological and habitat resources, and lands of major scenic value.

Policy 21: Protect identified Potential Agricultural Preserves by discouraging inappropriate land division and allowing only use types and intensities compatible with agriculture.

Policy 22: In non-urban areas outside of Potential Agricultural Preserves, encourage the retention and expansion of agriculture by promoting compatible land use arrangements and providing technical assistance to involved farming interests.

Policy 23: In urban areas, encourage the retention of economically viable agricultural production, e.g., high value crops such as strawberries, cut flowers, nursery stock, etc., through the identification and mitigation of significant adverse impacts resulting from adjacent new development.

Goal – Improve the Land Use Decision-Making Process: The manner in which land use decisions are made must address cumulative social, economic and environmental effects, and ensure opportunity for citizen participation.

Policy 29: Improve the land use decision-making process by closely monitoring and evaluating the cumulative impacts of individual projects and by modernizing development regulations

Goal – Improve Inter-Agency Coordination in Land Use Planning: There is a growing need to more effectively coordinate the land use planning activities of local, regional, State, and federal agencies in Los Angeles County.

Policy 30: Promote improved interjurisdictional coordination of land use policy matters between the County, cities, adjacent counties, special districts, and regional and subregional agencies.

Policy 31: Ensure that cities have a voice in land use decisions within their adopted spheres of influence.

Draft General Plan, Drafted 2014

Goal LU 2: Community-based planning efforts that implement the General Plan and incorporate public input, and regional and community level collaboration.

Policy LU 2.8: Coordinate with the Los Angeles County Department of Public Works and other infrastructure providers to analyze and assess infrastructure improvements that are necessary for plan implementation.

Goal LU 8: Well-designed and healthy places that support a diversity of built environments.

Policy LU 8.2: Design development adjacent to natural features in a sensitive manner to complement the natural environment.

Policy LU 8.4: Promote environmentally sensitive and sustainable design.

Goal M-7: Transportation networks that minimizes negative impacts to the environment and communities.

Policy M 7.1: Encourage the use of natural systems to treat stormwater and rainwater runoff.

Policy M 7.2: Minimize roadway runoff through the use of permeable surface materials, such as porous asphalt and concrete materials, wherever feasible.

Goal C/NR-5: Protected and useable local surface water resources.

Policy C/NR 5.1: Support the LID philosophy, which seeks to plan and design public and private development with hydrologic sensitivity, including limits to straightening and channelizing natural flow paths, removal of vegetative cover, compaction of soils, and distribution of naturalistic BMPs at regional, neighborhood, and parcel-level scales.

Policy C/NR 5.2: Require compliance by all County departments with adopted Municipal Separate Storm Sewer System (MS4), General Construction, and point source NPDES permits.

Policy C/NR 5.3: Actively engage with stakeholders in the formulation and implementation of surface water preservation and restoration plans, including plans to improve impaired surface water bodies by retrofitting tributary watersheds with LID types of BMPs.

Policy C/NR 5.4: Actively engage in implementing all approved Enhanced Watershed Management Programs/Watershed Management Programs and Coordinated Integrated Monitoring Programs/Integrated Monitoring Programs or other County-involved TMDL implementation and monitoring plans.

Policy C/NR 5.6: Minimize point and non-point source water pollution.

Policy C/NR 5.7: Actively support the design of new and retrofit of existing infrastructure to accommodate watershed protection goals, such as roadway, railway, bridge, and other—particularly—tributary street and greenway interface points with channelized waterways.

Goal C/NR-6: Protected and usable local groundwater resources.

Policy C/NR 6.1: Support the LID philosophy, which incorporates distributed, post-construction parcel-level stormwater infiltration as part of new development.

Policy C/NR 6.2: Protect natural groundwater recharge areas and regional spreading grounds.

Policy C/NR 6.3: Actively engage in stakeholder efforts to disperse rainwater and stormwater infiltration BMPs at regional, neighborhood, infrastructure, and parcel-level scales.

Policy C/NR 6.5: Prevent stormwater infiltration where inappropriate and unsafe, such as in areas with high seasonal groundwater, on hazardous slopes, within 100 feet of drinking water wells, and in contaminated soils.

Goal C/NR 7: Protected and healthy watersheds.

Policy C/NR 7.1: Support the LID philosophy, which mimics the natural hydrologic cycle using undeveloped conditions as a base, in public and private land use planning and development design.

Policy C/NR 7.2: Support the preservation, restoration and strategic acquisition of open space to preserve natural streams, drainage paths, wetlands, and rivers, which are necessary for the healthy function of watersheds.

Policy C/NR 7.3: Actively engage with stakeholders to incorporate the LID philosophy in the preparation and implementation of watershed and river master plans, ecosystem restoration projects, and other related natural resource conservation aims, and support the implementation of existing efforts, including Watershed Management Programs and Enhanced Watershed Management Programs.

Policy C/NR 7.4: Promote the development of multi-use regional facilities for stormwater quality improvement, groundwater recharge, detention/attenuation, flood management, retaining non-stormwater runoff, and other compatible uses..

City General Plans

The numerous cities encompassed by the EWMP area all have their own respective city General Plans, which may contain policies that address land use and agriculture. As implementation of the individual structural BMP projects proceed, specific policies and objectives pertaining to land use and agriculture from applicable city General Plans will be identified and evaluated on a project-by-project basis during subsequent CEQA environmental processes.

3.9.3 Impact Assessment

The proposed program's potential impacts have been assessed using the CEQA Guidelines Appendix G Checklist. The following sections discuss the key issue areas identified in the CEQA Guidelines with respect to the program's potential effect to agricultural resources and land use.

Threshold of Significance

For the purposes of this PEIR and consistency with Appendix G of the CEQA Guidelines, the program would have a significant impact on land uses if it would:

- Physically divide an established community.
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.
- Conflict with any applicable habitat conservation plan or natural community conservation plan.

The program would have a significant impact on agriculture land uses if it would:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use.
- Conflict with existing zoning for agricultural use, or a Williamson Act contract.
- Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g)).
- Result in the loss of forest land or conversion of forest land to non-forest use.

- Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use.

The significance determination for the above-listed impact thresholds is based on both short-term and long-term impacts of project implementation.

Project Impact Discussion

Division of an Established Community

Impact 3.9-1: The proposed program could physically divide an established community.

Structural (Regional, Centralized, and Distributed) BMPs

Distributed BMPs are most likely to be implemented in high-density urban, commercial, industrial, and transportation areas where they would either replace or improve upon existing stormwater infrastructure. These types of BMPs are generally “retrofit” type projects that replace existing impervious surfaces with pervious surfaces such as bioinfiltration cells, bioswales, porous pavement, and filter strips that tie into existing stormwater management systems. These projects may also augment the existing stormwater management systems with additional inlet screens, filter media systems, sediment removal systems, and diversions to sanitary sewer lines. Ground disturbance for distributed BMPs is typically less than 1 to 2 acres in extent, but may extend in some limited applications up to 5 acres where space is available, generally on municipally owned lands such as parks and schools, which would not divide a community.

Centralized structural BMPs collect, store, treat, and filter stormwater from multiple parcels and much larger drainage areas. Like centralized BMPs, regional BMPs can be implemented in a broad range of land use types, from high-density urban to open space, and can have multiple benefits (habitat, recreation, aesthetics, etc.). Centralized and regional structural BMPs require greater footprints for construction and implementation. However, the installation of these larger BMPs would not physically divide an established community as they would be implemented primarily on existing sidewalks, streets, parks, and city-owned lands. The BMPs would augment the physical structure of established communities, blending in as part of the existing landscape; enhancing water quality of existing communities. Additionally, much of the implementation would consist of the retrofitting of already-established stormwater infrastructure, and would not physically divide an established community. No impact would occur.

Mitigation Measures: None required

Significance Determination: No impact

Non-Structural (Institutional) BMPs

The non-structural BMPs associated with the proposed program would not consist of structural components; these BMPs would include programs, actions, and activities to eliminate pollutants from stormwater runoff, none of which would contribute to the physical division of a community. Therefore, non-structural BMPs would not have a physical impact on the built environment.

Mitigation Measures: None required

Significance Determination: No impact

Land Use Plan, Policy or Regulation Confliction

Impact 3.9-2: The proposed program could conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the program (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.

Structural (Regional, Centralized, and Distributed) BMPs

Structural BMPs would be located throughout Los Angeles County, spanning multiple jurisdictions within varying land uses. Each BMP would be subject to land use zoning and General Plan designations adopted by the local municipality or the County. Implementing agencies will identify appropriate locations based on the local zoning codes. Some BMPs may require easements, conditional use permits, variances, or General Plan amendments. Approval by local jurisdictions of these land use conditions would ensure consistency with local plans. The structural BMPs associated with the proposed program would complement the Los Angeles County's LID Ordinance that became effective December 5, 2013. The LID Standards provide guidance for the implementation of stormwater quality control measures in new development and redevelopment projects in unincorporated areas of the County with the intention of improving water quality and mitigating potential water quality impacts from stormwater and non-stormwater discharges. The proposed EWMP Program would implement LID techniques throughout the urbanized landscape via the implementation of distributed BMPs, as such; the implementation of structural BMPs would support implementation of the County's LID Ordinance.

The structural BMPs associated with the proposed program would complement the Los Angeles County's land use goals and policies for the built environment including conserving resources and enhancing environmental quality (goal from 1980 General Plan), creating well-designed and healthy places that support a diversity of built environments (Goal LU 8), supporting transportation networks that minimize negative impacts to the environment and communities, which includes encouraging the use of natural systems to treat stormwater runoff, and minimizing roadway runoff through the use of permeable surface materials wherever feasible, protecting local surface water resources (Goal C/NR 5), protecting local groundwater sources (Goal C/NR 6), and creating protected and healthy watersheds (Goal C/NR 7). These goals would be supported by the proposed project because they would not change land uses and would implement BMPs to support protection of important water resources in a way that would minimize the impact of the land use on the environment. The proposed water conservation and water quality projects included as part of the proposed program would align with the County LID standards, which call for projects to mimic naturally occurring runoff conditions, as best as possible.

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Implementation of BMPs to enhance water quality in the region would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect.

Mitigation Measures: None required

Significance Determination: No impact

Non-Structural (Institutional) BMPs

Non-structural BMPs associated with the proposed program include policies, actions and activities intended to prevent pollutants from entering stormwater runoff, thus eliminating the sources of the pollutants. The non-structural BMPs would not physically change the built environment, and would implement further policies and actions to protect stormwater runoff from pollution.

Mitigation Measures: None required

Significance Determination: No impact

Habitat Conservation Plan Or Natural Community Conservation Plan Confliction

Impact 3.9-3: The proposed program could conflict with any applicable habitat conservation plan or natural community conservation plan.

Structural (Regional, Centralized, and Distributed) BMPs

Only one HCP/NCCP has been adopted within the EWMP areas. The City of Rancho Palos Verdes NCCP Subarea Plan (Subarea Plan) was prepared to maximize benefits to wildlife and vegetation communities while accommodating appropriate economic development within the city and region pursuant to the requirements of the NCCP Act and Section 10(a) of the ESA (URS, 2004). The BMPs would be located primarily in high-density urban, commercial, industrial, and transportation areas, where they would either replace or improve upon existing stormwater infrastructure. BMPs proposed within the HCP/NCCP would be required to comply with the adopted plan. This would include avoiding impacts to coastal sage scrub habitat. The goals of the EWMP and the HCP are consistent and conflicts would be avoided through site placement, BMP type, and City of Rancho Palos Verde approval.

Mitigation Measures: None required

Significance Determination: Less than significant

Non-Structural (Institutional) BMPs

The non-structural BMPs associated with the proposed program are program- and policy-based and do not involve physical structures, so they would not introduce any physical impacts to the built environment. The project areas is located primarily in developed areas of Los Angeles

County, and would not take place within an HCP, NCCP, or any other conservation plan-covered area. There would be no impact.

Mitigation Measures: None required

Significance Determination: No impact

Agricultural and Forestry Resources

Impact 3.9-4: The proposed program could convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use. The proposed program could involve other changes in the existing environment which, due to their location or nature, could result in conversion of agricultural land to non-agricultural use or conversion of forest land to non-forest use.

Structural (Regional, Centralized, and Distributed) BMPs

Only small areas of Designated Prime, Unique and Important Farmlands exist within the EWMP area, limited to the Santa Clara and Malibu Watersheds. The structural BMPs associated with the proposed program would not convert any Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural uses because the BMPs would be located primarily in high-density urban, commercial, industrial, and transportation areas where they would either replace or improve upon existing stormwater infrastructure. The construction of structural BMPs would primarily focus on the retrofitting of existing infrastructure, and would be located on existing streets, sidewalks, and parks. The larger regional and centralized projects would be located in parks and open space areas that may be adjacent to or on farmland. However, none of the BMPs would replace designated Prime, Unique, or Important Farmland. There would be no impact to farmland.

Mitigation Measures: None required

Significance Determination: No impact

Non-Structural (Institutional) BMPs

Non-structural BMPs would consist of policies and programs that would not be physically constructed and would not involve or contribute to the conversion of agricultural land to non-agricultural uses. There would be no impact.

Mitigation Measures: None required

Significance Determination: No impact

Existing Agricultural Zoning or Williamson Act Contract Confliction

Impact 3.9-5: The proposed program could conflict with existing zoning for agricultural use, or a Williamson Act contract.

Structural (Regional, Centralized, and Distributed) BMPs

The structural BMPs associated with the proposed program would be constructed on urbanized land primarily on streets, sidewalks, and in parks or other city-owned lands, and would therefore not conflict with existing land zoned for agricultural use. There are no Williamson Act contracts within the project area. As a result, there would be no impacts to existing agricultural zoning or land under the Williamson Act contract.

Mitigation Measures: None required

Significance Determination: No impact

Non-Structural (Institutional) BMPs

The non-structural BMPs associated with the proposed program would not require any physical construction and would be implemented in primarily urbanized areas; therefore, they would have no impact on agriculturally-zoned land. There are no Williamson Act contracts within the project area.

Mitigation Measures: None required

Significance Determination: No impact

Forest Land Confliction

Impact 3.9-6: The proposed program could conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g)). The proposed program could result in the loss of forest land or conversion of forest land to non-forest use.

Structural (Regional, Centralized, and Distributed) BMPs

The structural BMPs associated with the proposed program would not conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production, and would not result in the loss of forest land or conversion of forest land to non-forest land because there is no land within the EWMP groups zoned as forest land or timberland. The structural BMPs would be constructed and implemented primarily on urbanized land primarily on streets, sidewalks, and in parks or other city-owned lands, and would therefore have no impact on forest land, timberland, or timberland zoned Timberland Production.

Mitigation Measures: None required

Significance Determination: No impact

Non-Structural (Institutional) BMPs

The non-structural BMPs associated with the proposed program would not involve any physical construction and would not conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production. Implementation of the non-structural BMPs would not result in the loss of forest land or conversion of forest land to non-forest use.

Mitigation Measures: None required

Significance Determination: No impact

Cumulative Impact Discussion

Structural (Regional, Centralized, and Distributed) BMPs

No land use planning impacts have been identified in this analysis as a result of the structural BMPs associated with the proposed program because the EWMPs would be implemented in already established urban areas. BMP locations would be required to be consistent with local zoning and General Plan designations. Furthermore, the BMPs would be supportive of LID Ordinance goals and objectives. The incremental effect on cumulative land use and planning during construction and operation of the proposed program would be less than significant. Therefore, the contribution is not cumulatively considerable and would not result in a cumulative impact on land use and planning. Furthermore, the proposed program would not impact agricultural and forest lands since structural BMPs would be implemented largely in urbanized areas and focus on improving existing facilities. Therefore, the contribution is not cumulatively considerable and would not result in a cumulative impact on agricultural resources.

Mitigation Measures: None required

Significance Determination: Less than significant

Non-Structural (Institutional) BMPs

No land use planning impacts have been identified in this analysis as a result of the non-structural BMPs associated with the proposed EWMPs because there is no physical construction associated with these BMPs. The non-structural BMPs will consist of policies, actions, and activities to help prevent pollutants from entering stormwater runoff. They will likely provide improvements to existing land uses because their primary goal will be to improve water quality. One major purpose of the non-structural BMPs is to meet Minimum Control Measure (MCM) requirements in the MS4 Permit. Therefore, the proposed program is not cumulatively considerable and would not result in a cumulative impact on land use and planning. Furthermore, the proposed program would not impact agricultural and forest lands since there would be no physical construction associated with these BMPs. Therefore, the non-structural BMPs are not cumulatively considerable and would not result in a cumulative impact on agricultural resources.

Mitigation Measures: None required

Significance Determination: Less than significant

3.9.4 Summary of Impact Assessment

Table 3.9-16 shows a summary of the structural BMPs requiring mitigation.

TABLE 3.9-16
SUMMARY OF LAND USE AND AGRICULTURE IMPACTS REQUIRING MITIGATION MEASURES

	Thresholds of Significance						
Structural BMPs	**Division of an Established Community**	**Land Use Plan, Policy or Regulation Confliction**	**Habitat Conservation Plan Confliction**	**Agricultural and Forestry Resources**	**Existing Agricultural Zoning or Williamson Act Contract Confliction**	**Forest Land Confliction**	**Cumulative Impacts**
Applicable Mitigation Measures:	**None Required**	**None Required**	**None Required**	**None Required**	**None Required**	**None Required**	**None Required**
Regional BMPs							
Regional Detention and Infiltration	No	No	No	No	No	No	No
Regional Capture, Detention, and Use	No	No	No	No	No	No	No
Centralized BMP							
Bioinfiltration	No	No	No	No	No	No	No
Constructed Wetlands	No	No	No	No	No	No	No
Treatment/Low-Flow Diversions	No	No	No	No	No	No	No
Creek, River, Estuary Restoration	No	No	No	No	No	No	No
Distributed BMPs							
Site-Scale Detention	No	No	No	No	No	No	No
LID – Infiltration/Filtration BMPs – Porous Pavement, Green Streets, Bioswale/Filter Strips, Downspout Disconnects	No	No	No	No	No	No	No
LID – Green Infrastructure – Capture and Use – Cisterns, Rain Barrels, Green roofs, Planter Boxes	No	No	No	No	No	No	No
Flow-through Treatment BMPs	No	No	No	No	No	No	No
Source Control Treatment BMPs (catch basin inserts/screens, hydrodynamic separators, gross solids removal devices)	No	No	No	No	No	No	No
Low-Flow Diversions	No	No	No	No	No	No	No

NOTE: These conclusions are based on typical BMP size and location.

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3.10 Noise

This section evaluates the potential for noise and groundborne vibration impacts to result from implementation of the proposed Enhanced Watershed Management Program (EWMP). This includes the potential for the proposed program to result in impacts associated with a substantial temporary and/or permanent increase in ambient noise levels in the vicinity of the proposed program; exposure of people in the vicinity of the proposed program to excessive noise and groundborne vibration levels; and whether this exposure is in excess of applicable, established standards in the EWMP areas of Los Angeles County (County). Mitigation measures to reduce potential noise and vibration impacts are identified, where warranted.

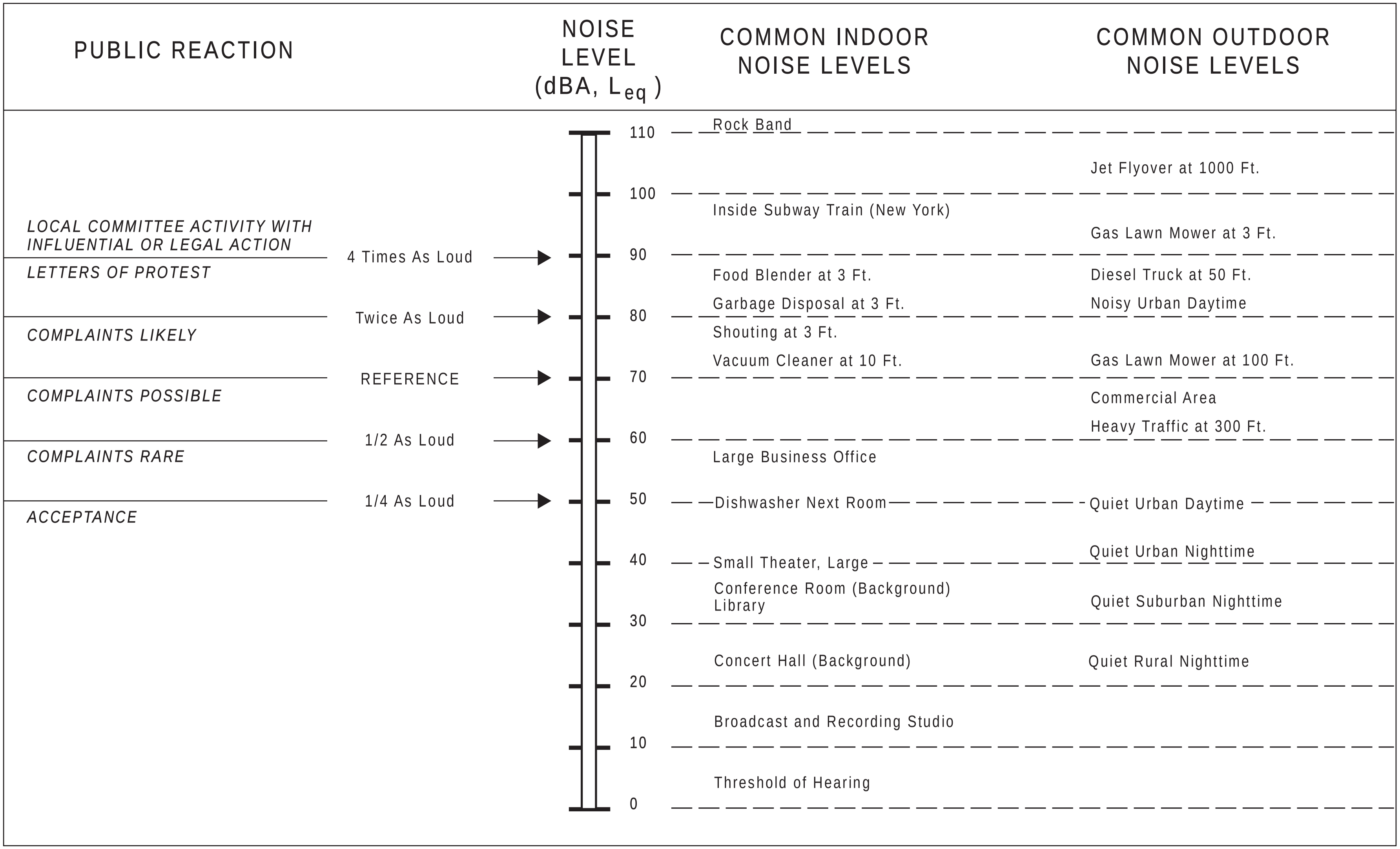
3.10.1 Principles of Noise and Vibration

Noise Principles and Descriptors

Noise is generally defined as unwanted sound, traveling in the form of waves from a source and exerting a sound pressure level (referred to as sound level) that is measured in decibels (dB), which is the standard unit of sound amplitude measurement. The dB scale is a logarithmic scale that describes the physical intensity of the pressure vibrations that make up any sound, with 0 dB corresponding roughly to the threshold of human hearing and 120 to 140 dB corresponding to the threshold of pain. Pressure waves traveling through air exert a force registered by the human ear as sound.

Sound pressure fluctuations can be measured in units of hertz (Hz), which correspond to the frequency of a particular sound. Typically, sound does not consist of a single frequency, but rather a broad band of frequencies varying in levels of magnitude. When all the audible frequencies of a sound are measured, a sound spectrum is plotted consisting of a range of frequency spanning 20 to 20,000 Hz. The sound pressure level, therefore, constitutes the additive force exerted by a sound corresponding to the sound frequency/sound power level spectrum.

The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. As a consequence, when assessing potential noise impacts, sound is measured using an electronic filter that deemphasizes the frequencies below 1,000 Hz and above 5,000 Hz in a manner corresponding to the human ear’s decreased sensitivity to extremely low and extremely high frequencies. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted decibels (dBA). A-weighting follows an international standard methodology of frequency deemphasis and is typically applied to community noise measurements. Some representative noise sources and their corresponding A-weighted noise levels are shown in **Figure 3.10-1**.



SOURCE: ESA

LA County PEIR EWMP . 140474

Figure 3.10-1
Effects of Noise on People

RB-AR 8570

Noise Exposure and Community Noise

An individual's noise exposure is a measure of noise over a period of time. A noise level is a measure of noise at a given instant in time. The noise levels presented in Figure 3.10-1 are representative of measured noise at a given instant in time; however, they rarely persist consistently over a long period of time. Rather, community noise varies continuously over a period of time with respect to the contributing sound sources of the community noise environment. Community noise is primarily the product of many distant noise sources, which constitute a relatively stable background noise exposure, with the individual contributors unidentifiable. The background noise level changes throughout a typical day, but does so gradually, corresponding with the addition and subtraction of distant noise sources such as traffic. What makes community noise constantly variable throughout a day, besides the slowly changing background noise, is the addition of short duration, single-event noise sources (e.g., aircraft flyovers, motor vehicles, sirens), which are readily identifiable to the individual.

These successive additions of sound to the community noise environment change the community noise level from instant to instant, thus requiring that noise exposure be measured over a period of time to legitimately characterize a community noise environment and evaluate cumulative noise impacts. This time-varying characteristic of environmental noise is described using statistical noise descriptors. The most frequently used noise descriptors are summarized below:

L_{eq}: The L_{eq}, or equivalent sound level, is used to describe noise over a specified period of time in terms of a single numerical value; the L_{eq} of a time-varying signal and that of a steady signal are the same if they deliver the same acoustic energy over a given time. The L_{eq} may also be referred to as the average sound level.

L_{max}: The maximum, instantaneous noise level experienced during a given period of time.

L_{min}: The minimum, instantaneous noise level experienced during a given period of time.

L_{50}: The noise level that is equaled or exceeded 50 percent of the specified time period. The L_{50} represents the median sound level.

L_{90}: The noise level that is equaled or exceeded 90 percent of the specified time period. The L_{90} is generally considered to be representing the background or ambient level of a noise environment.

L_{dn}: Also termed the day-night average noise level (DNL), the L_{dn} is the average A-weighted noise level during a 24-hour day, obtained after an addition of 10 dBA to measured noise levels between the hours of 10:00 P.M. and 7:00 A.M. to account nighttime noise sensitivity.

CNEL: CNEL, or Community Noise Equivalent Level, is the average A-weighted noise level during a 24-hour day that is obtained after an addition of 5 dBA to measured noise levels between the hours of 7:00 P.M. and 10:00 P.M. and after an addition of 10 dBA to noise levels between the hours of 10:00 P.M. and 7:00 A.M. to account for noise sensitivity in the evening and nighttime, respectively.

Effects of Noise on People

Noise is generally loud, unpleasant, unexpected, or undesired sound that is typically associated with human activity that is a nuisance or disruptive. The effects of noise on people can be placed into four general categories:

- Subjective effects (e.g., dissatisfaction, annoyance)
- Interference effects (e.g., communication, sleep, and learning interference)
- Physiological effects (e.g., startle response)
- Physical effects (e.g., hearing loss)

Although exposure to high noise levels has been demonstrated to cause physical and physiological effects, the principal human responses to typical environmental noise exposure are related to subjective effects and interference with activities. Interference effects of environmental noise refer to those effects that interrupt daily activities and include interference with human communication activities, such as normal conversations, watching television, telephone conversations, and interference with sleep. Sleep interference effects can include both awakening and arousal to a lesser state of sleep. With regard to the subjective effects, the responses of individuals to similar noise events are diverse and are influenced by many factors, including the type of noise, the perceived importance of the noise, the appropriateness of the noise to the setting, the duration of the noise, the time of day and the type of activity during which the noise occurs, and individual noise sensitivity.

Overall, there is no completely satisfactory way to measure the subjective effects of noise, or the corresponding reactions of annoyance and dissatisfaction on people. A wide variation in individual thresholds of annoyance exists, and different tolerances to noise tend to develop based on an individual’s past experiences with noise. Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted (i.e., comparison to the ambient noise environment). In general, the more a new noise level exceeds the previously existing ambient noise level, the less acceptable the new noise level will be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships generally occur:

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived.
- Outside of the laboratory, a 3 dBA change in noise levels is considered to be a barely perceivable difference.
- A change in noise levels of 5 dBA is considered to be a readily perceivable difference.
- A change in noise levels of 10 dBA is subjectively heard as doubling of the perceived loudness.

These relationships occur in part because of the logarithmic nature of sound and the decibel system. The human ear perceives sound in a nonlinear fashion; hence, the decibel scale was developed.

Because the decibel scale is based on logarithms, two noise sources do not combine in a simple additive fashion, but rather logarithmically. For example, if two identical noise sources produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA.

Noise Attenuation

Stationary point sources of noise, including stationary mobile sources such as idling vehicles, attenuate (lessen) at a rate between 6 dBA for hard sites and 7.5 dBA for soft sites for each doubling of distance from the reference measurement. Hard sites are those with a reflective surface between the source and the receiver, such as asphalt or concrete surfaces or smooth bodies of water. No excess ground attenuation is assumed for hard sites and the change in noise levels with distance (drop-off rate) is simply the geometric spreading of the noise from the source. Soft sites have an absorptive ground surface such as soft dirt, grass, or scattered bushes and trees. In addition to geometric spreading, an excess ground attenuation value of 1.5 dBA (per doubling distance) is normally assumed for soft sites. Line sources (such as traffic noise from vehicles) attenuate at a rate between 3 dBA for hard sites and 4.5 dBA for soft sites for each doubling of distance from the reference measurement (Caltrans, 1998).

Fundamentals of Vibration

As described in the Federal Transit Administration's (FTA's) *Transit Noise and Vibration Impact Assessment* (FTA, 2006), groundborne vibration can be a serious concern for nearby neighbors of a transit system route or maintenance facility, causing buildings to shake and rumbling sounds to be heard. In contrast to airborne noise, groundborne vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. Some common sources of groundborne vibration are trains, buses on rough roads, and construction activities such as blasting, pile-driving, and operation of heavy earthmoving equipment.

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings. The root mean square (RMS) amplitude is most frequently used to describe the effect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (VdB) is commonly used to measure RMS. The relationship of PPV to RMS velocity is expressed in terms of the "crest factor," defined as the ratio of the PPV amplitude to the RMS amplitude. PPV is typically a factor of 1.7 to 6 times greater than RMS vibration velocity (FTA, 2006). The decibel notation acts to compress the range of numbers required to describe vibration. Typically, groundborne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Sensitive receptors for vibration include structures (especially older masonry structures), people (especially residents, the elderly, and sick), and vibration-sensitive equipment.

The effects of groundborne vibration include movement of the building floors, rattling of windows, shaking of items on shelves or hanging on walls, and rumbling sounds. In extreme cases, the vibration can cause damage to buildings. Building damage is not a factor for most projects, with the occasional exception of blasting and pile-driving during construction. Annoyance from vibration often occurs when the vibration levels exceed the threshold of perception by only a small margin. A vibration level that causes annoyance will be well below the damage threshold for normal buildings. The FTA measure of the threshold of architectural damage for conventional sensitive structures is 0.2 in/sec PPV (FTA, 2006).

In residential areas, the background vibration velocity level is usually around 50 VdB (approximately 0.0013 in/sec PPV). This level is well below the vibration velocity level threshold of perception for humans, which is approximately 65 VdB. A vibration velocity level of 75 VdB is considered to be the approximate dividing line between barely perceptible and distinctly perceptible levels for many people (FTA, 2006).

3.10.2 Environmental Setting

Existing Noise Sources

As the EWMP areas are located throughout Los Angeles County, existing noise levels in the EWMP areas would consist of various noise sources typically associated with highly urbanized environments. These noise sources commonly include, but are not limited to, traffic, construction work, commercial operations, human activities, emergency vehicles, aircraft overflights, etc. Of these sources, transportation-related noise associated with vehicular traffic is generally the constant, dominating noise source that comprises an urban environment's ambient noise levels. Vehicular traffic creates noise on roads and highways in residential, commercial, industrial, and mixed-use areas. Aside from vehicular traffic on roadways, other transportation-related noise sources include rail/urban transit systems and airports, which are also located throughout the County. Noise generated by stationary sources in an urban environment are generally associated with heating, ventilating, and air conditioning (HVAC) equipment for residential and commercial uses as well as other similar and larger mechanical stationary equipment for industrial uses. The use of larger-capacity stationary mechanical equipment by industrial uses generally results in higher noise levels in industrial-zoned areas when compared with residential or retail areas.

Existing Groundborne Vibration Levels

Aside from periodic construction work that may occur throughout the County where the EWMP areas are located, other sources of groundborne vibration in the County include heavy-duty vehicular travel (e.g., refuse trucks, delivery trucks, and transit buses) on local roadways. Trucks and buses traveling at a distance of 50 feet typically generate groundborne vibration velocity levels of around 63 VdB (approximately 0.006 in/sec PPV), and these levels could reach 72 VdB (approximately 0.016 in/sec PPV) where trucks pass over bumps in the road (FTA, 2006). In terms of PPV levels, a heavy-duty vehicle traveling at a distance of 50 feet can result in a vibration level of approximately 0.001 inch per second.

Sensitive Receptors

Noise-sensitive receptors are locations where people reside or where the presence of unwanted sound could adversely affect or disrupt the types of activities associated with the land use at the location. Land uses such as residences, hotels, schools, rest homes, libraries, churches, and hospitals are generally more sensitive to noise than commercial and industrial land uses. As such, these types of land uses are considered to be noise-sensitive receptors. Given that the majority of the County is highly urbanized with a variety of land use types (e.g., open space, residential, commercial, mixed-use, public and semi-public, and industrial uses), and that the proposed program would be located in various watersheds across the County that span multiple jurisdictions, existing noise-sensitive uses such as residences, schools, guest lodging, hospitals, churches, parks, etc. would be located within and in proximity to the EWMP areas. As described in Section 3.9, *Land Use and Agriculture,* of this Program Environmental Impact Report (PEIR), many of the EWMP areas, including Ballona Creek, Beach Cities, Dominguez Channel, and Marina del Rey, have residential uses as the predominant land use.

3.10.3 Regulatory Setting

Federal

Federal Noise Standards

There are no federal noise standards that directly regulate environmental noise related to the construction or operation of the proposed program. With regard to noise exposure and workers, the Office of Safety and Health Administration (OSHA) regulations safeguard the hearing of workers exposed to occupational noise. Federal regulations also establish noise limits for medium and heavy trucks (more than 4.5 tons, gross vehicle weight rating) under 40 Code of Federal Regulations (CFR), Part 205, Subpart B. The federal truck pass-by noise standard is 80 dBA at 15 meters from the vehicle pathway centerline. These controls are implemented through regulatory controls on truck manufacturers.

Federal Transit Authority Vibration Standards

The FTA has adopted vibration standards that are used to evaluate potential building damage impacts related to construction activities. The vibration damage criteria adopted by the FTA are shown in **Table 3.10-1**.

TABLE 3.10-1
CONSTRUCTION VIBRATION DAMAGE CRITERIA

Building Category	PPV (in/sec)
I. Reinforced concrete, steel or timber (no plaster)	0.5
II. Engineered concrete and masonry (no plaster)	0.3
III. Non-engineered timber and masonry buildings	0.2
IV. Buildings extremely susceptible to vibration damage	0.12

SOURCE: FTA, 2006.

In addition, the FTA has also adopted standards associated with human annoyance for groundborne vibration impacts for the following three land-use categories: Vibration Category 1 – High Sensitivity, Vibration Category 2 – Residential, and Vibration Category 3 – Institutional.

The FTA defines Category 1 as buildings where vibration would interfere with operations within the building, including vibration-sensitive research and manufacturing facilities, hospitals with vibration-sensitive equipment, and university research operations. Vibration-sensitive equipment includes, but is not limited to, electron microscopes, high-resolution lithographic equipment, and normal optical microscopes. Category 2 refers to all residential land uses and any buildings where people sleep, such as hotels and hospitals. Category 3 refers to institutional land uses such as schools, churches, other institutions, and quiet offices that do not have vibration-sensitive equipment, but still have the potential for activity interference.

Under conditions where there are an infrequent number of events per day, the FTA has established thresholds of 65 VdB for Category 1 buildings, 80 VdB for Category 2 buildings, and 83 VdB for Category 3 buildings.[1] Under conditions where there are an occasional number of events per day, the FTA has established thresholds of 65 VdB for Category 1 buildings, 75 VdB for Category 2 buildings, and 78 VdB for Category 3 buildings.[2] No thresholds have been adopted or recommended for commercial and office uses.

State

California Department of Health Services Noise Standards

The California Department of Health Services (DHS) has established guidelines for evaluating the compatibility of various land uses as a function of community noise exposure. These guidelines for land use and noise exposure compatibility are shown in **Table 3.10-2**. In addition, Section 65302(f) of the California Government Code requires each county and city in the State to prepare and adopt a comprehensive long-range general plan for its physical development, with Section 65302(g) requiring a noise element to be included in the general plan. The noise element must: (1) identify and appraise noise problems in the community; (2) recognize Office of Noise Control guidelines; and (3) analyze and quantify current and projected noise levels.

The State of California also establishes noise limits for vehicles licensed to operate on public roads. For heavy trucks, the State pass-by standard is consistent with the federal limit of 80 dBA. The State pass-by standard for light trucks and passenger cars (less than 4.5 tons, gross vehicle rating) is also 80 dBA at 15 meters from the centerline. These standards are implemented through controls on vehicle manufacturers and by legal sanction of vehicle operators by state and local law enforcement officials.

1 "Infrequent events" is defined by the FTA as being fewer than 30 vibration events of the same kind per day.
2 "Occasional events" is defined by the FTA as between 30 and 70 vibration events of the same source per day.

TABLE 3.10-2
COMMUNITY NOISE EXPOSURE (L_{dn} OR CNEL)

Land Use	Normally Acceptable[a]	Conditionally Acceptable[b]	Normally Unacceptable[c]	Clearly Unacceptable[d]
Single-family, Duplex, Mobile Homes	50 - 60	55 - 70	70 - 75	above 75
Multi-Family Homes	50 - 65	60 - 70	70 - 75	above 75
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 - 70	60 - 70	70 - 80	above 80
Transient Lodging – Motels, Hotels	50 - 65	60 - 70	70 - 80	above 75
Auditoriums, Concert Halls, Amphitheaters	---	50 - 70	---	above 70
Sports Arena, Outdoor Spectator Sports	---	50 - 75	---	above 75
Playgrounds, Neighborhood Parks	50 - 70	---	67 - 75	above 75
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 - 75	---	70 - 80	above 80
Office Buildings, Business and Professional Commercial	50 - 70	67 - 77	above 75	---
Industrial, Manufacturing, Utilities, Agriculture	50 - 75	70 - 80	above 75	---

[a] Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.

[b] Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

[c] Normally Unacceptable: New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

[d] Clearly Unacceptable: New construction or development should generally not be undertaken.

SOURCE: Office of Planning and Research, State of California Genera Plan Guidelines, October 2003 (in coordination with the California Department of Health Services).

State Vibration Standards

There are no state vibration standards applicable to the proposed program. Moreover, according to the California Department of Transportation's (Caltrans') *Transportation and Construction Vibration Guidance Manual* (2013), there are no official Caltrans standards for vibration. However, this manual provides guidelines for assessing vibration damage potential to various types of buildings, ranging from 0.08 to 0.12 in/sec PPV for extremely fragile historic buildings, ruins, and ancient monuments to 0.50 to 2.0 in/sec PPV for modern industrial/commercial buildings. The vibration criteria for structural damage and human annoyance established in Caltrans' *Transportation and Construction Vibration Guidance Manual* (2013) are shown in **Tables 3.10-3** and **3.10-4**, respectively.

TABLE 3.10-3
CALTRANS VIBRATION DAMAGE POTENTIAL THRESHOLD CRITERIA

	Maximum PPV (in/sec)	
Structure and Condition	**Transient Sources**	**Continuous/Frequent Intermittent Sources**
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

NOTE: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile-drivers, pogo-stick compactors, crack and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

SOURCE: Caltrans, Transportation and Construction Vibration Guidance Manual, September 2013.

TABLE 3.10-4
CALTRANS VIBRATION ANNOYANCE POTENTIAL CRITERIA

	Maximum PPV (in/sec)	
Structure and Condition	**Transient Sources**	**Continuous/Frequent Intermittent Sources**
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.10
Severe	2.0	0.4

NOTE: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile-drivers, pogo-stick compactors, crack and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

SOURCE: Caltrans, Transportation and Construction Vibration Guidance Manual, September 2013.

Local

County of Los Angeles General Plan Noise Element

The California Government Code Section 65302(g) requires that a noise element be included in the General Plan of each county and city in the state. The Noise Element of the County of Los Angeles General Plan was established as a planning tool to develop strategies and action programs that address the multitude of noise sources and issues throughout the County. The noise guidelines used by the County are based on the community noise compatibility guidelines established by the State of California DHS (refer to Table 3.10-2), as described above. Specific regulations that implement these guidelines are set forth in the Los Angeles County Municipal Code as discussed below.

County of Los Angeles Municipal Code

Chapter 12.08, Noise Control, of the County of Los Angeles Municipal Code serves as the Noise Ordinance for the County and establishes noise standards to control unnecessary, excessive, and annoying noise and vibration in the County. Within Chapter 12.08 of the Los Angeles County Code, Section 12.08.380 assigned the following noise zones for receptor properties in the County:

1. Noise Zone 1 – Noise-sensitive areas
2. Noise Zone 2 – Residential properties
3. Noise Zone 3 – Commercial properties
4. Noise Zone 4 – Industrial properties

With respect to operational noise, Section 12.08.390 of the Noise Ordinance established exterior noise levels that should be applied to all receptor properties within a designated noise zone in the County. These exterior noise levels are shown in **Table 3.10-5**.

TABLE 3.10-5
COUNTY OF LOS ANGELES EXTERIOR NOISE STANDARDS BY NOISE ZONES

Noise Zone	Designated Noise Zone Land Use (Receptor Property)	Time Interval	Exterior Noise Level (dBA)
I	Noise-sensitive area	Anytime	45
II	Residential properties	10:00 P.M. to 7:00 A.M. (nighttime)	45
		7:00 A.M. to 10:00 P.M. (daytime)	50
III	Commercial properties	10:00 P.M. to 7:00 A.M. (nighttime)	55
		7:00 A.M. to 10:00 P.M. (daytime)	60
IV	Industrial properties	Anytime	70

SOURCE: County of Los Angeles Ordinance No. 11743, Section 12.08.390.

The exterior noise levels shown in Table 3.10-5 are meant to be further applied as noise standards based on the duration of the noise; i.e., the louder the noise, the shorter the time it is allowed to last. The Noise Ordinance uses a number of noise metrics to define the permissible noise levels. These metrics include L_{50}, L_{25}, $L_{8.3}$, $L_{1.7}$, and L_{max}, and are based upon a 1-hour timeframe which indicates exceedances of 50, 25, 8.3, and 1.7 percent of the time, plus the maximum sound level during that time period. The following noise standards should be applied to the exterior noise levels provided in Table 3.10-5:

- Standard No. 1 shall be the exterior noise level that may not be exceeded for a cumulative period of more than 30 minutes in any hour. Standard No. 1 shall be the applicable noise level from Table 3.10-5; or, if the ambient L_{50} exceeds the forgoing level, then the ambient L_{50} becomes the exterior noise level for Standard No. 1.

- Standard No. 2 shall be the exterior noise level that may not be exceeded for a cumulative period of more than 15 minutes in any hour. Standard No. 2 shall be the applicable noise level from Table 3.10-5 plus 5 dB(A); or, if the ambient L_{25} exceeds the forgoing level, then the ambient L_{25} becomes the exterior noise level for Standard No. 2.
- Standard No. 3 shall be the exterior noise level that may not be exceeded for a cumulative period of more than 5 minutes in any hour. Standard No. 3 shall be the applicable noise level from Table 3.10-5 plus 20 dB(A); or, if the ambient $L_{8.3}$ exceeds the forgoing level, then the ambient $L_{8.3}$ becomes the exterior noise level for Standard No. 3.
- Standard No. 4 shall be the exterior noise level that may not be exceeded for a cumulative period of more than one minute in any hour. Standard No. 4 shall be the applicable noise level from Table 3.10-5 plus 15 dB(A); or, if the ambient $L_{1.7}$ exceeds the forgoing level, then the ambient $L_{1.7}$ becomes the exterior noise level for Standard No. 4.
- Standard No. 5 shall be the exterior noise level that may not be exceeded for any period of time. Standard No. 5 shall be the applicable noise level from Table 3.10-5 plus 20 dB(A); or, if the ambient L_0 exceeds the forgoing level, then the ambient L_0 becomes the exterior noise level for Standard No. 5.

Section 12.08.400 of the Noise Ordinance also established interior noise standards for dwelling units in the County based on the allowable interior noise levels shown in **Table 3.10-6**.

TABLE 3.10-6
COUNTY OF LOS ANGELES INTERIOR NOISE STANDARDS FOR DWELLING UNITS

Noise Zone	Designated Land Use	Time Interval	Allowable Interior Noise Level (dBA)
All	Multifamily	10:00 P.M. to 7:00 A.M.	40
	Residential	7:00 A.M. to 10:00 P.M.	45

SOURCE: County of Los Angeles Ordinance No. 11743, Section 12.08.400.

As indicated in Section 12.08.400, no person is allowed to operate or cause to be operated within a dwelling unit any source of sound, or allow the creation of any noise, that causes the noise level when measured inside a neighboring receiving dwelling unit to exceed the following standards:

- Standard No. 1. The applicable interior noise level from Table 3.10-6 for cumulative period of more than 5 minutes in any hour.
- Standard No. 2. The applicable interior noise level from Table 3.10-6 plus 5 dB(A) for a cumulative period of more than 1 minute in any hour.
- Standard No. 3. The applicable interior noise level from Table 3.10-6 plus 10 dB(A) or the maximum measured ambient noise level for any period of time.

With respect to construction noise in the County, Section 12.08.440 of the Noise Ordinance prohibits the operation of any tools or equipment used between weekday hours of 7:00 P.M. and 7:00 A.M., or at any time on Sundays or holidays, that will create a noise disturbance across a residential or commercial real-property line. The only exceptions would be emergency work or public safety projects (Section 12.08.0570, part 5, exemption H, Public Health and Safety Activities) or by variance issued by the health officer. Additionally, both the working hours and maximum levels of equipment and activity noise that are allowable from both mobile and stationary equipment in the County are defined by land use and shown in **Table 3.10-7**.

TABLE 3.10-7
COUNTY OF LOS ANGELES CONSTRUCTION NOISE STANDARDS

Allowable Work Dates & Hours	Residential Structures					
	Single-Family		Multi-Family		Semi-Residential/Commercial	
	Mobile Equipment [a]	Stationary Equipment [b]	Mobile Equipment [a]	Stationary Equipment [b]	Mobile Equipment [a]	Stationary Equipment [b]
Daily 7:00 A.M. to 8:00 P.M.[c]	75 dBA	60 dBA	80 dBA	65 dBA	85 dBA	70 dBA
Daily 8:00 P.M. to 7:00 A.M.[d]	60 dBA	50 dBA	64 dBA	55 dBA	70 dBA	60 dBA
	Business Structures					
Daily[d]	85 dBA					

[a] Represents maximum noise levels for nonscheduled, intermittent, short-term operation (less than 10 days).
[b] Represents maximum noise level for repetitively scheduled and relatively long-term operation (periods of 10 days or more).
[c] Exception for Sundays and legal holidays.
[d] Includes all day Sunday and legal holidays.

SOURCE: County of Los Angeles Ordinance No. 11743, Section 12.08.440.

County of Los Angeles Groundborne Vibration Regulation

With respect to vibration, the County Noise Ordinance identifies a presumed perception threshold of 0.01 inches per second over the range of 1 to 100 hertz . Section 12.08.560 of the County Noise Ordinance prohibits the operation of any device that creates vibration above the vibration perception threshold of any individual at or beyond the property boundary of the source if on private property, or at 150 feet (46 meters) from the source if on a public space or public right-of-way.

City General Plans and Municipal Codes

The EWMP areas associated with the proposed program are located in multiple jurisdictions of Los Angeles County, which aside from the County also includes 46 cities. Each of these cities has their own independent General Plan and municipal code that regulates noise levels from various sources within their jurisdictional boundaries. Given that a project-level analysis for each structural BMP proposed in the EWMPs is beyond the scope of this PEIR, an extensive listing of the noise policies and regulations of each of the participating Permittees is not provided in this PEIR.

3.10.4 Impact Assessment

The proposed program's potential impacts have been assessed using the California Environmental Quality Act (CEQA) Guidelines Appendix G Checklist. The following sections discuss the key issue areas identified in the CEQA Guidelines with respect to the proposed program's potential effect due to noise and vibration.

Thresholds of Significance

For the purposes of this PEIR and consistency with Appendix G of the CEQA Guidelines, the proposed program would have a significant noise impact if it would:

- Result in exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
- Result in exposure of persons to, or generation of, excessive groundborne vibration or groundborne noise levels.
- Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
- Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.
- For a project located within an airport land use plan area, or, where such a plan has not been adopted, in an area within 2 miles of a public airport or public use airport, expose people residing or working in the area to excessive noise levels.
- For a project located in the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels.

Program Impact Discussion

Noise Levels Standard Exceedance

Impact 3.10-1: The proposed program could result in exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

Structural (Regional, Centralized, and Distributed) BMPs

Construction

Implementation of the proposed program would involve the installation of structural control measures that would be constructed as BMPs to reduce the impact of stormwater and non-stormwater on receiving water quality within the EWMP areas. Construction of the various structural BMPs proposed in the EWMP is anticipated to occur intermittently over the program implementation period. The proposed locations of individual BMPs are subject to change throughout the EWMP planning process. Definitive construction equipment lists, material lists, construction methods, construction schedules, and workforce details would be developed in the future as specific structural BMP projects are finalized according to the EWMPs.

The construction noise impacts associated with each individual structural BMP project would be short-term in nature and limited to the period of time when construction activity is taking place for that particular project. Construction activity noise levels at and near each structural BMP construction site would fluctuate depending on the particular type, number, and duration of usage of various pieces of construction equipment. Generally, development at each BMP construction site may require the use of heavy construction equipment for activities such as site preparation, grading and excavation, and the physical development of the structural BMP. Development activities could also involve the use of smaller power tools, generators, and other sources of noise. During each stage of development for each individual structural BMP project, there would be a different mix of equipment operating and noise levels would vary based on the amount and type of equipment in operation and the location of the activity.

The USEPA has compiled data for outdoor noise levels for typical construction activities. These data are presented in **Table 3.10-8**. The noise levels shown in Table 3.10-8 represent composite noise levels associated with typical construction activities, which take into account both the number of pieces and spacing of heavy construction equipment that are typically used during each phase of construction. These noise levels would diminish rapidly with distance from the construction site at a rate of approximately 6 dBA per doubling of distance. For example, a noise level of 84 dBA L_{eq} measured at 50 feet from the noise source to the receptor would reduce to 78 dBA L_{eq} at 100 feet from the source to the receptor, and reduce by another 6 dBA L_{eq} to 72 dBA L_{eq} at 200 feet from the source to the receptor. **Table 3.10-9** shows the typical maximum and average noise levels produced by various types of construction equipment.

TABLE 3.10-8
TYPICAL OUTDOOR CONSTRUCTION NOISE LEVELS

Construction Phase	Noise Level (dBA, $_{Leq}$)[a]
Ground Clearing	84
Excavation	89
Foundations	78
Erection	85
Finishing	89

[a] Average noise levels correspond to a distance of 50 feet from the noisiest piece of equipment associated with a given phase of construction and 200 feet from the rest of the equipment associated with that phase.

SOURCE: USEPA, 1971.

TABLE 3.10-9
TYPICAL NOISE LEVELS FROM CONSTRUCTION EQUIPMENT

Construction Equipment	Maximum Noise Level (dBA, L_{max} at 50 feet)	Average Noise Level (dBA, L_{eq} at 50 feet)[a]
Air Compressor	78	74
Backhoe	78	74
Chain Saw	84	77
Compactor (Ground)	83	76
Concrete Mixer Truck	79	75
Concrete Pump Truck	81	74
Concrete Saw	90	83
Crane	81	73
Dozer	82	78
Dump Truck	77	73
Excavator	81	77
Generator	82	79
Flat-Bed Truck	74	70
Front End Loader	79	75
Grader	85	81
Jack Hammer	89	82
Pavement Scarafier	90	83
Paver	77	74
Pneumatic Tool	85	82
Pumps	81	78
Roller	80	73
Scraper	84	80
Tractor	84	80
Vacuum Street Sweeper	82	72
Vibratory Concrete Mixer	80	73
Welder/Torch	74	70

[a] The average noise levels for the construction equipment at 50 feet were calculated from the maximum noise levels using the usage factors for each piece of equipment provided in the FHWA's RCNM.

SOURCE: FHWA, 2006.

As shown in Table 3.10-8, excavation activities can typically generate noise levels of 89 dBA L_{eq} at 50 feet from the construction noise source. Given the urbanized environment of many of the EWMP areas, many of the structural BMP projects would be constructed in proximity or adjacent to existing land uses, including those that are noise-sensitive uses. The construction activities for each structural BMP project would temporarily expose their respective existing off-site surrounding land uses to increased noise levels while construction activities are ongoing. This would be most applicable to the distributed BMPs, which are most likely to be implemented in high-density urban, commercial, industrial, and transportation areas where they will either replace or improve upon existing stormwater infrastructure. While the larger centralized and regional structural BMP projects (which require a larger footprint than the distributed BMPs) would occur mostly in existing open space areas that may have greater buffer distances to nearby surrounding land uses, there may still be incidences where a proposed centralized or regional structural BMP site could be located directly adjacent to an existing noise-sensitive land use. Where a proposed structural BMP site is located adjacent or in proximity to existing land uses, the construction activities at the structural BMP site would expose these off-site land uses to increased temporary and intermittent noise levels that are substantially greater than existing ambient noise levels in the area.

While construction noise levels may be exempt from the noise regulations of most of the implementing agencies, there may also be instances where some of the implementing agencies have their own established numerical noise standard for construction noise levels, such as the County of Los Angeles, City of Los Angeles, and the City of El Segundo. Although it is generally anticipated that construction of the structural BMPs would comply with such construction noise standards, there may be scenarios where these local numerical noise standards could potentially be exceeded. As a result, under these conditions, construction noise impacts would be potentially significant.

Mitigation Measure NOISE-1 would reduce construction noise impacts, requiring construction activities to be conducted in accordance with the applicable local noise regulations and standards, the implementation of noise reduction devices and techniques during construction activities, and advance notification to the surrounding noise-sensitive receptors of a structural BMP site about upcoming construction activities and their hours of operation. This would serve to reduce the construction-related noise levels at nearby receptors to the maximum extent feasible. However, as discussed previously, for implementing agencies that have established numerical noise standards for construction activities, there may be circumstances where the construction activities for a particular structural BMP project may exceed established thresholds. . Because of the possibility that certain structural BMP projects may exceed noise levels established by their respective local jurisdictions, this impact would be significant and unavoidable.

Operation

As discussed previously, the majority of the distributed, centralized, and regional structural BMPs would operate passively in the sense that they would not require the use of mechanized stationary equipment for their operation; however, it is anticipated that some of the centralized and regional structural BMPs would require the use of irrigation pump stations and associated components to divert the collected stormwater. At these structural BMP sites, operational noise levels would result from operation of the pumps and associated components. However, as a stationary noise source, the pumping equipment used at a structural BMP site would be required to comply with the applicable exterior noise standards and/or regulations established by the implementing agency that has jurisdiction over the site. Additionally, it is anticipated that many of the irrigation pumps would be located belowground and all other noise-producing components (e.g., generators) would be enclosed. As such, the noise levels generated by on-site pumps and associated components at structural BMP sites associated with the project would not exceed or violate noise standards and regulations established by implementing agencies in the EWMP areas. **Mitigation Measure NOISE-2** would be implemented to ensure that the operational noise levels occurring at structural

BMP sites that employ stationary mechanized equipment would be required to adhere and comply with the local noise standards established by the responsible implementing agency. Thus, with implementation of Mitigation Measure NOISE-2, operational noise impacts would be less than significant.

Mitigation Measures:

NOISE-1: The implementing agencies shall implement the following measures during construction as needed:

- Include design measures necessary to reduce the construction noise levels to where feasible. These measures may include noise barriers, curtains, or shields.
- Place noise-generating construction activities (e.g., operation of compressors and generators, cement mixing, general truck idling) as far as possible from the nearest noise-sensitive land uses.
- Locate stationary construction noise sources as far from adjacent noise-sensitive receptors as possible.
- If construction is to occur near a school, the construction contractor shall coordinate the with school administration in order to limit disturbance to the campus. Efforts to limit construction activities to non-school days shall be encouraged.
- For the centralized and regional BMP projects located adjacent to noise-sensitive land uses, identify a liaison for these off-site sensitive receptors, such as residents and property owners, to contact with concerns regarding construction noise and vibration. The liaison's telephone number(s) shall be prominently displayed at construction locations.
- For the centralized and regional BMP projects located adjacent to noise-sensitive land uses, notify in writing all landowners and occupants of properties adjacent to the construction area of the anticipated construction schedule at least 2 weeks prior to groundbreaking.

NOISE-2: All structural BMPs that employ mechanized stationary equipment that generate noise levels shall comply with the applicable noise standards established by the implementing agency with jurisdiction over the structural BMP site. The equipment shall be designed with noise-attenuating features (e.g., enclosures) and/or located at areas (e.g., belowground) where nearby noise-sensitive land uses would not be exposed to a perceptible noise increase in their noise environment.

Significance Determination: Significant and unavoidable with mitigation for construction; less than significant with mitigation for operations. (The application of these mitigation measures to specific BMP types and categories are identified in Table 3.10-11.)

Non-Structural (Institutional) BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the construction of new facilities. Consequently, there would be no impacts related to construction noise.

Mitigation Measures: None required

Significance Determination: No impact

Groundborne Vibration

Impact 3.10-2: The proposed program could result in exposure of persons to, or generation of, excessive groundborne vibration.

Structural (Regional, Centralized, and Distributed) BMPs

Construction of many of the structural BMP projects would include activities such as site preparation, grading, and excavation, which would have the potential to generate low levels of groundborne vibration. Persons residing and working in an area located in proximity to a structural BMP site could be exposed to some degree of groundborne vibration or groundborne noise levels related to construction activities. Ground vibrations from construction activities only rarely reach the levels that can damage structures, but they can be perceived in the audible range and be felt in buildings very close to a construction site.

Construction activities for the various structural BMP projects would have the potential to impact their respective nearby land uses. Given the urbanized environment of the County, the potential exists for construction of a structural BMP project, especially the distributed structural BMPs that would most likely be implemented in existing high-density areas, to be located within 25 feet of an adjacent noise-sensitive land use. Consequently, existing off-site receptors that are located immediately adjacent to these structural BMP sites could be exposed to some degree of groundborne vibration. The various PPV and RMS velocity (in VdB) levels for the types of construction equipment that could operate during the construction of the structural BMP projects are identified in **Table 3.10-10**. Based on the information presented in Table 3.10-11, vibration velocities could reach as high as approximately 0.089-inch-per-second PPV at 25 feet from the operation of a large bulldozer. This corresponds to an RMS velocity level (in VdB) of 87 VdB at 25 feet from the large bulldozer.

For the types of construction methods required to construct the various structural BMPs, vibration levels at nearby sensitive receptors would not approach the Caltrans damage thresholds presented in Table 3.10-3. Although some vibration may be experienced locally, vibration-related impacts from implementation of structural BMPs would be less than significant.

TABLE 3.10-10
VIBRATION VELOCITIES FOR CONSTRUCTION EQUIPMENT

Construction Equipment	PPV at 25 feet (inches/second)	RMS at 25 feet (VdB)
Large Bulldozer	0.089	87
Loaded Trucks	0.076	86
Jackhammer	0.035	79
Small Bulldozer	0.003	58

SOURCE: FTA, 2006.

Mitigation Measures: None required

Significance Determination: Less than significant

Non-Structural (Institutional) BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the construction of new facilities. Consequently, there would be no impacts related to groundborne vibration or noise.

Mitigation Measures: None required

Significance Determination: No impact

Permanent Ambient Noise Levels Increase

Impact 3.10-3: The proposed program could result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.

Structural (Regional, Centralized, and Distributed) BMPs

Given that the majority of the distributed, centralized, and regional structural BMPs would operate in a passive manner (i.e., would not require the use of mechanized stationary equipment) after their construction, no operational noise levels would be generated by these structural BMPs. However, it is anticipated that that some of the centralized and regional structural BMPs would require the use of irrigation pump stations and associated components to divert the collected stormwater. At these structural BMP sites, noise levels generated from the long-term operation of the pumps and associated components could result in increased noise levels in the surrounding noise environment. However, as discussed under Impact 3.10-1, the pumping equipment used at a structural BMP site would be required to comply with the applicable exterior noise standards and/or regulations established by the implementing agency that has jurisdiction over the site. In addition, many of the irrigation pumps would primarily be located belowground and all other noise-producing components (e.g., generators) would be enclosed. Furthermore, with implementation of **Mitigation Measure NOISE-1**,which would require the stationary mechanized equipment employed at each structural BMP site to comply with the local noise standards established by the responsible implementing agency with jurisdiction over the site, and for the equipment to be designed and located in a manner such that neighboring sensitive land uses would not be exposed to a perceptible noise increase in their environment (**Mitigation Measure NOISE-2)**, this impact would be less than significant.

Mitigation Measures: Implementation of **Mitigation Measures NOISE-1** and **NOISE-2**

Significance Determination: Less than significant with mitigation (The application of these mitigation measures to specific BMP types and categories are identified in Table 3.10-11.)

Non-Structural (Institutional) BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the operation of new facilities. Consequently, there would be no impacts related to a substantial permanent increase in ambient noise levels resulting from implementation of the non-structural BMPs.

Mitigation Measures: None required

Significance Determination: No impact

Temporary Ambient Noise Levels Increase

Impact 3.10-4: The proposed program could result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

Structural (Regional, Centralized, and Distributed) BMPs

During construction of the distributed, centralized, and regional structural BMPs, temporary or periodic increases in noise levels in and around each structural BMP site would result from the operation of construction equipment. As discussed in Impact 3.10-1, the construction activities for each individual structural BMP project would expose their respective nearby existing land uses to increased noise levels. Where a structural BMP site is located within 25 feet of an existing noise-sensitive land use, the resulting construction noise levels at that existing land use could reach as high as 95 dBA L_{eq} during excavation activities, which would result in a substantial noise increase over existing ambient noise levels at that existing land use. Although implementation of **Mitigation Measure NOISE-1** would reduce construction noise levels associated with the proposed program to the maximum extent feasible, under circumstances where future structural BMP sites are located immediately adjacent to existing sensitive land uses, the noise impacts related to a substantial temporary or periodic increase in ambient noise levels above levels existing without the structural BMPs would remain significant. Therefore, this impact for the proposed program would be significant and unavoidable. The identification of a significant and unavoidable program-level impact in this PEIR for the proposed program, however, does not preclude the finding of future less-than-significant impacts for individual structural BMP projects.

Mitigation Measures: Implementation of **Mitigation Measure NOISE-1**

Significance Determination: Significant and unavoidable with mitigation (The application of this mitigation measure to specific BMP types and categories are identified in Table 3.10-11.)

Non-Structural (Institutional) BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the construction of new facilities. Consequently, there would be no impacts related to a substantial temporary or periodic increase in ambient noise levels resulting from implementation of the non-structural BMPs.

Mitigation Measures: None required

Significance Determination: No impact

Exposure of Excessive Airport Noise Levels

Impact 3.10-5: For a project located within an airport land use plan area, or, where such a plan has not been adopted, in an area within 2 miles of a public airport or public use airport, implementation of the proposed program could expose people residing or working in the area to excessive noise levels.

Structural (Regional, Centralized, and Distributed) BMPs

The Distributed, Centralized, and Regional structural BMPs that would be implemented as part of the proposed program would serve to reduce the impact of stormwater and non-stormwater on receiving water quality and address the water quality priorities as defined by the MS4 Permit. While some of these structural BMPs could potentially occur at paved areas of airports (excluding the landing areas and taxiways, which have specific aircraft support requirements) and the undeveloped buffer zones around airports, no permanent residents or workers would be introduced to these areas under the proposed program. While maintenance and inspection of the structural BMPs would occur, these activities would only occur periodically and would be minimal during project operations. Therefore the proposed program would not introduce permanent future residents or workers to the structural BMP areas and as such would not expose persons to excessive airport-related noise levels. Exposure to airport noise would be a less than significant impact.

Mitigation Measures: None required

Significance Determination: Less than significant

Non-Structural (Institutional) BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the construction of new facilities. Consequently, there would be no impacts related to the exposure of people to excessive noise levels associated with a public airport or public use airport.

Mitigation Measures: None required

Significance Determination: No impact

Exposure of Persons to Excessive Private Airstrip Noise Levels

Impact 3.10-6: For a project located in the vicinity of a private airstrip, the proposed program could expose people residing or working in the project area to excessive noise levels.

Structural (Regional, Centralized, and Distributed) BMPs

As discussed under Impact 3.10-5 above, the proposed program would not introduce permanent future residents or workers to the structural BMP areas. Thus, while future structural BMP sites could be located in the vicinity of private airstrips, no persons would be exposed to excessive airstrip-related noise levels. Exposure to airstrip-related noise would be a less than significant impact.

Mitigation Measures: None required

Significance Determination: Less than significant

Non-Structural (Institutional) BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the construction of new facilities. Consequently, there would be no impacts related to the exposure of people to excessive noise levels associated with a private airstrip.

Mitigation Measures: None required

Significance Determination: No impact

Cumulative Impact Discussion

Structural (Regional, Centralized, and Distributed) BMPs

Noise and vibration are both defined as localized phenomena that significantly reduce in magnitude as distance from the source increases. The structural BMPs associated with the proposed program would be constructed in multiple jurisdictions of Los Angeles County, which aside from the County also includes 46 cities and LACFCD. As such, these structural BMP projects would be generally spread over a large geographic area within the County. These structural BMPs in combination with other current and planned projects in the County would result in an increase in construction-related noise levels, which would temporarily increase the ambient noise levels of the existing noise environment in areas where a construction project would occur. This would result in significant and unavoidable impacts for construction, but less than significant for operation.

Mitigation Measures: Implementation of **Mitigation Measures NOISE-1** and **NOISE-2**

Significance Determination: Significant and unavoidable with mitigation for construction; Less than significant for operation. (The application of these mitigation measures to specific BMP types and categories are identified in Table 3.10-11.)

Non-Structural (Institutional) BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the construction of new facilities. Consequently, there would be no new facilities that would contribute to cumulative noise impacts. As such, no impacts related to cumulative noise would occur.

Mitigation Measures: None required

Significance Determination: No impact

Summary of Impact Assessment

Table 3.10-11 shows a summary of the structural BMPs requiring mitigation.

TABLE 3.10-11
SUMMARY OF NOISE IMPACTS REQUIRING MITIGATION MEASURES

	Thresholds of Significance				
Regional BMPs	**Exceed Noise Standards**	**Vibration**	**Ambient Noise**	**Exposure to Airport Noise**	**Cumulative Impacts**
Applicable Mitigation Measures:	**NOISE-1; NOISE-2**	**None Required**	**NOISE-1**	**None Required**	**NOISE-1; NOISE-2**
Regional Detention and Infiltration	Yes	Yes	Yes	No	Yes
Regional Capture, Detention and Use	Yes	Yes	Yes	No	Yes
Centralized BMP					
Bioinfiltration	Yes	Yes	Yes	No	Yes
Constructed Wetlands	No	No	No	No	No
Treatment/Low Flow Diversions	No	No	No	No	No
Creek, River, Estuary Restoration	No	No	No	No	No
Distributed BMPs					
Site Scale Detention	No	No	No	No	No
LID – Infiltration/Filtration BMPs – Porous Pavement, Green Streets, Bioswale/Filter Strips, downspout disconnects	No	No	No	No	No
LID – Green Infrastructure – Capture and Use – Cisterns, Rain Barrels, Green roofs, Planter Boxes	No	No	No	No	No
Flow through Treatment BMPs	No	No	No	No	No
Source Control Treatment BMPs (catch basin inserts/screens, hydrodynamic separators, gross solids removal devices)	No	No	No	No	No
Low Flow Diversions	No	No	No	No	No

NOTE: These conclusions are based on typical size and function of BMPs.

3.11 Population and Housing and Environmental Justice

This section examines the existing population, housing, and employment conditions in Los Angeles County (County) as a whole. Data presented in this section was obtained from two U.S. Census Bureau data sets: 2010 census files and 2008–2012 American Community Survey (ACS) 5-year estimates. According to Section 15382 of the California Environmental Quality Act (CEQA) Guidelines, "An economic or social change by itself shall not be considered a significant impact on the environment." Socioeconomic characteristics should be considered in an Environmental Impact Report (EIR) only to the extent that they create adverse impacts on the physical environment.

3.11.1 Environmental Setting

Population

The proposed program is located in Los Angeles County, which has a population of approximately 10,017,068 people (U.S. Census Bureau, 2013). Like much of the Southern California region, Los Angeles County has experienced a population increase over the past decade. Between 2000 and 2012, the County experienced a growth rate of 3.8 percent, roughly two and a half times below the rest of the Southern California Association of Governments (SCAG) Region (10.4 percent) (SCAG, 2013). The County's population is estimated to grow to 11,353,000 by 2035 (SCAG, 2012).

Demographics

According to the 2008–2012 ACS 5-year estimates data, the racial breakdown of Los Angeles County's population is as follows:

- 27.8 percent White
- 47.7 percent Hispanic or Latino of any race
- 13.7 percent Asian
- 8.2 percent Black/African American
- 0.2 percent American Indian and Alaska Native
- 0.2 percent Native Hawaiian and Other Pacific Islander
- 2.2 percent Other (two or more races; some other race)

The general distribution of demographics around the County based on 2010 census data shows that the Hispanic and Black/African American populations are most highly concentrated within the center of the County's coastal basin, with the Black/African American population most highly concentrated within the cities of Baldwin Hills, Inglewood, Compton, and Carson. White populations within the County are most concentrated along the coastal western County boundary from Malibu down to Palos Verdes and along the coastal southern County boundary from Long Beach to Los Alamitos. The White populations are also concentrated along the Santa Monica Mountains and northern County limits, interspersed with mainly Hispanic and Asian populations in the central San Fernando Valley. Concentrations of the Asian populations exist around South San Gabriel and North El Monte, as well as around mid-city Los Angeles, Westwood, Torrance, and Norwalk (Cable, 2013).

Income

In the County of Los Angeles, the median household income is $56,241 according to the 2008-2012 ACS 5-Year Estimates data. Between the years of 2000 and 2012, the median household income for the County increased by an average of $11,691 annually. Median household income levels vary widely by census tract throughout the County, with lower-income tracts primarily located in central, east, and south Los Angeles. Other lower-income census tracts lie in the northern edges of the County, including some in the cities of Palmdale and Lancaster.

The median household annual income for all cities/Permittees included in the 12 EWMP areas ranges from $41,538 in the City of Industry to over $250,000 in the City of Hidden Hills. This represents over a $200,000 range in the EWMP areas. The cities'/Permittees' median household income is $75,350, which is almost $20,000 higher than the County median household income level.

TABLE 3.11-1
2014 LOS ANGELES COUNTY AREA MEDIAN HOUSEHOLD INCOME CLASSIFICATION IN U.S. DOLLARS

	2 persons in household	3 persons in household	4 persons in household
Extremely low income	20,500	23,050	25,600
Very low income	34,200	38,450	42,700
Low Income*	54,650	61,500	68,300
Median Income	51,850	58,300	64,800
Moderate Income	62,200	70,000	77,750

*Low income exceeding median income is an anomaly just for LA County due to HUD historical high cost adjustments to median. Household lower-income figures are derived based on very-low income figures not adjusted by HUD to account for any exceptions.

SOURCE: California Department of Community Development, 2014

Median household income varies greatly throughout Los Angeles neighborhoods. "High" median household income levels are concentrated mostly along the western boundary of the County along the coast and in Santa Clarita bordering Ventura County. These areas include the majority of the Upper Santa Clara River, Malibu Creek, North Santa Monica Bay, Beach Cities, and Palos Verdes Peninsula EWMP areas, along with parts of the Santa Monica Bay Jurisdictions 2 and 3 and the Ballona Creek EWMP areas. "Low" median household income areas are concentrated in the southern center of the County, and include parts of the Upper Los Angeles River, Ballona Creek, and Dominguez Channel EWMP areas. "Medium" median household income areas are more evenly interspersed throughout the County (Los Angeles Times, 2014).

Housing

There are approximately 3,441,416 housing units in Los Angeles County, with an average household size of 3.19 for owner-occupied units and 2.84 for renter-occupied units (U.S. Census Bureau, 2008–2012). As for housing tenure, 47.3 percent of County units are owner-occupied and 52.7 percent are renter-occupied units. The County homeowner vacancy rate is 1.7 percent and the rental vacancy rate is 4.5 percent; these vacancy rates are much lower than the national rates (2.3 percent of homeowners and 7.5 percent of rentals). Vacancy rates are an indicator of housing market balance in the County, where high vacancy rates demonstrate low demand and/or high prices, and low vacancy rates demonstrates high demand and/or low prices in the housing market. The County's vacancy rates are relatively low compared to the national level, indicating a relatively high demand for housing in the region.

3.11.2 Regulatory Setting

Federal

Executive Order 12898 outlines federal actions to address environmental justice in minority populations and low-income populations. Executive Order 12898 states that agencies shall identify and address disproportionately high and adverse human health or environmental effects on minority and low-income populations. A new working group was created to develop strategies for programs and policies regarding minority and low-income populations to: promote enforcement of all health and environmental statutes, improve research and data collection in relation to health and environment, identify different patterns of consumption of natural resources, and ensure greater public participation.

Local

County of Los Angeles General Plan

A General Plan is a basic planning document that, alongside the zoning code, governs development in a city or county. The State requires each city and county to adopt a General Plan with seven mandatory elements: land use, open space, circulation, housing, noise, conservation, and safety, along with any number of optional elements as appropriate. The proposed EWMPs would be subject to the local plans and policies of the areas in which they are located. Because this Program Environmental Impact Report (PEIR) is a high-level assessment of projects spanning the entire County, it will discuss only the County-level goals and policies relating to the overall program.

Housing Element (2014–2021)

The Housing Element is a required section of the General Plan, and serves to address the existing and projected housing needs of a city or county, including their share of the regional housing need. State law requires each local government agency to update their Housing Element every 5 years, and submit it to the State Department of Housing and Community Development for review. Los Angeles County's Housing Element was updated most recently in early 2014 for the 2014–2021 planning period. This policy guide analyzes the housing needs of the unincorporated areas of the County, and its primary focus is to ensure decent, safe, sanitary, and affordable housing for current and future residents in those areas. The following are the goals and policies from the Los Angeles County Housing Element that relate to the proposed program.

Goal 5: Neighborhoods that protect the health, safety, and welfare of the community, and enhance public and private efforts to maintain, reinvest in, and upgrade the existing housing supply.

Policy 5.2: Maintain adequate neighborhood infrastructure, community facilities, and services as a means of sustaining the overall livability of neighborhoods.

Goal 6: An adequate supply of housing preserved and maintained in sound condition, and located within safe and decent neighborhoods.

Policy 6.4: Maintain and improve community facilities, public housing services, and infrastructure, where necessary, to enhance the vitality of older, low income neighborhoods.

City General Plans

The EWMP areas associated with the proposed program are located in multiple jurisdictions of Los Angeles County, which, aside from the County, also includes 46 cities. Each of these cities has their own independent General Plan and municipal code that regulates housing. Given that a project-level analysis for each structural Best Management Practice (BMP) proposed in the EWMPs is beyond the scope of this PEIR, an extensive listing of the housing policies and regulations of each of the participating Permittees is not provided in this PEIR.

3.11.3 Impacts Assessment

Thresholds of Significance

For the purposes of this PEIR and consistency with Appendix G of the CEQA Guidelines, the project would have a significant impact on population and housing if it would:

- Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure).
- Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere.
- Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

Implementation of the proposed project may result in a potentially significant impact to environmental justice if the projects would:

- Affect the health or environment of minority or low-income populations disproportionately.

Program Impact Discussion

Impact 3.11-1: Implementation of the proposed program could induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure).

Structural (Regional, Centralized, and Distributed) BMPs

The structural BMPs associated with the proposed program would be installed to treat existing water quality impairments and would not induce population growth in the EWMP areas, either directly or indirectly. The structural BMPs are not habitable structures and would not provide new homes or businesses. In addition, the structural BMPs would generally be located within existing urbanized areas that do not have structural BMPs to treat existing runoff; the implementation of structural BMPs within existing stormwater infrastructure would not indirectly induce growth as the BMPs do not provide growth opportunities, as occurs with the extension of roads or other infrastructure. The construction work force anticipated to support implementation of the proposed projects would be drawn from the local Los Angeles region workforce and would not require housing. Because of the relatively short construction durations (typically less than one year) of the various types of structural BMPs and large available construction workforce in the Los Angeles Region, it is assumed that construction workers would not have to travel far or add traffic to roads outside of the vicinity of the project sites.

In addition, while one of the main goals of the EWMP is to increase infiltration and potentially increase recharge of stormwater into the groundwater basin, the amount of water potentially recharged would not be enough to indirectly support population growth. This potential additional recharge would contribute to local water supplies, but would not alter population demographics. Therefore, there would be no impact on population growth, either directly or indirectly.

Mitigation Measures: None required

Significance Determination: No impact

Non-Structural (Institutional) BMPs

Non-structural BMPs consist of policies, actions, and activities aimed at preventing pollutants from entering stormwater runoff; therefore, no physical impacts would occur in the EWMP areas. Non-structural BMPs would not include any direct or indirect population growth-inducing measures. There would be no impact.

Mitigation Measures: None required

Significance Determination: No impact

Impact 3.11-2: Implementation of the proposed program could displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere.

Structural (Regional, Centralized, and Distributed) BMPs

The proposed program and implementation of associated structural BMPs would not impact existing housing or necessitate construction of additional or replacement housing elsewhere. Structural BMPs may be constructed on private parcels, but would not displace existing housing or necessitate replacement housing elsewise. Although a property owner may decide to modify the structures on their property, that a structural BMP would not displace existing housing.

Distributed BMPs are most likely to be implemented in high-density urban, commercial, industrial, and transportation areas where they would either replace or improve upon existing stormwater infrastructure. These types of BMPs are generally "retrofit" type projects that replace existing impervious surfaces with pervious surfaces such as bioinfiltration cells, bioswales, porous pavement, and filter strips that tie into existing stormwater management systems. These projects may also augment the existing stormwater management systems with additional inlet screens, filter media systems, sediment removal systems, and diversions to sanitary sewer lines. Ground disturbance for distributed BMPs is typically less than 1 to 2 acres in extent, but may extend in some limited applications up to 5 acres where space is available. Any new construction would be implemented along sidewalks and streets, in parks, and on publicly owned lands and would have no direct impact on existing homes. If projects are implemented in residential areas or streets, the projects would likely provide an improvement to the community in terms of aesthetic appearance.

Mitigation Measures: None required

Significance Determination: No impact

Non-Structural (Institutional) BMPs

The implementation of non-structural BMPs would not displace housing, as they do not involve structural elements and would not have a direct physical impact on the environment, as no construction or maintenance activities would be required. There would be no impact.

Mitigation Measures: None required

Significance Determination: No impact

Impact 3.11-3: Implementation of the proposed program could displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

Structural (Regional, Centralized, and Distributed) BMPs

The currently planned program and implementation of associated structural BMPs would not displace any housing or people. Structural BMPs would generally be implemented along sidewalks and streets, in parks, and on publicly owned lands and would have no direct impact on existing homes or residents. Future regional and centralized structural BMPs under the EWMP may include private property, schools, and universities. These potential future structural BMPs are not anticipated to result in displacement of existing housing.

RB-AR 8599

Mitigation Measures: None required

Significance Determination: No impact

Non-Structural (Institutional) BMPs

The implementation of non-structural BMPs would not displace any people, as they do not consist of structural improvements that would have a physical impact on the environment. No construction or maintenance activities would be required. There would be no impact.

Mitigation Measures: None required

Significance Determination: No impact

Impact 3.11-4: Implementation of the proposed program could affect the health or environment of minority or low-income populations disproportionately.

Structural (Regional, Centralized, and Distributed) BMPs

Structural BMPs would be located throughout the County and cities based on water quality priorities and site suitability, factors of which include space, soil type, proximity/connectivity to other BMPs, etc. Structural BMPs are not expected to be concentrated in any one area or city in particular within the EWMP areas. The structural BMPs are expected to be located on public lands (e.g., schools, parks, sidewalks, and road rights-of-way) throughout the EWMP areas and would be designed to capture, convey, and/or filter stormwater and surface runoff. The structural BMPs would treat surface water runoff in a manner that would not result in human contact with surface flows that are potentially harmful to health. Structural BMPs would not disproportionately affect the health or environment of minority or low-income populations. Impacts would be less than significant.

Mitigation Measures: None required

Significance Determination: Less than significant impact

Non-Structural (Institutional) BMPs

Similar to structural BMPs, non-structural BMPs are expected to be implemented throughout the County area, with no concentration in any area in particular. Non-structural BMPs would consist of policies and measures taken to prevent surface water pollution, and by their non-structural and preventative nature are not expected to introduce a threat to the environmental or public health, much less a disproportionate threat to minority or low-income populations. Street sweeping is a non-structural BMP that requires temporary parking restrictions to allow for effective collection and removal of debris and sediment from the streets. Curb parking spaces tend to be used more in higher-density, predominantly rental communities. Prior to implementation of increased street sweeping activities to improve effectiveness of these measures, the impact on street parking would be assessed and frequency of restriction on street parking assessed to avoid impacts to these communities that rely more heavily on street parking for residences and small businesses. Impacts would be less than significant.

Mitigation Measures: None required

Significance Determination: Less than significant impact

Cumulative Impact Discussion

Structural (Regional, Centralized, and Distributed) BMPs

The proposed program would involve implementation of structural BMPs that would capture and/or infiltrate, filter, divert, or treat stormwater runoff. Structural BMPs would result in the improvement of existing stormwater infrastructure and stormwater quality, and would therefore not result in a direct or indirect increase in population or housing. Structural BMPs would be installed along sidewalks and streets and in other public areas, and would not displace existing people or housing. There would be no impacts to population and housing; therefore, there would be no cumulative impacts to population and housing.

Mitigation Measures: None required

Significance Determination: No impact

Non-Structural (Institutional) BMPs

Non-structural BMPs consist of policies, actions, and activities aimed at preventing pollutants from entering stormwater runoff; there would not be physical impact to the environment. Non-structural BMPs would not include any direct or indirect population growth-inducing measures, and would not displace existing people or housing. There would be no impacts to population and housing; therefore, there would be no cumulative impacts to population and housing.

Mitigation Measures: None required

Significance Determination: No impact

3.11.4 Summary of Impact Assessment

Table 3.11-2 shows a summary of the structural BMPs requiring mitigation.

TABLE 3.11-2
SUMMARY OF POPULATION AND HOUSING IMPACTS REQUIRING MITIGATION MEASURES

	Thresholds of Significance				
Structural BMPs	**Population Growth**	**Displaced Housing**	**Displaced Population**	**Disproportionate Impact on Minority Populations**	**Cumulative Impacts**
Applicable Mitigation Measures:	**None Required**	**None Required**	**None Required**	**None Required**	**None Required**
Regional BMPs					
Regional Retention and Infiltration	No	No	No	No	No
Regional Capture, Detention and Use	No	No	No	No	No
Centralized BMP					
Biofiltration	No	No	No	No	No
Constructed Wetlands	No	No	No	No	No
Treatment/Low-Flow Diversions	No	No	No	No	No
Creek, River, Estuary Restoration	No	No	No	No	No
Distributed BMPs					
Site Scale Detention	No	No	No	No	No
LID – Infiltration/Filtration BMPs – Porous Pavement, Green Streets, Bioswale/Filter Strips, downspout disconnects	No	No	No	No	No
LID – Green Infrastructure – Capture and Use – Cisterns, Rain Barrels, Green roofs, Planter Boxes	No	No	No	No	No
Flow-through Treatment BMPs	No	No	No	No	No
Source Control Treatment BMPs (catch basin inserts/screens, hydrodynamic separators, gross solids removal devices)	No	No	No	No	No
Low-Flow Diversions	No	No	No	No	No

NOTE: These conclusions are based on typical size and function of BMPs.

3.12 Public Services and Recreation

This section addresses potential impacts on public services and recreational resources that could occur as a result of implementation of the proposed program. The public services addressed in this section include law enforcement services, fire protection services, and schools.

3.12.1 Environmental Setting

Public Services

Fire Protection

The Los Angeles County Fire Department (LACFD) serves unincorporated areas as well as many of the cities within the County; 21 of these cities are participating Permittees within the Enhanced Watershed Management Program (EWMP) areas. These cities include Hawthorne, West Hollywood, Malibu, Palos Verdes Estates, Rancho Palos Verdes, Rolling Hills Estates, Azusa, Bradbury, Duarte, Calabasas, Hidden Hills, La Canada Flintridge, Rosemead, San Gabriel, Temple City, Baldwin Park, Covina, Glendora, Industry, La Puente, and Santa Clarita (LACFD, 2013). LACFD employs approximately four thousand emergency personnel and works out of 170 fire stations across the County. In addition to fire suppression, the LACFD also provides fire prevention services, emergency medical services, hazardous materials services, and urban search and rescue services.

LACFD is organized into three different emergency operations bureaus, the North, Central, and East Regional Operations Bureau. The North Regional Operations Bureau includes 43 fire stations serving communities in the Antelope and Santa Clarita Valleys. The Central Regional Operations Bureau includes 51 fire stations serving communities in the central Los Angeles portions of the County. It also includes the Lifeguard Division based in Venice, which helps protect millions of annual visitors along 74 miles of the Pacific Coast. The East Regional Operations Bureau includes 76 fire stations servicing communities within the east side of the County (LACFD, 2013).

Under a mutual-aid pact covering federal forestlands, responsibility for nonstructural fires within the National Forest belongs to the U.S. Forest Service (USFS), while LACFD has the primary mission of suppressing structure fires. In addition, they have an automatic-aid agreement that allows the closest municipality to provide an initial response to fires that may occur in a part of another municipality. The LACFD has several standards to maintain adequate fire protection within their service area (Los Angeles County, 2014). The current standards for response times are:

- 5 minutes or less for response times for urban areas
- 8 minutes or less for suburban areas
- 12 minutes or less for rural areas

LACFD has designated lands in Los Angeles County with regard to their potential for wildland fires. These designations, determined by the County Forester, are based on an area's accessibility, amount and type of vegetative cover, water availability, and topography. LACFD uses three wildland fire hazard designations: Moderate Fire Hazard, High Fire Hazard, and Very High Fire Hazard. Areas in Los Angeles County that are not designated within a fire hazard zone are not considered to be subject to wildland fire hazards (Los Angeles County, 2014).

The following 26 EWMP participating Permittees run city-owned fire departments: Beverly Hills, Culver City, Inglewood, Santa Monica, Hermosa Beach, Manhattan Beach, Redondo Beach, Torrance, El Segundo, Agoura Hills, Westlake Village, Culver City, Malibu, Arcadia, Monrovia, Sierra Madre, Alhambra, Burbank, Glendale, Los Angeles, Montebello, Monterey Park, Pasadena, Rosemead, San Marino, and South Pasadena, (LACFD, 2013).

Police Protection

The Los Angeles County Sheriff's Department (LASD) provides law enforcement services to more than one million people living within 90 unincorporated communities and to more than four million residents living within 40 contract cities. In addition, LASD provides law enforcement services to nine community colleges, Metro, and 48 Superior Courts (Los Angeles County, 2014). LASD comprises 11 divisions, including 3 patrol divisions and the Office of Homeland Security. In addition to proactive enforcement of criminal laws, the LASD also provides investigative, traffic enforcement, accident investigation, and community education functions.

Cities within the EWMP areas that contract with LASD for their police services include West Hollywood, Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village, Rancho Palos Verdes, Rolling Hills Estates, Rolling Hills. Duarte, Bradbury, Monrovia, Santa Clarita, Industry, La Puente, Glendora, Covina, Baldwin Park, Temple City, East Pasadena, Rosemead, La Canada Flintridge, Hidden Hills, and Calabasas. LASD staff has indicated that an officer-to-population ratio of 1 officer to every 1,000 residents provides the desired level of service for its service area (Los Angeles County, 2014). The LASD also has established an optimal service response time of 10 minutes or less for emergency response incidents (a crime that is presently occurring and is a life-or-death situation), 20 minutes or less for priority response incidents (a crime or incident that is currently occurring but is not a life-or-death situation), and 60 minutes or less for routine response incidents (a crime that has already occurred and is not a life-or-death situation). These response times represent the range of time required to handle a service call, which is measured from the time a call is received until the time a patrol car arrives at the incident scene. Response time is variable, particularly because the nearest responding patrol car may be located anywhere within the station's patrol area and may not necessarily respond directly from the station itself (Los Angeles County, 2014).

Nineteen cities within the EWMP areas run their own city police departments; these cities are Beverly Hills, El Segundo, Culver City, Inglewood, Santa Monica, Los Angeles, Hermosa Beach, Manhattan Beach, Torrance, Hawthorne, Arcadia, San Marino, South Pasadena, San Gabriel, Burbank, Monterey Park, Montebello, Glendale, and Alhambra.

Schools

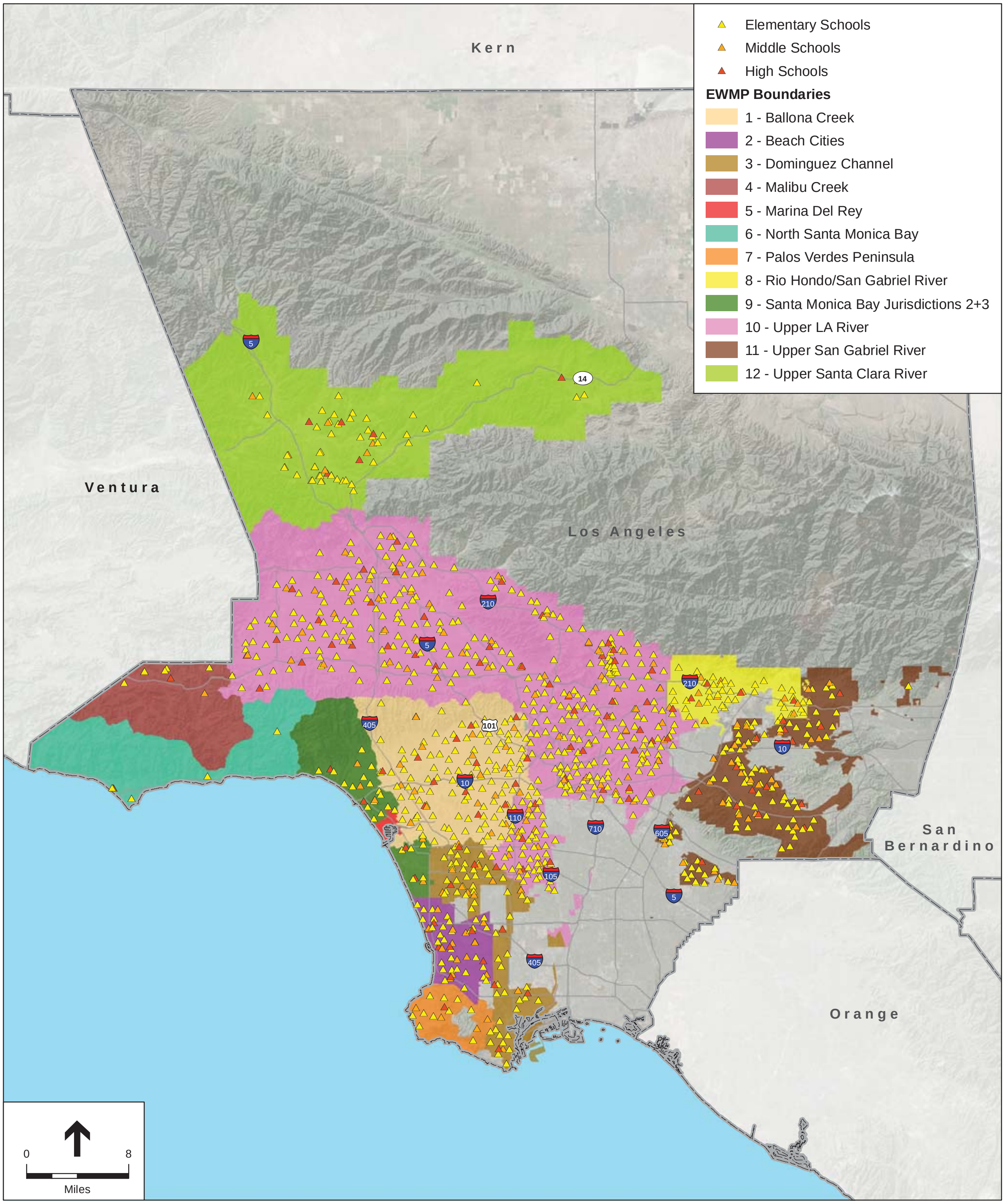
Within the County there are more than two thousand public schools (not including colleges) that serve over 1.5 million students. The County's role in developing and managing educational facilities and programs is limited. However, the Los Angeles County Office of Education (LACOE) serves as a regional education agency and an intermediary between the local school districts and the California Department of Education. LACOE supports 80 public school districts and numerous other educational agencies within the County (LACOE, 2014). The largest public school district in the County is Los Angeles Unified School District (LAUSD), which has a service area of over 720 square miles and includes the City of Los Angeles, 31 smaller municipalities, and unincorporated areas. LAUSD has more than nine hundred schools and 640,000 students (LAUSD, 2014). There are several other smaller school districts in the EWMP study area. **Table 3.12-1** lists the school districts in each EWMP area. **Figure 3.12-1** shows the schools located throughout the EWMP areas, distinguishing between elementary schools, middle schools, high schools, and colleges; other schools such as pre-schools, colleges, and other types of education facilities are not shown.

TABLE 3.12-1
SCHOOL DISTRICTS IN EWMP AREAS

Watershed Management Group	Cities/Permittees	School Districts
Ballona Creek	Beverly Hills, Culver City, Inglewood, Los Angeles, Santa Monica, West Hollywood, County, LACFCD	Beverly Hills USD, Culver City USD, Los Angeles USD, Santa Monica-Malibu USD,
Beach Cities	Hermosa Beach, Manhattan Beach, Redondo Beach, Torrance, LACFCD	Hermosa Beach City School District, Manhattan Beach USD, Redondo Beach USD, Torrance USD,
Dominguez Channel	El Segundo, Hawthorne, Inglewood, Los Angeles, LA County, LACFCD	El Segundo USD, Hawthorne School District, Inglewood USD, Los Angeles USD,
Malibu Creek	Agoura Hills, Calabasas, Hidden Hills, Westlake Village, LA County, LACFCD	Las Virgenes USD, Los Angeles USD
Marina del Rey	Culver City, Los Angeles, LACFCD, LA County	Culver City USD, Los Angeles USD
North Santa Monica Bay	LA County, LACFCD, Malibu	Los Angeles USD, Santa Monica-Malibu USD,
Palos Verdes Peninsula	Palos Verdes Estates, Rancho Palos Verdes, Rolling Hills Estates, LA County, LACFCD	Palos Verdes Area USD, Palos Verdes Peninsula USD, Los Angeles USD
Rio Honda/San Gabriel River	Arcadia, Azusa, Bradbury, Duarte, Monrovia, County, LACFCD, Sierra Madre	Arcadia USD, Duarte USD, Monrovia USD, Los Angeles USD, Pasadena USD
Santa Monica Bay	Los Angeles, El Segundo, Santa Monica, LA County, LACFCD	Los Angeles USD, el Segundo USD, Santa Monica-Malibu USD
Upper LA River	Alhambra, Burbank, Calabasas, Glendale, Hidden Hills, La Canada Flintridge, Los Angeles, Montebello, Monterey Park, Pasadena, Rosemead, San Gabriel, San Marino, South Pasadena, Temple City, LA County, LAFCD	Alhambra USD, Burbank USD, Las Virgenes USD, La Canada USD, Los Angeles USD, Montebello USD, Pasadena USD, Rosemead School District, San Gabriel USD, San Marino USD, South Pasadena USD, Temple City USD
Upper San Gabriel River	Baldwin Park, Covina, Glendora, Industry, La Puente, LACFCD, LA County	Baldwin Park USD, Covina-Valley USD, Glendora USD, Los Angeles USD, Hacienda La Puente USD
Upper Santa Clara River	LA County, LACFCD, Santa Clarita	Los Angeles USD, Newhall School District

USD: Unified School District

SOURCE: Google, 2014.



SOURCE: ESRI.

LA County PEIR EWMP . 140474

Figure 3.12-1

Public School Locations

Parks and Recreational Resources

The County of Los Angeles Department of Parks and Recreation owns, operates, and maintains nearly 174 parks and recreational facilities (LADPR, 2014). The local park system encompasses approximately 609 total acres, and includes community parks (10 to 20 acres in size), neighborhood parks (3 to 10 acres in size), pocket parks (less than 3 acres in size), and park nodes (small pieces of open space that provide breaks to the urban landscape). Local parks serve neighborhoods within a maximum of a 2-mile radius of the park. The regional park system makes up 68,986 acres and includes regional parks (greater than 100 acres), community regional parks (20 to 100 acres), and special-use facilities (single-use facilities serving greater recreational or cultural needs). The parks in the regional park system provide service for areas within a 20- to 25-mile radius. Other recreational facilities available to County residents include trails, multi-benefit parks, school sites, city parks and facilities, private recreational facilities, and greenways (Los Angeles County, 2014).

The County goal for the provision of parkland is 4 acres of local parkland per 1,000 residents of the population in the unincorporated areas, and 6 acres of regional parkland per 1,000 residents of the total population of Los Angeles County (Los Angeles County, 2014). Section 21.24.340 of the County Code has a standard of 3 acres of local and 5 acres of regional parkland per 1,000 residents.

According to County estimates, there are currently a total of 1,066,414 people living in the unincorporated areas. This means that for every 1,000 residents there are a total of approximately 0.57 acres of local parkland, resulting in a local parkland deficit; the current acreage of available local parkland does not meet the County's goal for recreational facilities (Los Angeles County, 2014). In addition to the 609 acres of local parkland, there is a total of 68,986 acres of regional parkland in Los Angeles County at this time. For every 1,000 residents in Los Angeles County, there is a total of approximately 7 acres of regional parkland. There is a surplus of regional parkland, which exceeds the County's goal for regional parkland (Los Angeles County, 2014). **Figure 3.12-2** shows the County parks present within the EWMP areas.

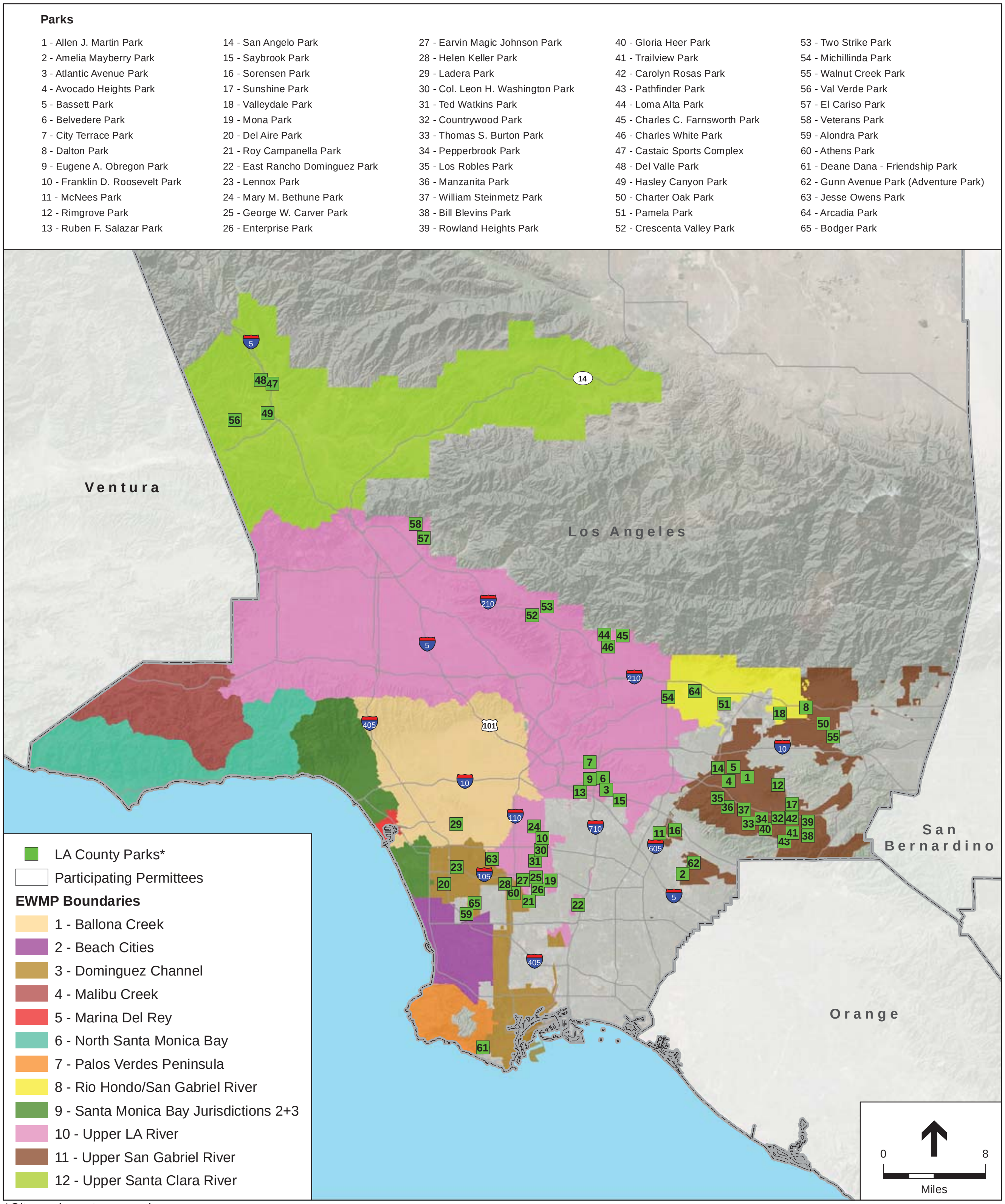
Many of the cities/Permittees within the EWMP areas have city-owned and -operated parks. Given that a project-level analysis for each structural Best Management Practice (BMP) proposed in the EWMPs is beyond the scope of this Program Environmental Impact Report (PEIR), an extensive listing of each of the participating Permittees' parklands is not provided in this PEIR.

3.12.2 Regulatory Setting

Local

Los Angeles County General Plan

State law requires every city and county to include an Open Space Element in their General Plan. Both the existing and draft County of Los Angeles General Plan include a Parks and Recreation Element that discusses recreational facilities available within the County boundaries, and goals and policies addressing the growing and diverse recreation needs of the region. The following are the parks and recreation goals and policies.



City parks not mapped

SOURCE: ESRI.

LA County PEIR EWMP . 140474

Figure 3.12-2
County Park Locations

Existing General Plan 1980

Goal: Provide Outdoor Recreation Areas.

Policy 27: Provide low intensity outdoor recreation in areas of scenic and ecological value compatible with protection of these natural resources.

Policy 28: Develop local parks in urban areas as part of urban revitalization projects, wherever possible.

Draft General Plan 2035

Goal P/R 1: Enhanced active and passive park and recreation opportunities for all users.

Policy P/R 1.4: Promote efficiency by building on existing recreation programs.

Policy P/R 1.5: Ensure that County parks and recreational facilities are clean, safe, inviting, usable and accessible.

Goal P/R 2: Enhanced multi-agency collaboration to leverage resources.

Policy P/R 2.5: Support the development of multi-benefit parks and open spaces through collaborative efforts among entities such as cities, the County, state, and federal agencies, private groups, schools, private landowners, and other organizations.

State law also requires the inclusion of a Safety Element that addresses environmental hazards and other safety concerns and aims to reduce the potential risk of death, injury, and economic damage resulting from natural and man-made hazards. The following presents the goals and policies in the existing and draft County of Los Angeles General Plan Safety Element.

Existing General Plan 1980

Goal: Strengthen County short-term emergency response and long-term recovery capability.

Policy 27: Strengthen the capability of County agencies to effectively respond to earthquake and non-earthquake induced emergencies.

Policy 28: Upgrade regional heavy rescue capability including mobilization operations and resource management.

Policy 29: Encourage critical facilities to maintain and regularly update emergency response plans identifying safety procedures, disaster control capabilities, and evacuation procedures such as drills and exercises.

Policy 30: Upgrade interagency and multijurisdictional communications, planning and decision making to ensure efficient and integrated emergency response capability.

Policy 31: Promote improved cooperation with nonprofit and private sector emergency response organizations.

Policy 35: Strengthen emergency communication systems and improve cooperation between the media and emergency response agencies.

Goal: Continue to promote research on and mapping of natural and urban hazards: and improve safety information systems for planning, emergency response management and hazard mitigation.

Policy 37: Encourage research that will lead to the detailed mapping of ground response (microzonation) of Los Angeles County.

Draft General Plan 2035

Goal S 3: An effective regulatory system that prevents or minimizes personal injury, loss of life, and property damage due to fire hazards.

Policy S 3.9: Adopt by reference the County of Los Angeles Fire Department Strategic Fire Plan, as amended.

Goal S 4: Effective County emergency response management capabilities.

Policy S 4.1: Ensure that residents are protected from the public health consequences of natural or man-made disasters through increased readiness and response capabilities, risk communication, and the dissemination of public information.

Policy S 4.2: Support County emergency providers in reaching their response time goals.

Policy S 4.3: Coordinate with other County and public agencies, such as transportation agencies and health care providers on emergency planning and response activities, and evacuation planning.

Policy S 4.5: Ensure that there are adequate resources, such as sheriff and fire services, for emergency response.

Los Angeles County Strategic Fire Plan

LACFD provides fire, safety, and emergency medical services to the unincorporated areas, as well as to several cities in the County. Their strategic plan is updated yearly and includes department goals and policies the department implements to ensure safety of residents and to carry out the County’s public safety mission.

City General Plans and Municipal Codes

The EWMP areas associated with the proposed program are located in multiple jurisdictions of Los Angeles County, which, aside from the County, also includes 46 cities. Each of these cities has their own independent General Plan and municipal code that regulates public service levels and recreation resources within their jurisdictional boundaries. Given that a project-level analysis for each structural BMP proposed in the EWMPs is beyond the scope of this PEIR, an extensive listing of the public service and recreation policies and goals of each of the participating Permittees is not provided in this PEIR.

3.12.3 Impact Assessment

The proposed program's potential impacts were assessed using the California Environmental Quality Act (CEQA) Guidelines Appendix G Checklist. The following sections discuss the key issue areas identified in the CEQA Guidelines with respect to the proposed program's potential effects on public services and recreational resources.

Thresholds of Significance

For the purposes of this PEIR and consistency with Appendix G of the CEQA Guidelines, the project would have a significant impact on public services if the project would:

- Result in substantial adverse physical impacts associated with the provision of, or the need for, new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services:
    - Fire protection
    - Police protection
    - Schools
    - Parks
    - Other public facilities

Implementation of the proposed project may result in a potentially significant impact to recreational resources if the projects would:

- Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.
- Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment.

Program Impact Discussion

Fire Protection Services

Impact 3.12-1: The proposed program could result in substantial adverse physical impacts associated with the provision of, or the need for, new or physically altered governmental fire protection facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for fire protection services.

Structural (Regional, Centralized, and Distributed) BMPs

Distributed BMPs are most likely to be implemented in high-density urban, commercial, industrial, and transportation areas where they would either replace or improve upon existing stormwater infrastructure. These types of BMPs are generally "retrofit"-type projects that replace existing impervious surfaces with pervious surfaces such as bioinfiltration cells, bioswales, porous pavement, and filter strips that tie into existing stormwater management systems. These projects may also augment the existing stormwater management systems with additional inlet screens, filter media systems, sediment removal systems, and diversions to sanitary sewer lines. Ground disturbance for distributed BMPs is typically less than 1 to 2 acres in extent, but may extend in some limited applications up to 5 acres where space is available. Centralized structural BMPs use similar elements to the types of BMPs used in distributed structural BMPs, but also collect, store, treat, and filter stormwater from multiple parcels and much larger drainage areas. Like centralized BMPs, regional BMPs can be implemented in a broad range of land use types, from high-density urban to open space, and can have multiple benefits (habitat, recreation, aesthetics, etc.). Centralized and regional structural BMPs require greater footprints for construction and implementation. Regional and centralized BMPs have similar construction methods.

The structural BMPs associated with the proposed program would be installed to treat existing water quality impairments and would not contribute to an increased need for fire protection services. The structural BMPs are not habitable structures, would not be constructed with flammable materials, and would not require fire protection services. Because of the relative scale of these infrastructure improvements, the construction of the various structural BMPs are not expected to result in the need for new or physically altered fire protection facilities. However, construction of new structural BMPs in streets, sidewalks, parkland, or other facilities (these may include public service facilities such as police stations, fire stations, and municipal maintenance yards) within existing high-density urban, commercial, industrial, and transportation areas, as well as associated staging areas, could temporarily disrupt the provision of fire services, resulting in potentially significant impacts. Implementation of **Mitigation Measure PS-1** (construction noticing) would reduce potential impacts to a less-than-significant level.

Mitigation Measure:

PS-1: The Permittee implementing the EWMP project shall provide reasonable advance notification to service providers such as fire, police, and emergency medical services as well as to local businesses, homeowners, and other residents adjacent to and within areas potentially affected by the proposed EWMP project about the nature, extent, and duration of construction activities. Interim updates should be provided to inform them of the status of the construction activities.

Significance Determination: Less than significant with mitigation (The application of this mitigation measure to specific BMP types and categories are identified in Table 3.12-2.)

Non-Structural (Institutional) BMPs

The non-structural BMPs associated with the proposed program would consist of standards and policies related to development and maintenance activities in mostly urban areas. The non-structural BMPs would not contribute to an increase in population within the project area, and would therefore not result in the need for new or physically altered fire protection facilities. There would be no impact.

Mitigation Measures: None required

Significance Determination: No impact

Police Protection Services

Impact 3.12-2: The proposed program could result in substantial adverse physical impacts associated with the provision of, or the need for, new or physically altered governmental police protection facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for police protection services.

Structural (Regional, Centralized, and Distributed) BMPs

The structural BMPs associated with the proposed program would not contribute to an increase in population requiring police protection services. The structural BMPs are not habitable structures; they include mostly unobtrusive structures such as bioswales, pervious pavement, and bioretention areas and are not expected to be of a nature that would require police protection services. Larger-size regional and centralized BMPs could be located in public open spaces such as parks and large parking lots, but would not result in an increased need for police services. Centralized BMPs may include larger-scale diversion and treatment systems that may require added security systems to protect operating systems. These added security systems will be part of the design process and operation and maintenance of these facilities. The structural BMPs would therefore not result in the need for new or physically altered police protection facilities, as there would be no increase in the demand for police protection services.

Mitigation Measure: None required

Significance Determination: Less than significant

Non-Structural (Institutional) BMPs

Consisting of standards and activities designed to protect surface water quality, the non-structural BMPs associated with the proposed program are not expected to result in substantial increases of criminal activity and would not result in the need for new or physically altered police protection facilities. There would be no impact.

Mitigation Measures: None required

Significance Determination: No impact

Schools

Impact 3.12-3: The proposed program could result in substantial adverse physical impacts associated with the provision of, or the need for, new or physically altered schools, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for schools.

Structural (Regional, Centralized, and Distributed) BMPs

The structural BMPs associated with the proposed program would consist of structures such as bioinfiltration cells, bioswales, porous pavement and filter strips, low-flow diversions, detention ponds, treatment wetlands, and stream/creek restoration projects; it would not increase the population in the project area, so it would not generate additional students. However, some of the structural BMPs may be installed on school facilities, on or under large grassy fields typically found on school sites. Large open space areas that can be found on school sites offer potential opportunities for infiltration and recharge areas. Such impacts would be analyzed on a site-specific basis as projects are brought forward and will be reviewed under a subsequent CEQA process. However, because of the short construction period of the types of structural BMPs under consideration, construction activities would not be anticipated to significantly affect the operation of existing school facilities such that new or physically altered facilities would be required. In addition, the long-term operation of the structural BMPs would not likely affect the operation of existing school facilities because of the relatively small scale and design of these structural BMPs. Impacts would be less than significant.

Mitigation Measures: None required

Significance Determination: Less than significant

Non-Structural (Institutional) BMPs

The non-structural BMPs would consist of standards and activities designed to protect surface water quality, and would not increase population within the project area. Therefore, these BMPs would not result in the need for new or physically altered school facilities. There would be no impact.

Mitigation Measures: None required

Significance Determination: No impact

Increased Use of Recreational Facilities

Impact 3.12-4: The proposed program could increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

Structural (Regional, Centralized, and Distributed) BMPs

The structural BMPs would not contribute to an increase in population and an associated increase in existing recreational facilities that could result in physical deterioration of existing facilities.

Some of the structural BMPs associated with the proposed program are anticipated to be located on existing parkland, as these open space areas offer ample area for potential subsurface spreading and infiltration. During the construction of such infrastructure, certain parts of selected parks and recreational facilities would temporarily be removed from service. Bike lanes and other linear recreational resources may also be affected by construction activities. Therefore, the construction of structural BMPs could temporarily limit the usage of the parks on which they are located, thereby potentially temporarily increasing the use at adjacent parks. Such temporary limits on access to parks and recreational resources may create increased demand on other parks and recreational resources within the EWMP area.

Once constructed, the structural BMPs would be in-ground or compatible with open space uses. The structural BMPs would operate passively and consist of mostly unobtrusive structures such as bioinfiltration cells, bioswales, porous pavement and filter strips, low-flow diversions, detention ponds, treatment wetlands, and stream/creek restoration projects. Construction periods for each BMP are expected to be relatively short, typically several months to a year. Because the construction will be temporary, the physical deterioration of park and recreational facilities to which recreational activities were diverted would not be substantial. The structural BMPs operated as part of the proposed program would be compatible with recreational and park-set activities; therefore, no impacts would occur during operation. Thus, construction and operation of structural BMPs would not increase the use of adjacent recreational facilities in such a way that would physically deteriorate them.

Mitigation Measures: None required

Significance Determination: Less than significant

Non-Structural (Institutional) BMPs

The non-structural BMPs associated with the proposed program would include programs that would lead to the establishment of various standards and/or physical maintenance activities, such as street sweeping. These BMPs would be preventative of water quality degradation and would not directly result in population growth or displace any existing recreational resources that would thereby result in the increased use of neighborhood or regional recreational resources. Therefore, they would not result in physical deterioration of existing facilities. There would be no impact.

Mitigation Measures: None required

Significance Determination: No impact

Inclusion of Recreational Facilities

Impact 3.12-5: The proposed program could include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

Structural (Regional, Centralized, and Distributed) BMPs

The structural BMPs associated with the proposed program would not require the construction or expansion of recreational facilities, although some BMPs may be located within existing parks or would create new public park space. Implementation of these BMPs would not increase the population and would therefore not create a need for the construction of new or expansion of existing recreational facilities. The structural BMPs constructed and operated as part of the proposed program, if it is approved, would be located on existing recreational facilities and would be compatible with recreational uses during operation. Therefore, the BMPs would not impact parkland in such a way that would require its expansion or the creation of new parkland. Impacts would be less than significant.

Mitigation Measures: None required

Significance Determination: Less than significant

Non-Structural (Institutional) BMPs

The non-structural BMPs associated with the proposed program would not include recreational facilities. Non-structural BMPs would consist of programs and policies that would include development guidelines and activities designed to prevent surface water quality degradation, and would not specifically result in the construction of new or expansion of existing recreational facilities. There would be no impact.

Mitigation Measures: None required

Significance Determination: No impact

Cumulative Impact Discussion

Structural (Regional, Centralized, and Distributed) BMPs

BMPs would be constructed throughout the watersheds. None of the facilities individually or cumulatively would increase population; require additional police, fire, or emergency services; or result in construction of new schools. Most of the distributed BMPs would be small in scale and would not result in cumulatively significant impacts to public services. Similarly, the larger regional and centralized BMPs would not result in cumulatively significant impacts to public services, but may instead provide multiple benefits by increasing public open space in urban areas. Therefore, the program's potential contribution to cumulative effects on public services and recreation is considered less than significant.

Mitigation Measures: Mitigation Measure **PS-1** (The application of this mitigation measure to specific BMP types and categories is identified in Table 3.12-2.)

Significance Determination: Less than significant with mitigation

Non-Structural (Institutional) BMPs

The non-structural BMPs associated with the proposed program would not result in impacts to public services or recreational facilities, as these BMPs will not consist of any physical construction. There would be no impact.

Mitigation Measures: None required

Significance Determination: No impact

3.12.4 Summary of Impact Assessment

Table 3.12-2 shows a summary of the structural BMPs requiring mitigation.

TABLE 3.12-2
SUMMARY OF PUBLIC SERVICES AND RECREATION IMPACTS REQUIRING MITIGATION MEASURES

	Thresholds of Significance					
Structural BMPs	**Adverse physical impacts due to new or altered fire protection facilities**	**Adverse physical impacts due to new or altered police facilities**	**Adverse physical impacts due to new or altered schools**	**Increased use of recreational facilities**	**Construction of recreational facilities**	**Cumulative Impacts**
Applicable Mitigation Measures:	**PS-1**	**None Required**	**None Required**	**None Required**	**None Required**	**PS-1**
Regional BMPs						
Regional Retention and Infiltration	Yes	No	No	No	No	Yes
Regional Capture, Detention and Use	Yes	No	No	No	No	Yes
Centralized BMP						
Biofiltration	Yes	No	No	No	No	Yes
Constructed Wetlands	Yes	No	No	No	No	Yes
Treatment/Low-Flow Diversions	Yes	No	No	No	No	Yes
Creek, River, Estuary Restoration	Yes	No	No	No	No	Yes
Distributed BMPs						
Site Scale Detention	Yes	No	No	No	No	Yes
LID – Infiltration/Filtration BMPs – Porous Pavement, Green Streets, Bioswale/Filter Strips, downspout disconnects	Yes	No	No	No	No	Yes
LID – Green Infrastructure – Capture and Use – Cisterns, Rain Barrels, Green roofs, Planter Boxes	Yes	No	No	No	No	Yes
Flow-through Treatment BMPs	Yes	No	No	No	No	Yes
Source Control Treatment BMPs (catch basin inserts/screens, hydrodynamic separators, gross solids removal devices)	Yes	No	No	No	No	Yes
Low-Flow Diversions	Yes	No	No	No	No	Yes

NOTE: These conclusions are based on typical size and function of BMPs.

3.13 Transportation and Circulation

This section discusses the setting, regulatory framework, and impacts and mitigation measures regarding traffic and transportation services in the Enhanced Watershed Management Program (EWMP) areas. Temporary impacts related to construction of Best Management Practices (BMPs) have been identified and analyzed throughout the section.

3.13.1 Environmental Setting

Regional and Local Roadways

The network of regional and local roadways in the potentially affected areas of the EWMP areas consists of interstate freeways (e.g., I-405, I-710, and I-210), state highways (e.g., State Route [SR] 1, and SR 60), and numerous local roads that are under the jurisdiction of a particular city or Los Angeles County Department of Public Works. Local roads provide access to the individual project work sites and also provide a connection between local land uses and major thoroughfares.

Public Transportation

Public transit service is provided by various agencies in the study area; for example, the Los Angeles County Metro, Torrance Transit, and the Los Angeles Department of Transportation Transit Service. Buses serve local and regional needs for public transportation with varying frequencies.

Bicycle and Pedestrian Transportation

The regional network of bicycle facilities includes a variety of Class I (bicycle paths), Class II (bicycle lanes, striped in roads), and Class III (bicycle routes without striping) bikeways within the cities and communities in the EWMP study areas. Pedestrian facilities consist of sidewalks and intersection crosswalks in built-up areas.

Truck Routes

Cities often develop a truck route plan, which designates truck routes to provide contractors with the preferred travel roadways to and from connecting local roadways. For example, the cities of Torrance and Los Angeles have such plans. Los Angeles County has a similar system of truck routes for unincorporated areas.

3.13.2 Regulatory Setting

State

California Department of Transportation

The California Department of Transportation (Caltrans) is responsible for planning, designing, constructing, operating, and maintaining all state highway and interstate freeway systems. As a result, any change to the state roadway system requires an Encroachment Permit from Caltrans.

Caltrans' construction practices require temporary traffic control planning "during any time the normal function of a roadway is suspended" (Caltrans, 2012). In addition, Caltrans has the discretionary authority to issue special permits for the movement of vehicles/loads exceeding statutory limitations on the size, weight, and loading of vehicles contained in Division 15 of the California Vehicle Code. Requests for such special permits require the completion of an application for a Transportation Permit. The California Highway Patrol is notified about transportation of oversize/overweight loads. In addition to maintaining highways, and general regulations and laws dealing with licensing, traffic signage, and other noncommercial driver requirements, state laws and regulations also govern motor carriers on roadways within the state.

Local

County and City Land Use Regulations and Ordinances

Local regulations and ordinances vary widely in the program area. Traffic-related policies included in General Plans typically concern traffic resulting from project operation rather than project construction. However, some local jurisdictions incorporate restrictions to their General Plans that pertain to construction activities in or through their jurisdictional areas, such as assigning truck traffic routes or requiring the development of Traffic Control Plans.

3.13.3 Impact Assessment

Approach and Methods

This section assesses the transportation impacts that could result from the implementation of the proposed structural and non-structural BMPs. Because of the geographic scale of the program area and the range of actions that fall within the scope of the proposed program, this impact assessment was conducted at a programmatic level. Assumptions regarding the types of transport and the types of roads used to haul materials were used to assess the overall significance of program impacts. In determining the level of significance, the assessment assumed that the implementation of the proposed BMPs would comply with relevant federal, state, and local laws, regulations, ordinances, and guidance. It is assumed that supplemental project-level analysis of transportation-related impacts (e.g., traffic safety analysis of heavy vehicles traveling on, and turning onto and off of, local roads) would be required for site-specific structural BMPs prior to commencement of construction activity.

Thresholds of Significance

The California Environmental Quality Act (CEQA) defines a significant effect on the environment as a substantial, or potentially substantial, adverse change in the physical conditions of the area affected by a project. An impact related to transportation would be considered significant if it would result in any of the following, which are from Appendix G of the CEQA Guidelines:

- Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit.

- Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways.
- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment).
- Result in inadequate emergency access.
- Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

The following discussion of environmental impacts is limited to those potential impacts that could result in some level of potentially significant environmental change, as defined by CEQA. The project site is located in the County of Los Angeles, which has established level-of-service standards and a congestion management program that are intended to monitor and address long-term traffic impacts resulting from future development, but do not apply to temporary impacts associated with construction projects (bullet 2 in the list of guidelines). In addition, implementation of the proposed program would not affect air traffic patterns of airports in the program area (bullet 3 above). Also, implementation of the proposed program would not directly or indirectly eliminate existing or planned alternative transportation corridors or facilities (bicycle paths, lanes, bus turnouts, etc.), include changes in policies or programs that support alternative transportation, or construct facilities in locations in which future alternative transportation facilities are planned (bullet 6 in the list of guidelines). Therefore, no impact would occur under these three categories, and these categories are not discussed further within this section.

Program Impact Discussion

Effects on Performance of the Traffic Circulation System

Impact 3.13-1: The proposed program could intermittently and temporarily increase traffic levels and traffic delays due to vehicle trips generated by construction workers and construction vehicles on area roadways.

Structural (Regional, Centralized, and Distributed) BMPs

Implementation of the proposed program would involve the installation of structural control measures that would be constructed as BMPs to reduce the impact of stormwater and non-stormwater on receiving water quality within the EWMP areas. The construction activities for the proposed distributed, centralized, and regional structural BMPs would generally require similar processes such as removal of existing aboveground and/or surface materials, ground disturbance (e.g., site preparation and grading), and construction of the structural control measure. The intensity and nature of the construction activity required for the different structural BMPs would vary, and the number of vehicle trips generated by that activity would similarly vary. A general description of the anticipated construction activities that would be required for each of the various types of distributed, centralized, and regional structural BMPs are provided in Chapter 2.0, *Project Description*, of this Program Environmental Impact Report (PEIR). Construction activities of the various structural BMPs proposed in the EWMPs are anticipated to occur intermittently in the future, and would be subject to change, as the EWMPs are also planning documents that will be revised periodically to reflect new data, further modeling, emerging technologies, and results of BMP assessments. As such, the proposed locations of individual BMPs are subject to change throughout the EWMP process. Definitive construction equipment lists, material lists, construction methods, construction schedules, and workforce details would be developed in the future as specific structural BMP projects are finalized according to the EWMPs.

Vehicle trips would be generated primarily by construction workers commuting to and from the BMP work sites, and by trucks hauling materials and equipment to and from the sites. Construction equipment would be delivered to and removed from each site as needed. The construction traffic impacts associated with each individual structural BMP project would be short-term in nature and limited to the period of time when construction activity is taking place for that particular project. The primary off-site impacts resulting from the movement of construction trucks would include a short-term and intermittent lessening of roadway capacities due to the slower movements and larger turning radii of the trucks compared to passenger vehicles. Drivers could experience delays if they were traveling behind a heavy truck. The added traffic would be most apparent on the local roadways serving the facility sites. Although project-related traffic would be temporary, supplemental project-level analysis of potential site-specific impacts could determine that addition of project-generated traffic would be considered substantial in relation to traffic flow conditions on local roadways. For this program-level assessment, this impact is considered potentially significant.

To reduce the potential construction traffic impacts associated with the structural BMP projects, **Mitigation Measure TRAF-1** would be implemented; it would require all construction activities to be conducted in accordance with an approved construction traffic control plan. This would serve to reduce the construction-related traffic impacts to the maximum extent feasible. Thus, through the environmental review and development permit process, subsequent project-specific analysis by implementing agencies would be needed to determine specific required elements of the traffic control plans.

Mitigation Measures:

TRAF-1: For projects that may affect traffic, implementing agencies shall require that contractors prepare a construction traffic control plan. Elements of the plan should include, but are not necessarily limited to, the following:

- Develop circulation and detour plans to minimize impacts to local street circulation. Use haul routes minimizing truck traffic on local roadways to the extent possible.
- To the extent feasible, and as needed to avoid adverse impacts on traffic flow, schedule truck trips outside of peak morning and evening commute hours.

- Install traffic control devices as specified in Caltrans' Manual of Traffic Controls for Construction and Maintenance Work Zones where needed to maintain safe driving conditions. Use flaggers and/or signage to safely direct traffic through construction work zones.

- Coordinate with facility owners or administrators of sensitive land uses such as police and fire stations, hospitals, and schools. Provide advance notification to the facility owner or operator of the timing, location, and duration of construction activities.

Significance Determination: Less than significant with mitigation (The application of this mitigation measure to specific BMP types and categories are identified in Table 3.13-1.)

Non-Structural (Institutional) BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the construction of new facilities. Consequently, there would be no impacts related to transportation and traffic.

Mitigation Measures: None required

Significance Determination: No impact

Traffic Safety Hazards

Impact 3.13-2: Construction of the proposed program could potentially cause traffic safety hazards for vehicles, bicyclists, and pedestrians on public roadways, and could increase traffic hazards due to possible road wear.

Structural (Regional, Centralized, and Distributed) BMPs

The construction activities for the proposed distributed, centralized, and regional structural BMPs would not alter the physical configuration of the existing roadway network serving the area, and would not introduce unsafe design features. Impacts would be less than significant...

Curb and traffic flow designs would be subject to the design requirements imposed by local Departments of Traffic. Freeways, major arterials, and collectors are designed to accommodate a mix of vehicle types, including heavy trucks needed for temporary construction activities; therefore, impacts to traffic safety would be less than significant.

Mitigation Measures: None required

Significance Determination: Less than significant

Non-Structural (Institutional) BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the construction of new facilities. Consequently, there would be no impacts related to transportation and traffic.

Mitigation Measures: None required

Significance Determination: No impact

Inadequate Emergency Access

Impact 3.13-3: The proposed program could result in inadequate emergency access during construction.

Structural (Regional, Centralized, and Distributed) BMPs

Construction trucks generated by the individual structural BMP projects would interact with other vehicles on project area roadways, including emergency vehicles, but would not alter the physical configuration of the existing roadway network serving the area. As such, while individual emergency vehicles could be slowed if travelling behind a slow-moving truck, per vehicle code requirements, vehicles must yield to emergency vehicles using a siren and red lights. Lane closures would be subject to local Departments of Traffic requiring coordination with emergency providers. This potential impact is considered to be less than significant.

Mitigation Measures: None required

Significance Determination: Less than significant impact

Non-Structural (Institutional) BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the construction of new facilities. Consequently, there would be no impacts related to transportation and traffic.

Mitigation Measures: None required

Significance Determination: No impact

Cumulative Impact Discussion

Impact 3.13-4: Construction of the proposed program could contribute to cumulative impacts to traffic and transportation (traffic congestion, traffic safety, and emergency vehicle access).

Structural (Regional, Centralized, and Distributed) BMPs

The geographic scope of potential cumulative traffic impacts includes access routes to regional and local roadways used for haul routes and construction equipment/vehicle access throughout the project area. Given the dispersion of individual structural BMP project construction vehicle trips over the study area, and the fact that the trips would occur over the course of each workday, the project-related traffic on any one roadway during any hour of the day would not be substantial, and the contribution to cumulative traffic conditions would be less than significant.

However, constructing the structural BMPs could result in intermittent and temporary traffic-related impacts in the cumulative context. Traffic impacts include temporary increases in traffic congestion and increased potential for traffic safety hazards. The project has the potential to contribute to potentially significant cumulative construction-related impacts as a result of (1) cumulative projects (such as land development projects) that generate increased traffic at the same time on the same roads as would the proposed program, causing increased congestion and delays; and (2) infrastructure projects in roads that would be used by project construction workers and trucks, which could delay project-generated vehicles past the work zones of those other projects.

The structural BMPs associated with the proposed program would be constructed in multiple jurisdictions of Los Angeles County, which aside from the County also includes 46 cities and LACFCD. As such, these structural BMP projects would be generally spread over a large geographic area within the County. These structural BMPs, in combination with other current and planned projects in the County, would result in an increase in construction-related traffic levels, which would temporarily increase the levels of congestion on roadways in areas where a construction project would occur. However, each construction project occurring in the multiple municipalities of the County would be subject to the applicable regulations (e.g., traffic control plans) established by their respective municipalities. Nonetheless, temporary increases in traffic would occur as a result of construction activities under the proposed program along with other related project construction activities in the County. Where a related project is located in proximity to a structural BMP site and is constructed concurrently with the structural BMP, the combined construction traffic levels could have a cumulative effect on nearby roadways. Thus, under circumstances where these simultaneous construction activities would occur in proximity to roads with existing congestion, the cumulative traffic impacts related to a substantial temporary or periodic increase in ambient traffic levels could be cumulatively considerable.

However, with implementation of traffic control plans for each project that has the potential to increase traffic, including circulation and detour plans, traffic control devices, and scheduling (to the extent feasible) truck trips outside of peak morning and evening commute hours (as identified in **Mitigation Measure TRAF-1**) the project's contribution to the cumulative impacts from construction would be minimal. Once constructed, no impacts to traffic would result. Therefore, the contribution of structural BMPs to cumulative traffic conditions is less than significant.

Mitigation Measures: Implementation of **Mitigation Measure TRAF-1**

Significance Determination: Less than significant with mitigation (The application of these mitigation measures to specific BMP types and categories are identified in Table 3.13-1.)

Non-Structural (Institutional) BMPs

As discussed in Chapter 2.0, *Project Description*, non-structural/institutional BMPs do not include the construction of new facilities. Consequently, there would be no cumulative impacts related to transportation and traffic.

Mitigation Measures: None required

Significance Determination: No impact

3.13.4 Summary of Impact Assessment

Table 3.13-1 shows a summary of the structural BMPs requiring mitigation.

**TABLE 3.13-1
SUMMARY OF TRANSPORTATION AND CIRCULATION IMPACTS REQUIRING MITIGATION MEASURES**

	Thresholds of Significance			
Structural BMPs	**Traffic Circulation**	**Traffic Safety**	**Emergency Access**	**Cumulative Impacts**
Applicable Mitigation Measures:	**TRAF-1**	**None Required**	**None Required**	**TRAF-1**
Regional BMPs				
Regional Detention and Infiltration	Yes	No	No	Yes
Regional Capture, Detention and Use	Yes	No	No	Yes
Centralized BMPs				
Bioinfiltration	Yes	No	No	Yes
Constructed Wetlands	No	No	No	No
Treatment/Low-Flow Diversions	No	No	No	No
Creek, River, Estuary Restoration	No	No	No	No
Distributed BMPs				
Site Scale Detention	No	No	No	No
LID – Infiltration/Filtration BMPs – Porous Pavement, Green Streets, Bioswale/Filter Strips, downspout disconnects	No	No	No	No
LID – Green Infrastructure – Capture and Use – Cisterns, Rain Barrels, Green roofs, Planter Boxes	No	No	No	No
Flow-through Treatment BMPs	No	No	No	No
Source Control Treatment BMPs (catch basin inserts/screens, hydrodynamic separators, gross solids removal devices)	No	No	No	No
Low-Flow Diversions	No	No	No	No

NOTE: These conclusions are based on typical size of BMPs and the need for hauling materials off-site during construction.

3.14 Utilities, Service Systems, and Energy

This section discusses existing utilities and service systems in the County of Los Angeles, presents the associated regulatory framework, and provides an analysis of potential impacts to utilities and service systems that would result from implementation of the proposed program. Public utilities and utility systems in the program area include: water, wastewater, stormwater, solid waste, and energy. The following discussion describes existing utilities and service systems in the program area.

3.14.1 Environmental Setting

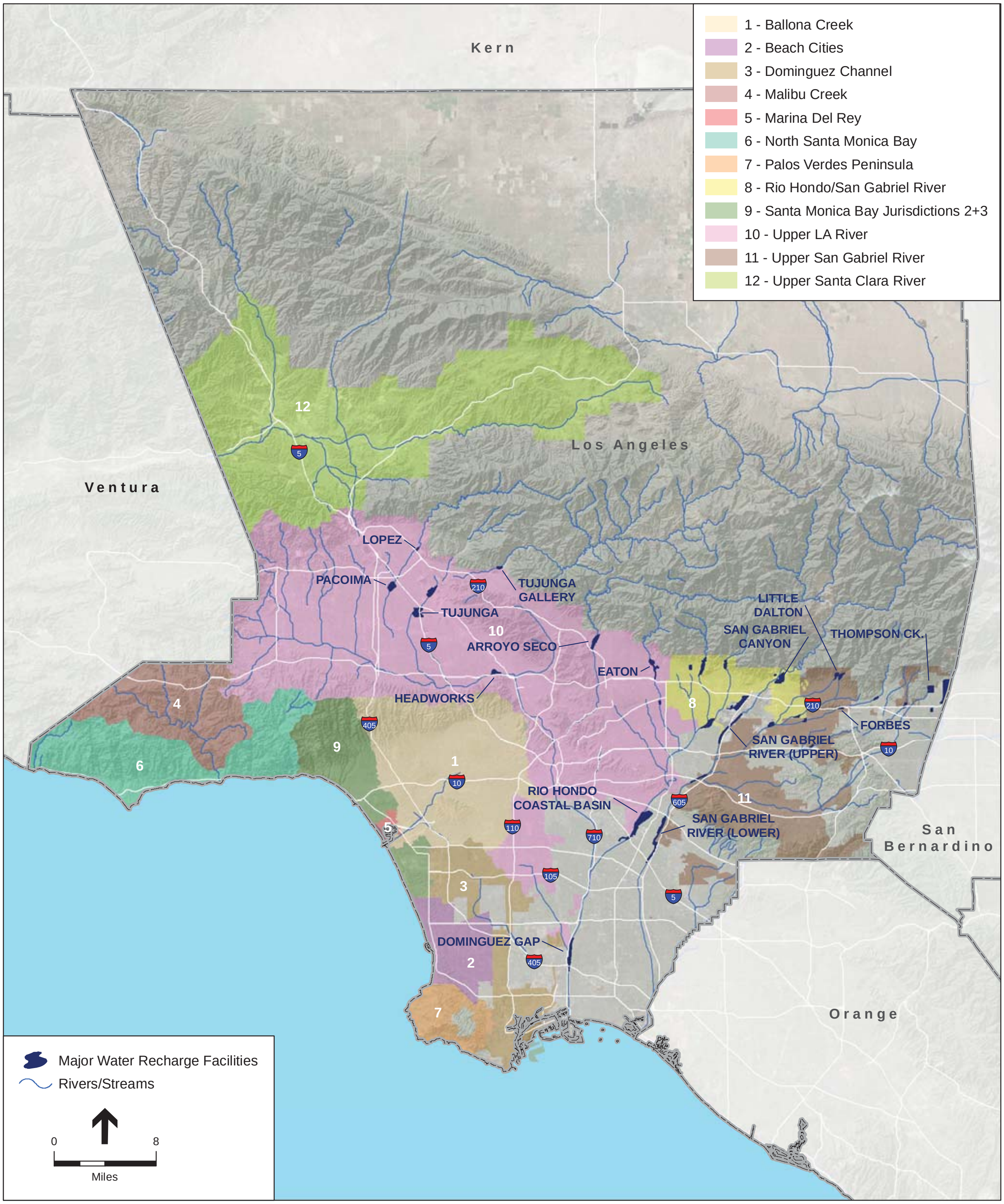
Water Agencies

Several water agencies participate in delivering water from its source to retail customers and households in Los Angeles County. Water supplies include local surface and groundwater, imported surface water, captured and recharged stormwater, and recycled water. The California Department of Water Resources operates and maintains the State Water Project that imports water from the Sacramento River Delta to Southern California. The Metropolitan Water District (Metropolitan) buys imported State Water Project water, imports water from the Colorado River through the Colorado River Aqueduct, and wholesales water to its member agencies. Other water wholesalers in Los Angeles County include the Central Basin Municipal Water District, West Basin Municipal Water District, Upper San Gabriel Valley Municipal Water District, Castaic Lake Water Agency, Las Virgenes Municipal Water District, Three Valleys Municipal Water District, and Antelope Valley–East Kern Water Agency. Water wholesalers provide water to retail customers; some are agencies of cities or counties, some are private companies, and some are special districts. There are several water purveyors that supply water to the Enhanced Watershed Management Program (EWMP) areas of Los Angeles County (Los Angeles County, 2014), as listed in **Table 3.14-1**.

According to Metropolitan, approximately 55 percent of water supplies in Southern California are imported, and 45 percent are supplied by local groundwater basins that are recharged naturally from rainfall and through constructed recharge facilities (MWD, 2010). Local supplies fluctuate in response to variations in rainfall. Stormwater recharge facilities currently augment local groundwater supplies in the region by an estimated 477,000 acre-feet per year (MWD, 2014). Studies have estimated about 1 million acre-feet per year of stormwater in the region is not captured (MWD, 2014). The largest stormwater detention and recharge facilities in Los Angeles County are located along the San Gabriel River in the City of Pico Rivera. These facilities, shown in **Figure 3.14-1, Water Recharge Facilities**, were constructed in the 1930s when the river levees were significantly improved. These groundwater recharge facilities are also used to recharge recycled water conveyed from the Los Coyote Hills Treatment Plant.

TABLE 3.14-1
EWMP AREA WATER PURVEYORS

Group Name	Permittees Involved	Water Agency
Ballona Creek	Beverly Hills, Culver City, Inglewood, Los Angeles, Santa Monica, West Hollywood, Los Angeles County, LACFCD	Beverly Hills Public Works; Central Basin Municipal Water District; West Basin Municipal Water District; Santa Monica Public Works; LADWP
Beach Cities Watershed Management Group	Hermosa Beach, Manhattan Beach, Redondo Beach, Torrance, LACFCD	West Basin Municipal Water District; Torrance Public Works
Dominguez Channel Watershed Management Group	El Segundo, Hawthorne, Inglewood, Los Angeles, Lomita, Los Angeles County, LACFCD	West Basin Municipal Water District; LADWP
Malibu Creek Watershed	Agoura Hills, Calabasas, Hidden Hills, Westlake Village, Los Angeles County, LACFCD	Las Virgenes Municipal Water District
Marina Del Rey	Culver City, Los Angeles, Los Angeles County, LACFCD	West Basin Municipal Water District; LADWP
North Santa Monica Bay Coastal Watersheds	Los Angeles County, Malibu, LACFCD	West Basin Municipal Water District; Los Angeles County Waterworks Districts
Palos Verdes Peninsula EWMP Agencies	Palos Verdes Estates, Rancho Palos Verdes, Rolling Hills Estates, Los Angeles County, LACFCD	West Basin Municipal Water District
Rio Hondo/San Gabriel River Water Quality Group	Arcadia, Azusa, Bradbury, Duarte, Monrovia, Los Angeles County, Sierra Madre, LACFCD	Three Valleys Municipal Water District; Upper San Gabriel Valley Municipal Water District
Santa Monica Bay Watershed Jurisdictions 2 and 3	Los Angeles, El Segundo, Santa Monica, Los Angeles County, LACFCD	West Basin Municipal Water District; LADWP; Santa Monica Public Works
Upper Los Angeles River Watershed	Alhambra, Burbank, Calabasas, Glendale, Hidden Hills, La Canada Flintridge, Los Angeles, Montebello, Monterey Park, Pasadena, Rosemead, San Gabriel, San Marino, South Pasadena, Temple City, Los Angeles County, LACFCD	Alhambra Public Works Department; Burbank Water and Power; Foothill Municipal Water District; Glendale Water and Power; Crescenta Valley Water District; Las Virgenes Municipal Water District; LADWP; Central Basin Municipal Water District; Upper San Gabriel Valley Municipal Water District; California-American Water Company
Upper San Gabriel River	Baldwin Park, Covina, Glendora, Industry, La Puente, Los Angeles County, LACFCD	Upper San Gabriel Valley Municipal Water District
Upper Santa Clara River Watershed	Los Angeles County, Santa Clarita, LACFCD	Santa Clarita Water Division



SOURCE: ESRI; Los Angeles County GIS

LA County PEIR EWMP . 140474

Figure 3.14-1
Water Recharge Facilities

Wastewater

Several wastewater agencies participate in providing wastewater collection and treatment for the EWMP areas. The EWMP areas fall within the Sanitation Districts of Los Angeles County, the City of Los Angeles Bureau of Sanitation, and Las Virgenes Municipal Water District wastewater system service areas.

The Sanitation Districts are a partnership of 24 independent special districts that serve the wastewater and solid waste management needs of approximately 5.5 million people in Los Angeles County (County). The Sanitation Districts' service area covers approximately 824 square miles and encompasses 78 cities and unincorporated territory within the County. Within the Sanitation Districts' service area, there are approximately 9,500 miles of sewers that are owned and operated by the cities and County that are tributary to the Sanitation Districts' wastewater collection system. The Sanitation Districts own, operate, and maintain approximately 1,400 miles of sewers, ranging from 8 to 144 inches in diameter, that convey approximately 500 million gallons per day of wastewater to 11 wastewater treatment plants. Included in the Sanitation Districts' wastewater collection system are 48 active pumping plants located throughout the County. In the interest of promoting better health and safety protection for those who engage in water contact activities in coastal areas bordered by the Sanitation Districts service area, the Sanitation Districts have consented, where justified, to accept the diversion of dry-weather urban runoff into the sewer system. The agencies responsible for the stormwater collection system are required to obtain permits from the Sanitation Districts, install equipment to remove gross solids, provide the means for measuring flow, and pay appropriate fees.

The City of Los Angeles Bureau of Sanitation provides wastewater treatment to the City of Los Angeles, as well as several unincorporated areas next to the City of Los Angeles. The Bureau of Sanitation operates and maintains its own wastewater collection and treatment systems with over 6,500 miles of sewers that serve more than four million residential and business customers in Los Angeles and 29 contracting cities and agencies. These sewers are connected to the City of Los Angeles' four wastewater and water reclamation plants that process an average of 550 million gallons of wastewater each day of the year. The City of Los Angeles Department of Public Works have implemented several low-flow diversion systems along the coast that divert urban dry-weather runoff and other types of non-stormwater from the storm drain system into the sewer system for treatment by the City of Los Angeles Hyperion Sewer Treatment Plant. Some of the low-flow diversion systems are being upgraded and, to convey the increased diverted stormwater flows from the low-flow diversion systems to the Hyperion Treatment Plant, the Coastal Interceptor Relief Sewer (CIRS) was constructed to provide additional capacity to the existing sewer system.

Las Virgenes Municipal Water District and the Triunfo Sanitation District (that serves a portion of Ventura County) share a service area in the Malibu Creek watershed. The Tapia Water Reclamation Facility and the Rancho Las Virgenes Composting Facility are owned by the Las Virgenes – Triunfo Joint Powers Authority and operated by Las Virgenes Municipal Water District personnel.

Table 3.14-2 lists the major municipal wastewater treatment plants in the EWMP areas. Each of these facilities provides treatment for daily wastewater flows and is designed with augmented hydraulic capacity to receive and discharge peak flows that enter the system during storm events.

TABLE 3.14-2
EWMP AREA WASTEWATER TREATMENT PLANTS

Water Reclamation Plants (WRP)	Rated Capacity (mgd)	Average Daily Flow 2013 (mgd)
Hyperion	450	362
Joint Water Pollution Control Plant (JWPCP)	400	264
La Cañada WRP	0.2	0.1
Los Angeles/Glendale WRP	20	20
Long Beach WRP	25	17
Los Coyotes WRP	37.5	21
Saugus WRP	6.2	5.2
San Jose Creek WRP	100	63
Tapia WRF	16	9.5
Tillman WRP	80	67
Whittier Narrows WRP	15	8.6
Valencia WRP	21.6	15.7

mgd = million gallons per day

SOURCES: Sanitation Districts of Los Angeles County website: http://www.lacsd.org/wastewater/wwfacilities/default.asp; Los Angeles County, 2014; Santa Clarita, 2010; LACSD, 2014).

Stormwater

The Los Angeles County Flood Control District (LACFCD) encompasses more than 3,000 square miles, 85 cities, and approximately 2.1 million land parcels. It includes the vast majority of drainage infrastructure within incorporated and unincorporated areas in every watershed, including 500 miles of open channel, 2,800 miles of underground storm drains, and an estimated 120,000 catch basins. In addition to the County maintaining regional storm drain structures, many of the cities within the EWMP study areas maintain storm drains within their respective city boundaries.

A low-flow diversion is a structural system that diverts potentially polluted, dry-weather flow to be treated, usually at a sewage treatment plant, before being discharged into the ocean. Several coastal cities have installed low-flow diversion systems that divert dry-weather flows to local treatment plants. For example, the City of Santa Monica operates the Santa Monica Urban Runoff Recycling Facility (SMURRF), which treats dry-weather runoff water (from excessive irrigation, spills, construction sites, pool draining, car washing, the washing down of paved areas, and some initial wet-weather runoff) prior to discharging to the ocean. An average of 500,000 gallons per day (gpd) of urban runoff generated in parts of the cities of Santa Monica and Los Angeles is treated by conventional and advanced treatment systems at the SMURRF. The runoff water is diverted from the City of Santa Monica's two main storm drains (Pier, Pico-Kenter) into the SMURRF and treated to remove pollutants such as trash, sediment, oil, grease, and pathogens (Santa Monica, 2014). In addition, LACFCD owns and operates 20 low-flow diversions in the Santa Monica Bay coast which divert low flows to the sanitary sewer system; these low-flow diversions also capture trash and floating debris in a trash well (LACFCD, 2013).

Solid Waste Management

Trash discarded on land frequently makes its way into streams, creeks, rivers, and eventually the ocean as rain storms wash it into gutters and storm drains. Types of trash generated by human activity that frequently pollute waterways include cigarette butts, paper, fast food containers, plastic grocery bags, cans and bottles, used diapers, construction site debris, industrial preproduction plastic pellets, old tires, appliances, and more. Trash is a significant pollutant of California's waters that adversely affects beneficial uses, including but not limited to uses that support aquatic life, wildlife, and public health (SWRCB, 2014).

The EWMP areas are served by various landfills and recycling centers operated by cities, the County, and private facility operators. Sanitation Districts of Los Angeles County (LACSD) serves the solid waste management needs of a large portion of Los Angeles County with several landfills, recycle centers, materials recovery/transfer facilities, and energy recovery facilities (LACSD, 2014). The two operational landfill sites are the Calabasas Landfill, located near Agoura Hills, and the Scholl Canyon Landfill, located in the Glendale. Other solid waste collection facilities operated by LACSD include the Puente Hills Materials Recovery Facility, the Downey Area Recycling and Transfer Facility, South Gate Transfer Station, the Commerce Refuse-to-Energy Facility, and the Southeast Resource and Recovery Facility. The City of Los Angeles Bureau of Sanitation collects refuse, recyclables, yard trimmings, and other bulky items from more than 750,000 homes and operates the Central LA Recycling and Transfer Station, which temporarily stores refuse and transports it to the nearest landfill. The City of Los Angeles has closed its five landfills and now uses Sunshine Canyon landfill for refuse disposal. Many of the participating cities within the EWMP study areas contract with landfills outside of Los Angeles County for disposal.

Energy

In 2012, the County of Los Angeles used 69,277.09 million kilowatt-hours (kWh) (CEC, 2014). Southern California Edison (SCE) provides electricity for the majority of the County. The Los Angeles Department of Water and Power provides over 23 million megawatt-hours (MWh) for the 1.4 million customers in the City of Los Angeles and Owens Valley (LADWP, 2013). LADWP is the third largest California electric utility in terms of consumption, behind Pacific Gas & Electric and SCE (LADWP, 2013). Both LADWP and SCE continue to increase efforts to use additional renewable energy resources. Local, state, and federal mandates require levels of renewable energy as a percentage of electricity sales. Senate Bill (SB) 2 (1X) set renewable energy targets of 20 percent for years 2011–2013, 25 percent by 2016, and 33 percent by 2020 and thereafter.

3.14.2 Regulatory Setting

State

California Health and Safety Code

The California Health and Safety Code, Division 104, Part 12, Chapter 5, Article 2, Section 116815, requires all pipes carrying recycled water to be colored purple or wrapped in purple tape. This requirement stems from a concern in cross contamination and potential public health risks similar to those discussed for Title 17 (Public Health) of the California Code of Regulations. It is also discussed in the California Health Laws Related to Recycled Water (the Purple Book).

Protection of Underground Infrastructure

The California Government Code Section 4216-4216.9 "Protection of Underground Infrastructure" requires an excavator to contact a regional notification center (e.g., Underground Services Alert or Dig Alert) at least two days prior to excavation of any subsurface installations. Any utility provider seeking to begin a project that could damage underground infrastructure can call Underground Service Alert, the regional notification center for Southern California, which would in turn notify the utilities of potentially buried lines within 1,000 feet of the project excavation. Representatives of the utilities are then required to mark the specific location of their facilities within the work area prior to the start of excavation activities in the area.

California Integrated Waste Management Act of 1989

The California Integrated Waste Management Act of 1989 (Public Resources Code, Division 30) enacted through AB 939 emphasizes conservation of natural resources through reduction, recycling, and reuse of solid waste. AB 939 requires that all cities and counties divert 25 percent of solid waste streams from landfills by 1995 and 50 percent by 2000. In accordance with AB 939, each local agency must submit an annual report to the California Integrated Waste Management Board summarizing its progress in diverting disposed of solid waste.

2005 California Energy Action Plan II

The California Energy Commission's California Energy Action Plan II is the state's principal energy planning and policy document. The plan identifies state-wide energy goals, describes a coordinated implementation plan for state energy policies, and identifies specific action areas to ensure that California's energy is adequate, affordable, technologically advanced, and environmentally sound. In accordance with this plan, the first priority actions to address California's increasing energy demands are energy efficiency and demand response (i.e., reduction of customer energy usage during peak periods in order to address system reliability and support the best use of energy infrastructure). Additional priorities include the use of renewable sources of power and distributed generation (i.e., the use of relatively small power plants near or at centers of high demand). To the extent that these actions are unable to satisfy the increasing energy and capacity needs, clean and efficient fossil-fired generation is supported.

The Energy Action Plan II includes the following energy efficiency action specific to water supply systems:

- Identify opportunities and support programs to reduce electricity demand related to the water supply system during peak hours and opportunities to reduce the energy needed to operate water conveyance and treatment systems.

California Urban Water Management Planning Act of 1983

Section 10610 of the California Water Code establishes the Urban Water Management Planning Act. The act states that every publicly and privately owned urban water service provider that serves 3,000 or more customers or that supplies over 3,000 acre-feet of water annually is required to prepare an Urban Water Management Plan (UWMP) every 5 years. The goal of an UWMP is to ensure a reliable level of water service sufficient to meet the needs of customers during normal, dry, and multiple dry years.

NPDES Construction General Permit

Construction associated with the proposed program would disturb more than one acre of land surface for centralized and regional structural Best Management Practices (BMPs) (and possibly for those distributed structural BMPs larger than one acre), affecting the quality of stormwater discharges into waters of the United States. The proposed program would therefore be subject to the National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Order 2009-0009-DWQ, NPDES No. CAS000002, Construction General Permit [CGP]), as amended by Order 2010-0014-DWQ and Order 2012-0006-DWQ). The CGP regulates discharges of pollutants in stormwater associated with construction activity to waters of the United States from construction sites that disturb one or more acres of land surface, or that are part of a common plan of development or sale that disturbs more than one acre of land surface.

The CGP requires the development and implementation of a Stormwater Pollution Prevention Plan (SWPPP) that includes specific BMPs designed to prevent pollutants from contacting stormwater and keep all products of erosion from moving off-site into receiving waters. The SWPPP BMPs are intended to protect surface water quality by preventing the off-site migration of eroded soil and construction-related pollutants from the construction area. The CGP and SWPPPs are described in more detail in Section 3.8, *Hydrology and Water Quality*.

Statewide Water Quality Control Plans for Trash

The State Water Board proposes to adopt Amendments to Statewide Water Quality Control Plans to Control Trash (Trash Amendments) to the *California Ocean Plan* and the forthcoming *Inland Surface Waters, Enclosed Bays, and Estuaries Plan*. The proposed Trash Amendments will include six elements: (1) water quality objective, (2) prohibition of discharge, (3) implementation provisions, (4) time schedule, (5) time extension option for State Water Board consideration, and

(6) monitoring and reporting requirements. The project objective for the proposed Trash Amendments is to provide statewide consistency for the State Water Board's regulatory approach to protect aquatic life and public health beneficial uses, and reduce environmental issues associated with trash in state waters, while focusing limited resources on high-trash-generating areas (SWRCB, 2014).

Local

Los Angeles County Municipal Separate Storm Sewer System Permit

The current Municipal Separate Storm Sewer System (MS4) Permit for Los Angeles County (Order No. R4-2012-0175) became effective December 28, 2012 and contains requirements that are necessary to improve efforts to reduce the discharge of pollutants in stormwater runoff to the maximum extent practicable and achieve water quality standards.

Illicit Connections and Illicit Discharge Elimination Program

The MS4 Permit requires Permittees to continue to implement an Illicit Connection and Illicit Discharge (IC/ID) Program to detect, investigate, and eliminate IC/IDs to its MS4. Each Permittee must have adequate legal authority to prohibit IC/IDs to the MS4 and enable enforcement capabilities to eliminate the source of IC/IDs. The IC/ID Program includes at least the following major program components:

a) An up-to-date map of the MS4 facilities
b) Procedures for conducting source investigations for IC/IDs
c) Procedures for eliminating the source of IC/IDs
d) Procedures for public reporting of IDs
e) Spill response plan
f) IC/IDs education and training for staff

Enhanced Watershed Management Programs

The MS4 Permit allows Permittees the flexibility to develop EWMPs to implement the requirements of the Permit on a watershed scale through customized strategies, control measures, and BMPs. Participation in an EWMP is voluntary and allows a Permittee to address the highest watershed priorities, including complying with the requirements of Receiving Water Limitations and Total Maximum Daily Load Provisions. Customized strategies, control measures, and BMPs will be implemented on a watershed basis, where applicable, through each Permittee's stormwater management program and/or collectively by all participating Permittees through an EWMP. An EWMP comprehensively evaluates opportunities, within the participating Permittees' collective jurisdictional area in a Watershed Management Area, for collaboration among Permittees and other partners on multi-benefit regional projects that, wherever feasible, retain (i) all non-stormwater runoff and (ii) all stormwater runoff from the 85th percentile, 24-hour storm event for the drainage areas tributary to the projects, while also achieving other benefits including flood control and water supply, among others. An EWMP shall ensure that existing requirements to comply with technology-based effluent limitations and core requirements (e.g., including elimination of nonstormwater discharges of pollutants through the MS4, and controls to reduce the discharge of pollutants in stormwater to the maximum extent practicable) are not delayed.

County of Los Angeles Low Impact Development Manual

The County of Los Angeles prepared the 2014 Low Impact Development Standards Manual (LID Standards) to comply with the requirements of the NPDES MS4 Permit for stormwater and non-stormwater discharges from the MS4 within the coastal watersheds of Los Angeles County (CAS004001, Order No. R4-2012-0175), referred to as the 2012 MS4 Permit. The LID Standards provide guidance for the implementation of stormwater quality control measures in new development and redevelopment projects in unincorporated areas of the County with the intention of improving water quality and mitigating potential water quality impacts from stormwater and non-stormwater discharges. The November 2013 LID Ordinance became effective December 5, 2013.

City of Los Angeles Low Impact Development Manual

In November 2011, the City of Los Angeles adopted the Stormwater Low Impact Development (LID) Ordinance #181899 with the stated purpose of:

- Requiring the use of LID standards and practices in future developments and redevelopments to encourage the beneficial use of rainwater and urban runoff
- Reducing stormwater/urban runoff while improving water quality
- Promoting rainwater harvesting
- Reducing offsite runoff and providing increased groundwater recharge
- Reducing erosion and hydrologic impacts downstream
- Enhancing the recreational and aesthetic values in our communities

The City of Los Angeles institutionalized the use of LID techniques for development and redevelopment projects. Subsequent to the adoption of the Stormwater LID Ordinance, the City prepared the *Development Best Management Practices Handbook, Low Impact Development Manual,* dated June 2011, which describes the required BMPs (City of Los Angeles, 2011).

Other Cities LID

Various other cities within the County also have LID standards or guidance. The goals, objectives, and content of the LID document are similar to that of the County and City of Los Angeles and are not referenced here.

Los Angeles County Construction and Demolition Debris Recycling and Reuse Program

On January 1, 2011, Los Angeles County adopted the Green Building Standards Code, which sets forth recycling requirements for construction and demolition projects in the unincorporated areas of Los Angeles County. These requirements apply to any project requiring a construction, demolition or grading permit. According to the requirements, nonresidential construction projects consisting of commercial, industrial, or retail structures, as well as all tenant improvements, irrespective of the square footage, must recycle a minimum of 65 percent of the debris generated by weight (Los Angeles County, 2014).

Los Angeles County General Plan

The County of Los Angeles is currently updating their 1980 General Plan; the new comprehensive General Plan was expected to be adopted by late 2014, but is still pending approval. The following are utilities and service systems goals and policies relating to the proposed program from the existing General Plan's Water and Waste Management Element, and the Draft General Plan 2035 (as of September 2014) Public Services and Facilities Element.

Existing General Plan 1980:

Goal – Reduce Service Deficiencies: Major deficiencies include the lack of water in aquifers and the shortage of solid waste landfill capacity. Technological advancements may reduce reliance on landfills.

Goal – Reduce Detrimental Impacts on Natural and Man Made Environments: Adverse effects on the natural, social and man-made environment arising from water and waste management development must be anticipated and mitigated where they cannot be avoided.

Draft General Plan 2014:

Goal PS/F 1: A coordinated, reliable, and equitable network of public facilities that preserves resources, ensures public health and safety, and keeps pace with planned development.

Goal PS/F 3: Increased local water supplies through the use of new technologies.

Policy PS/F 3.1: Increase the supply of water through the development of new sources, such as recycled water, gray water, and rainwater harvesting.

Policy PS/F 3.2: Support the increased production, distribution and use of recycled water, gray water, and rainwater harvesting to provide for groundwater recharge, seawater intrusion barrier injection, irrigation, industrial processes and other beneficial uses.

Goal PS/F 4: Reliable sewer and urban runoff conveyance treatment systems.

Policy PS/F 4.1: Encourage the planning and continued development of efficient countywide sewer conveyance treatment systems.

Goal PS/F 5: Adequate disposal capacity and minimal waste and pollution.

Policy PS/F 5.1: Maintain an efficient, safe and responsive waste management system that reduces waste while protecting the health and safety of the public.

Goal PS/F 6: A County with adequate public utilities.

Policy PS/F 6.1: Ensure efficient and cost-effective utilities that serve existing and future needs.

City General Plans

The numerous cities encompassed by the EWMP area all have their own respective city General Plans, some of which may contain policies that address public utilities. As implementation of the individual structural BMP projects proceed, specific policies and objectives pertaining to public utilities from applicable city General Plans will be identified and evaluated on a project-by-project basis during subsequent California Environmental Quality Act (CEQA) environmental processes.

3.14.3 Impact Assessment

The proposed program's potential impacts have been assessed using the CEQA Guidelines Appendix G Checklist. The following sections discuss the key issue areas identified in the CEQA Guidelines with respect to the program's potential effect to utilities and service systems.

Thresholds of Significance

For the purposes of this Program Environmental Impact Report (PEIR) and consistency with Appendix G of the CEQA Guidelines, applicable local plans, and agency and professional standards, the proposed program would have a significant effect on utilities and service systems if it would:

- Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board (RWQCB).
- Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.
- Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.
- Have sufficient water supplies available to serve the project from existing entitlements and resources, or would require new or expanded water supply resources or entitlements.
- Result in a determination (by the wastewater treatment provider that serves or may serve the project) that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments.
- Be served by a landfill with insufficient permitted capacity to accommodate the project solid waste disposal needs.
- Not comply with federal, state, and local statutes and regulations related to solid waste.

- Cause a substantial increase in overall or per capita energy consumption or cause wasteful or unnecessary consumption of energy.
- Require construction of new sources of energy supplies or additional energy infrastructure capacity, the construction of which could cause significant environmental effects.
- Conflict with applicable energy efficiency policies or standards.

Program Impact Discussion

Wastewater Treatment

Impact 3.14-1: Implementation of the proposed program could exceed wastewater treatment requirements of the applicable RWQCB or result in the construction of new treatment facilities or expansion of existing facilities if the wastewater treatment provider has inadequate capacity to serve the proposed program.

Structural (Regional, Centralized, and Distributed) BMPs

The proposed program would involve the construction of structural BMPs intended to treat stormwater and non-stormwater runoff. The structural BMPs that fall under this category include green infrastructure/LID, of which there are many subtypes, including bioretention and biofiltration, permeable pavement, and bioswales, flow-through treatment BMPs, source-control BMPs, infiltration BMPs, capture-and-use BMPs, bioinfiltration BMPs, treatment facilities and low-flow diversions, constructed wetlands, and other multi-benefit flood management projects.

The implementation of the proposed program would comply with the MS4 Permit issued by the RWQCB. Existing discharge permits for individual facilities such as publically owned treatment works, or for general actions such as construction and industrial activities, would not be affected by the implementation of proposed structural BMPs. Each Permittee would be required to comply with existing discharge permit limitations, as is the case under existing conditions. Implementation of facilities meant to improve water quality and meet water quality objectives of the MS4 Permit would be consistent with RWQCB discharge requirements. (See Section 3.8.4, *Hydrology and Water Quality*, for a discussion on construction-related water quality impacts.)

The construction of structural BMPs would vary significantly based on the location, size, and configuration of the BMP. Construction methods may include removal or retrofitting of above-ground infrastructure or local soils in relatively compact areas, requiring the hauling of demolished material. Excavation may be necessary for subsurface structure installations such as dry/wet wells, underdrain, flow-through treatment BMPs, infiltration BMPs, capture-and-use BMPs, and treatment facilities. However, many of these structural BMPs would have a relatively small footprint of a few acres or much less. Some of the centralized BMPs would require larger areas of excavation for installation of infiltration and detention basins and other subsurface facilities and may be a few acres to several tens of acres.

Most structural BMPs would be constructed in developed areas, including parking lots, roads, or sidewalks, and would not require new treatment facilities or expansion of existing facilities. Treatment provided by most of the structural BMPs would be from soil infiltration. However, some BMPs, in particular low-flow diversion systems, would be designed to convey dry-weather flows to a newly constructed treatment system, or to an existing wastewater treatment facility. Some of these facilities would be small and constructed in close proximity to the water course. The implementing agency would be required to evaluate the location of these facilities to ensure compatible land uses, but otherwise these new treatment facilities would be constructed as part of the water quality improvement project.

Other low-flow diversion systems would divert dry-weather flows to existing wastewater treatment plants. As part of the design for these types of projects, the implementing agency would be required to evaluate the available dry-weather capacity of the existing treatment facility and to evaluate whether the additional flow could be accommodated within the existing system and under the existing discharge requirements. The wastewater treatment provider would be a lead agency in evaluating impacts to their facility. If additional capacity is required, or additional treatment processes are required to meet discharge limitations, the implementing agency would evaluate these elements as part of the proposed low-flow diversion project. Implementation of these low-flow diversion projects would require the cooperation and approval of the wastewater treatment provider under the discharge permit limitations.

The operational purpose of the structural BMPs associated with the proposed EWMPs is to meet the surface water treatment requirements of the Los Angeles RWQCB for stormwater and non-stormwater discharges. The main functions of the structural BMPs would be to infiltrate, treat, and store runoff to help reduce the impact of stormwater and non-stormwater discharges on receiving water quality, which would not produce wastewater during operation. Therefore, the structural BMPs would be designed to meet wastewater treatment requirements of the RWQCB permit. Impacts would be less than significant.

Construction requiring ground disturbance could encounter buried utilities including wastewater conveyance infrastructure. As part of the project design, Implementing Agencies would be required to identify the potential for underground utilities and determine whether they would need to be relocated to accommodate the BMP. As standard construction practices require, Implementing Agencies would conduct an underground utility search prior to excavation and would coordinate with utility providers in advance to ensure no disruption in services to the utility customers. Impacts to wastewater infrastructure would be less than significant.

Mitigation Measures: None required

Significance Determination: Less than significant

Non-Structural (Institutional) BMPs

The non-structural BMPs associated with the proposed program would include programs and policies that would entail development guidelines and activities designed to prevent surface water quality degradation. Examples include construction stormwater management programs, municipal pollutant reduction programs, IC/ID detection programs, smart growth planning and LID practices, and public education programs. These BMPs would not increase local populations and would not contribute to an increased generation of wastewater exceeding wastewater treatment requirements of the RWQCB. Consequently, the structural BMPs would not require construction or the expansion of any water or wastewater treatment facilities. There would be no impact.

Mitigation Measures: None required

Significance Determination: No impact

Stormwater Facilities

Impact 3.14-2: The proposed program could require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

Structural (Regional, Centralized, and Distributed) BMPs

The proposed program consists of improvements to existing storm drainage facilities as well as new storm drain facilities within the EWMP program areas. New facilities proposed would likely be installed within existing sidewalks, streets, parks, municipally owned lands, or drainage easements. Storm drainage capacity would be verified during design as applicable, and temporary retention facilities may be used until such time as adequate downstream storm drainage facilities are constructed and operational. This PEIR contains an analysis on the potential environmental effects that might result from the installation of storm drainage facilities identified in the proposed EWMPs. No additional analysis is required under this impact discussion.

Mitigation Measures: None required

Significance Determination: Less than significant

Non-Structural (Institutional) BMPs

The non-structural BMPs associated with the proposed EWMPs would involve policies, actions, and activities and would not require construction of new stormwater drainage facilities or expansion of existing facilities. There would be no impact.

Mitigation Measures: None required

Significance Determination: No impact

Water Supply

Impact 3.14-3: The proposed program could require new or expanded water supply resources or entitlements or require or result in the construction of new water facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

Structural (Regional, Centralized, and Distributed) BMPs

Implementation of the EWMPs would not increase water demands. Construction of the majority of the structural BMPs would require some minor water usage for dust control and concrete washout activities. However, the construction periods for BMPs are expected to be relatively short, lasting several months to a year. Therefore, water demand during construction is not expected to be substantial enough to require new or expanded water supply resources. Some of the BMPs would augment local water supplies through enhanced stormwater recharge. Impacts to the existing water supplies are anticipated to be beneficial as a result of the stormwater and non-stormwater runoff infiltration and conservation BMPs implemented across the EWMP areas. No adverse impacts related to new or expanded water supply resources or entitlements would occur.

Construction requiring ground disturbance could encounter buried utilities including water supply infrastructure. As part of the project design, Implementing Agencies would be required to identify the potential for underground utilities and determine whether they would need to be relocated to accommodate the BMP. As standard construction practices require, Implementing Agencies would conduct an underground utility search prior to excavation and would coordinate with utility providers in advance to ensure no disruption in services to the utility customers. Impacts to water supply infrastructure would be less than significant.

Local surface water contributes little to the regional water supply; local agriculture relies mostly on groundwater and imported water. Throughout Los Angeles County, stormwater flows are captured for recharge by LACFCD where suitable detention and infiltration facilities are available. These captured flows augment groundwater supplies, but are not directly diverted for beneficial uses such as drinking water. Dry-weather flows are also captured in some areas for groundwater recharge. Construction of BMPs to detain stormwater and dry-weather flows may reduce flows downstream, thereby reducing access to beneficial uses downstream. Under California law, the State Water Resources Control Board (SWRCB), Division of Water Rights, is responsible for issuing appropriation permits pursuant to Division 2, Part 2 of the California Water Code. The SWRCB maintains a list of water diversion rights issued since the 1920s in Los Angeles County (http://www.waterboards.ca.gov/waterrights/board_decisions/adopted_orders/decisions/county.shtml). If installation of BMPs (detention, infiltration, and low-flow diversions) would reduce water available to downstream diverters such that their water rights would be impinged, this would be a significant impact of the Program. However, much of the existing diversion permits for Los Angeles County involve streams that are fed by groundwater seepage. These flows, to the extent they still remain, would not be adversely affected by the installation of BMPs since they are fed by natural sources.

The urbanization of the County has resulted in channelization of many drainages that are owned and managed by LACFCD. In areas with natural unimproved streams, such as in the Santa Clara River watershed and Malibu watershed where surface water diversions may be more common, stormwater flows are conveyed downstream quickly. Any detention of storm flows upstream would not substantially reduce storm flows downstream or significantly impede access to storm flow. Dry-weather flows in coastal streams and foothills are largely fed by groundwater seepage or wastewater discharges. These flows would not be affected by infiltration BMPs. However, implementation of **Mitigation Measure UTIL-1** would ensure that downstream water rights would not be affected by upstream diversions.

Mitigation Measure:

UTIL-1: Prior to approval of BMPs, implementing agencies shall evaluate the potential for impacts to downstream beneficial uses, including surface water rights. Implementing agencies shall not approve BMPs that result in preventing access to previously appropriated surface water downstream.

Significance Determination: Less than significant (The application of this mitigation measure to specific BMP types and categories are identified in Table 3.14-3.)

Non-Structural (Institutional) BMPs

The non-structural BMPs associated with the proposed program would include programs and policies that would entail development guidelines and activities designed to prevent surface water quality degradation; they would not increase water demand. Some non-structural BMPs would result in water conservation of existing water sources. For example, the Malibu Creek EWMP would implement the Citywide Smart Irrigation Control System, which calls for the installation of a smart irrigation control system using evapotranspiration technology. This system would be put into place at all City of Calabasas-owned facilities, street medians, and parkways. Replacement of irrigation controllers is projected to reduce irrigation runoff that is associated with overwatering of landscaped areas. The City uses 66,431 gallons of water on annual basis for landscape irrigation. It is anticipated that with the new system, the City would save between 13,300 to 16,600 gallons of water, which also translates to approximately 5,000 to 7,000 gallons of reduction in runoff. Therefore, they would not require new or expanded water supply resources or entitlements.

Mitigation Measures: None required

Significance Determination: No impact

Solid Waste

Impact 3.14-4: The proposed program could be served by a landfill with insufficient permitted capacity to accommodate the project solid waste disposal needs or the project could not comply with federal, state, and local statutes and regulations related to solid waste.

Structural (Regional, Centralized, and Distributed) BMPs

Construction activities associated with the structural BMPs would include excavation and demolition of some existing infrastructure, which would produce solid waste requiring disposal in the nearest landfill. The largest potential source of solid waste during construction would be excavated soil. While it is expected that most clean soil would be recycled, reused offsite, or stockpiled and reused as backfill, this analysis assumes that a portion of soil would be disposed in landfills. The exact quantity of waste materials to be disposed of in nearby landfills (which includes construction debris, demolition materials, and excavation spoils) would not be known until each project undergoes a detailed evaluation as part of separate, project-level CEQA review. Recycling and reuse of construction and demolition material has been shown to considerably reduce the amount of debris sent to landfills. The County of Los Angeles and many participating cities have construction and demolition debris recycling and reuse programs. According the

County of Los Angeles, except under unusual circumstances, it is feasible to recycle or reuse at least 50 percent or construction and demolition debris (RWQCB, 2008). Development of a waste management or recycling plan (**Mitigation Measure UTIL-2**) would reduce this impact.

Some of the EWMPs, including the Dominguez Channel EWMP and the Upper Santa Clara River EWMP, are required to implement trash Total Maximum Daily Limits (TMDLs) and associated trash removal structural BMPs. Two types of source-control BMPs for trash are illustrated in Section 2.0, *Project Description*: catch basin inserts, which use nets, screens, fabric, or similar filtration media to separate sediment and gross solids from stormwater, and hydrodynamic separators, which use screens, baffles, or vertical flow to separate sediment and gross solids from stormwater.

The Upper Santa Clara River EWMP plans to implement trash removal BMPs for 79 storm drains in a commercial/industrial park (County of Los Angeles) and 110 storm drain inlets in a commercial/industrial park (City of Santa Clarita). The Dominguez Channel EWMP plan primarily proposes the installation of catch opening screen covers and inserts in those structures found in the Santa Monica Bay, Machado Lake, and Dominguez Channel watersheds of the City of Los Angeles. The catch basin opening screen covers are coarse screens that are installed in the catch basin openings and prevent trash from entering the City storm drain system. Each catch basin opening screen cover has a self-opening device activated by a predetermined street gutter flow to disengage its locking mechanism. The catch basin inserts are perforated screens that are installed inside the catch basin in front of the outlet pipe of the catch basin.

The EPA-approved Trash TMDLs for the EWMP areas require annual determination of trash discharges. The TMDLs also require compliance monitoring calculations of the Trash Daily Generation Rate. These monitoring efforts allow permitting agencies to track and monitor the amounts being sent to landfills. The volume of trash removed from the regional waterways is small when compared to daily trash collection and disposal quantities in the highly urbanized Los Angeles County. The new trash collection would be accommodated with existing and planned trash disposal facilities. Based on landfill capacity in the Los Angeles region, there appears to be ample availability to receive trash that would be collected as part of compliance with the Malibu Creek and Machado Lake Trash TMDLs (RWQCB, 2007; 2008). Impacts related to insufficient permitted landfill capacity from implementation of the proposed program is anticipated be less than significant.

The program would comply with all federal, state, and local statutes and regulations related to solid waste, including the Los Angeles County Construction and Demolition Debris Recycling and Reuse Program. Impacts regarding noncompliance solid waste regulations would be less than significant.

Mitigation Measure:

UTIL-2: Implementing agencies shall encourage construction contractors to recycle construction materials and divert inert solids (asphalt, brick, concrete, dirt, fines, rock, sand, soil, and stone) from disposal in a landfill, where feasible. Implementing agencies shall incentivize construction contractors with waste minimization goals in bid specifications where feasible.

Significance Determination: Less than significant (The application of these mitigation measures to specific BMP types and categories are identified in Table 3.14-3.)

Non-Structural (Institutional) BMPs

The non-structural BMPs associated with the proposed EWMPs would not involve the construction of new facilities that would generate a new solid waste disposal need. However, the non-structural BMPs would include a broad range of municipal practices such as street cleaning, landscape management, storm drain operation, and more, which produce debris and trash for disposal. Regular street sweeping is one of the most cost-effective non-structural BMPs used to remove sediment, metals, petroleum products, trash, and vegetation that accumulate on streets. Maintaining a regular street sweeping schedule reduces the buildup of trash on streets and prevents trash from entering catch basins and the storm drain system. Street sweeping can also improve the appearance of roadways and urban areas. Based on the existing and planned trash disposal and recycling facilities available to the Los Angeles region, the additional solid waste would not exceed disposal capacity or require additional disposal facilities. As a result, impacts related to insufficient permitted landfill capacity would be less than significant.

Mitigation Measures: None required

Significance Determination: Less than significant

Energy

Impact 3.14-5: Construction and operation of the proposed program would require additional energy use that could result in wasteful consumption, affect local and regional energy supplies, or conflict with applicable energy efficiency policies or standards.

Structural (Regional, Centralized, and Distributed) BMPs

Construction of BMPs would require use of non-renewable energy in the form of gasoline and diesel to power construction equipment. However, use of this fuel for construction would not be at such a large scale that it could be seen as wasteful or as affecting local or regional energy supplies. Impacts to energy supplies for construction would be less than significant.

Construction requiring ground disturbance could encounter buried or overhead utilities including electric or gas conveyance infrastructure. As part of the project design, Implementing Agencies would be required to identify the potential for underground utilities and determine whether they would need to be relocated to accommodate the BMP. As standard construction practices require, Implementing Agencies would conduct an underground utility search prior to excavation and would coordinate with utility providers in advance to ensure no disruption in services to the utility customers. Impacts to electric or gas infrastructure would be less than significant.

Some of the centralized and regional structural BMPs may require the installation of pump stations and ancillary components that would be electrically powered. Operation of the proposed pump station facilities would require new connections to the local electrical transmission system. Plans for the pump station facilities have not been finalized, and thus the energy requirements for operation of the proposed pump stations have not been determined. Operation of the pump stations may be variable in response to seasonal fluctuations.

Energy for the pump stations would be provided by LADWP and SCE. Electricity is generated and made available to Southern California from generating facilities and transmission lines located throughout the western United States. LADWP and SCE would be responsible for delivering the energy needed for the proposed structural BMPs. The proposed program would include implementation of energy efficient equipment, such as pumps and lighting, which would minimize the energy requirements of the proposed pump stations. The use of energy anticipated for the proposed program is minor when compared to the County-wide use of electricity. In addition, the proposed program would be supporting water conservation efforts and water quality requirements of the MS4 Permit, which would not result in wasteful consumption, affect local and regional energy supplies, or conflict with applicable energy efficiency policies or standards. Impacts to energy supplies for operation would be less than significant.

Mitigation Measures: None required

Significance Determination: Less than significant

Cumulative Impact Discussion

Structural (Regional, Centralized, and Distributed) BMPs

Structural BMPS constructed to treat, infiltrate, and/or store stormwater and non-stormwater throughout the watershed would not generate wastewater or require wastewater treatment. However, low-flow diversion BMPs would install localized treatment facilities or use existing wastewater treatment systems to treat and discharge dry-weather flows. Use of these treatment systems throughout the region would result in cumulatively improved water quality and local impacts during construction, but would not result in adverse cumulative impacts from operation or construction. Cumulative impacts would be less than significant.

The proposed program consists of improvements to existing storm drainage facilities as well as new storm drain facilities within the EWMP program areas. This PEIR contains an analysis on the potential environmental effects that might result from the installation of storm drainage facilities identified in the proposed EWMPs. Cumulative impacts to storm drain facilities would be less than significant.

Impacts to the existing water supplies are anticipated to be beneficial as a result of the stormwater and non-stormwater runoff infiltration and conservation BMPs implemented across the EWMP areas. **Mitigation Measure UTIL-1** would require that implementing agencies evaluate impacts to downstream beneficial uses, including surface water rights prior to BMP approval. No adverse cumulative impacts related to new or expanded water supply resources or entitlements would occur.

Construction and operation of the structural BMPs would generate solid waste; however, landfills serving the program area are expected to have sufficient capacity to accommodate the amount of waste generated. Development of a waste management or recycling plan (**Mitigation Measure UTIL-2**) would reduce this impact. Disposal of the solid waste generated during construction and operation would comply with all pertinent regulations and statutes. All other projects implemented in the area would also be required to comply with federal, state, and local solid waste regulations and statutes. Cumulative impacts would be less than significant.

The use of energy anticipated for the proposed program is minor when compared to the County-wide use of electricity. The proposed program would use energy-efficient equipment and would not result in wasteful consumption. Cumulative impacts would be less than significant.

Mitigation Measures: Implement **Mitigation Measure UTIL-1** and **Mitigation Measure UTIL-2**

Significance Determination: Less than significant (The application of these mitigation measures to specific BMP types and categories are identified in Table 3.14-3.)

Non-Structural (Institutional) BMPs

The non-structural BMPs associated with the proposed program would generally have no impact on utilities and service systems. The non-structural BMPs would not require construction and would not require water or wastewater treatment or expanded water supply sources. However, the non-structural BMPs would include street cleaning, landscape management, and storm drain operation, which produce debris and trash for disposal. Based on landfill capacity for the Los Angeles region, there appears to be ample availability to receive trash that would be collected with street cleaning throughout the EWMPs in addition to all other projects implemented in the program area. As a result, cumulative impacts related to insufficient permitted landfill capacity would be less than significant.

Mitigation Measures: None required

Significance Determination: Less than significant

3.14.4 Summary of Impact Assessment

Table 3.14-3 shows a summary of the structural BMPs requiring mitigation.

TABLE 3.14-3
SUMMARY OF UTILITIES AND SERVICE SYSTEM IMPACTS REQUIRING MITIGATION MEASURES

	Thresholds of Significance					
Structural BMPs	**Wastewater Facilities and Discharge Requirements**	**Stormwater Facilities**	**Water Supply**	**Solid Waste**	**Energy**	**Cumulative Impacts**
Applicable Mitigation Measures:	**None Required**	**None Required**	**UTIL-1**	**UTIL-2**	**None Required**	**UTIL-1; UTIL-2**
Regional BMPs						
Regional Detention and Infiltration	No	No	Yes	Yes	No	Yes
Regional Capture, Detention and Use	No	No	Yes	Yes	No	Yes
Centralized BMP						
Bioinfiltration	No	No	Yes	Yes	No	Yes
Constructed Wetlands	No	No	Yes	No	No	Yes
Treatment/Low-Flow Diversions	No	No	Yes	No	No	Yes
Creek, River, Estuary Restoration	No	No	Yes	No	No	No
Distributed BMPs						
Site-Scale Detention	No	No	Yes	No	No	No
LID – Infiltration/Filtration BMPs – Porous Pavement, Green Streets, Bioswale/Filter Strips, downspout disconnects	No	No	Yes	No	No	No
LID – Green Infrastructure – Capture and Use – Cisterns, Rain Barrels, Green Roofs, Planter Boxes	No	No	Yes	No	No	No
Flow-through Treatment BMPs	No	No	No	No	No	No
Source Control Treatment BMPs (catch basin inserts/screens, hydrodynamic separators, Gross Solids-Removal Devices)	No	No	No	Yes	No	Yes
Low flow diversions	No	No	No	Yes	No	Yes

NOTE: These conclusions are based on typical need for excavation, generation of construction debris, and trash collection

CHAPTER 4
Cumulative Impacts

4.1 Introduction

This chapter presents CEQA requirements for cumulative impact analysis and analyzes the potential for the proposed program to have significant cumulative effects when combined with other past, present, and reasonably foreseeable future projects in each resource area's cumulative geographic scope. This section provides the requirements for cumulative impact analysis. Cumulative impacts for the proposed program when combined with other reasonable and foreseeable future projects in the area are organized by resource topic and analyzed below.

CEQA Guidelines Section 15130(a) requires that an EIR discuss the cumulative impacts of a project when the project's incremental effect is "cumulatively considerable," meaning that the project's incremental effects are considerable when viewed in connection with the effects of past, current, and probable future projects. A consideration of actions included as part of a cumulative impact scenario can vary by geographic extent, time frame, and scale. They are defined according to environmental resource issues and the specific significance level associated with potential impacts. *CEQA Guidelines* 15130(b) requires that discussions of cumulative impacts reflect the severity of the impacts and their likelihood of occurrence. The *CEQA Guidelines* note that the cumulative impacts discussion does not need to provide as much detail as is provided in the analysis of project-only impacts and should be guided by the standards of practicality and reasonableness and focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impacts.

CEQA Analysis Requirements

CEQA requires that an EIR assess the cumulative impacts of a project with respect to past, current, and probable future projects within the region. *CEQA Guidelines* (Section 15355) define cumulative effects as "two or more individual effects that, when considered together, are considerable or which compound or increase other environmental impacts. The cumulative impact from several projects result from the incremental impacts of the proposed program when added to other closely related, and reasonably foreseeable, future projects." Pertinent guidance for cumulative impact analysis is given in Section 15130 of the *CEQA Guidelines*:

- An EIR shall discuss cumulative impacts of a project when the project's incremental effect is "cumulatively considerable", (i.e., the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of current projects, and the effects of probable future projects, (including those outside the control of the lead agency, if necessary).

- An EIR should not discuss impacts that do not result in part from the project evaluated in the EIR.
- A project's contribution is less than cumulatively considerable, and thus not significant, if the project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact.
- The discussion of impact severity and likelihood of occurrence need not be as detailed as for effects attributable to the project alone.

In addition, the *CEQA Guidelines* Section 15130(b) allows for the use of two alternatives methods to determine the scope of projects for the cumulative impact analysis:

- List Method - A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency.
- Regional Growth Projections Method - A summary of projects contained in an adopted general plan or related planning document or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area wide conditions contributing to the cumulative impact (Section 15130).

The analysis of cumulative effects in this PEIR utilizes a combination of the list and regional growth projections methods and focuses on the effects of concurrent construction and operation of the proposed EWMP projects along with the regional growth anticipated in each of the following Participating Permittee's jurisdictional areas: LACFCD, County of Los Angeles, and the following 46 cities: Los Angeles, Beverly Hills, Culver City, Inglewood, Santa Monica, West Hollywood, Hawthorne, El Segundo, Lomita, Baldwin Park, Covina, Glendora, Industry, La Puente, Malibu, Calabasas, Agoura Hills, Westlake Village, Hidden Hills, Santa Clarita, Rancho Palos Verdes, Palos Verdes Estates, Rolling Hills Estates, Redondo Beach, Hermosa Beach, Torrance, Manhattan Beach, Arcadia, Azusa, Bradbury, Duarte, Monrovia, Sierra Madre, Alhambra, Burbank, Glendale, Hidden Hills, La Cañada Flintridge, Montebello, Monterey Park, Pasadena, Rosemead, San Gabriel, San Marino, South Pasadena, and Temple City (refer to Figure 2-1).

Each of these jurisdictions have independent planning documents that guide the development of urban, agricultural and other land uses within their jurisdictional boundaries.

4.2 Related Projects

Geographic Scope

Cumulative impacts are assessed for related projects within a similar geographic area. This geographic area may vary, depending upon the issue area discussed and the geographic extent of the potential impact. For example the geographic area associated with construction noise impacts is limited to areas directly adjacent to construction sites, whereas the geographic area that is affected by construction-related air emissions may include the larger air basin. Construction impacts associated with increased noise, dust, erosion, and access limitations tend to be localized but could be exacerbated if other development or improvement projects are occurring within the same or adjacent locations as the proposed program.

Geographically, the proposed program is located in the Los Angeles basin. For the purposes of this analysis, the PEIR considered planned EWMP projects within the service area of LACFCD and all participating permittees, along with the adopted general plans or related planning documents for the EWMP areas, when evaluating potential cumulative impacts due to construction and operation of the proposed program. The planned EWMP projects are listed in **Table 4-1**, shown on **Figure 4-1**, Planned EWMP Projects and detailed further in Section 2.0, *Project Description*.

Project Timing

In addition to the geographic scope, cumulative impacts also take into consideration the timing of related projects relative to the proposed program. The implementation schedule is particularly important for construction-related impacts; for a group of projects to generate cumulative construction impacts, they must be temporally as well as spatially proximate. The EWMP projects that will be included in the proposed EWMPs along with other reasonably foreseeable future projects in the EWMP areas may or may not occur simultaneously. However, this analysis assumes some the EWMP projects and other local projects would be implemented concurrently, between 2015 and 2035.

Type of Projects Considered

As described throughout Chapter 3 of this PEIR, the impacts associated with implementation of the proposed program include both short-term, temporary construction-related impacts and long-term impacts related to program operation.

Cumulative Construction Impacts

Cumulative effects could result when considering the effects of the proposed program in combination with the effects of other construction projects in the area. For this PEIR, the analysis of cumulative construction impacts assumes that throughout the EWMP areas, planned future development projects will be on-going simultaneously with the proposed program, including other local major residential construction, small-scale construction project, and projects that have not yet been identified.

Cumulative Operational Impacts

Cumulative effects could result when considering the effects of the proposed program in combination with the effects of operating other projects in the EWMP areas.

TABLE 4-1
EWMP PROJECTS

Map Number	Project Name	BMP Type	Project Sponsor	Project Implementation
6	Phase IV Trash TMDL Implementation	Distributed	Dominguez Channel	Installation of CB covers began the Summer of 2013.
3	Citywide Smart Irrigation Control System	Distributed	Malibu Creek	Unknown
5	Wildlife Road Storm Drain Improvements	Distributed	North Santa Monica Bay Coastal Watersheds	Construction was scheduled to begin March 2014 and continue through August 2014
2	Model Equestrian Center	Distributed	Palos Verdes Peninsula	Completion anticipated June 2015
4	Brandon Street and Green Street Improvements Project	Distributed	Upper LA River	Construction Spring 2014 to Fall 2014
7	Avocado Heights Multiuse Trail Project	Distributed	Upper San Gabriel River	Constructed
1	Trash removal BMPs	Distributed	Upper Santa Clara River	Planned Implementation Date July 2015
13	Phase II of the Mar Vista Recreation Center Stormwater BMP Project	Centralized	Ballona Creek	Phase II is expected to be completed by December 2014.
16	Manhattan Beach Greenbelt Infiltration System	Centralized	Beach Cities WMG	The project construction was completed February 19, 2013.
18	Oxford Basin Multi-Use Enhancement Project	Centralized	Marina Del Rey	LACFCD anticipates the project to commence construction by the end of this year or early 2015.
12	Lindero Parkway Improvements	Centralized	Malibu Creek	Construction of the proposed improvements is expected to commence either Spring 2015 or early Summer 2015.
14	Broad Beach Biofiltration Project	Centralized	North Santa Monica Bay Coastal Watersheds	June 2014 (Completion of Construction)
19	San Ramon Canyon Stormwater Flood Reduction Project	Centralized	Palos Verdes Peninsula	Anticipated to be completed June 2015.
11	Monrovia Station Square/Transit Village Multi-Benefit Park and Greenway Project	Centralized	Rio Honda - San Gabriel River	Planned Implementation Date Spring 2015.
17	Metro Gold Line Infiltration Project	Centralized	Rio Honda - San Gabriel River	Planned Implementation Date Spring 2016.
15	Penmar Water Quality Improvement Project (Phase I and Phase II)	Centralized	Santa Monica Bay Jurisdictions 2+3	Phase II – expected completion by Spring 2015.
10	Humboldt Greenway Project	Centralized	Upper LA River	Under Construction
8A-8C	Torrance Stormwater Basin Recharge and Enhancement Project	Regional	Beach Cities WMG	Construction was scheduled for Spring 2014.
9	Malibu Legacy Park Pump Station Improvements	Regional	North Santa Monica Bay Coastal Watersheds	Anticipated to be completed June 2015.

SOURCES: EWMP Work Plans, 2014.

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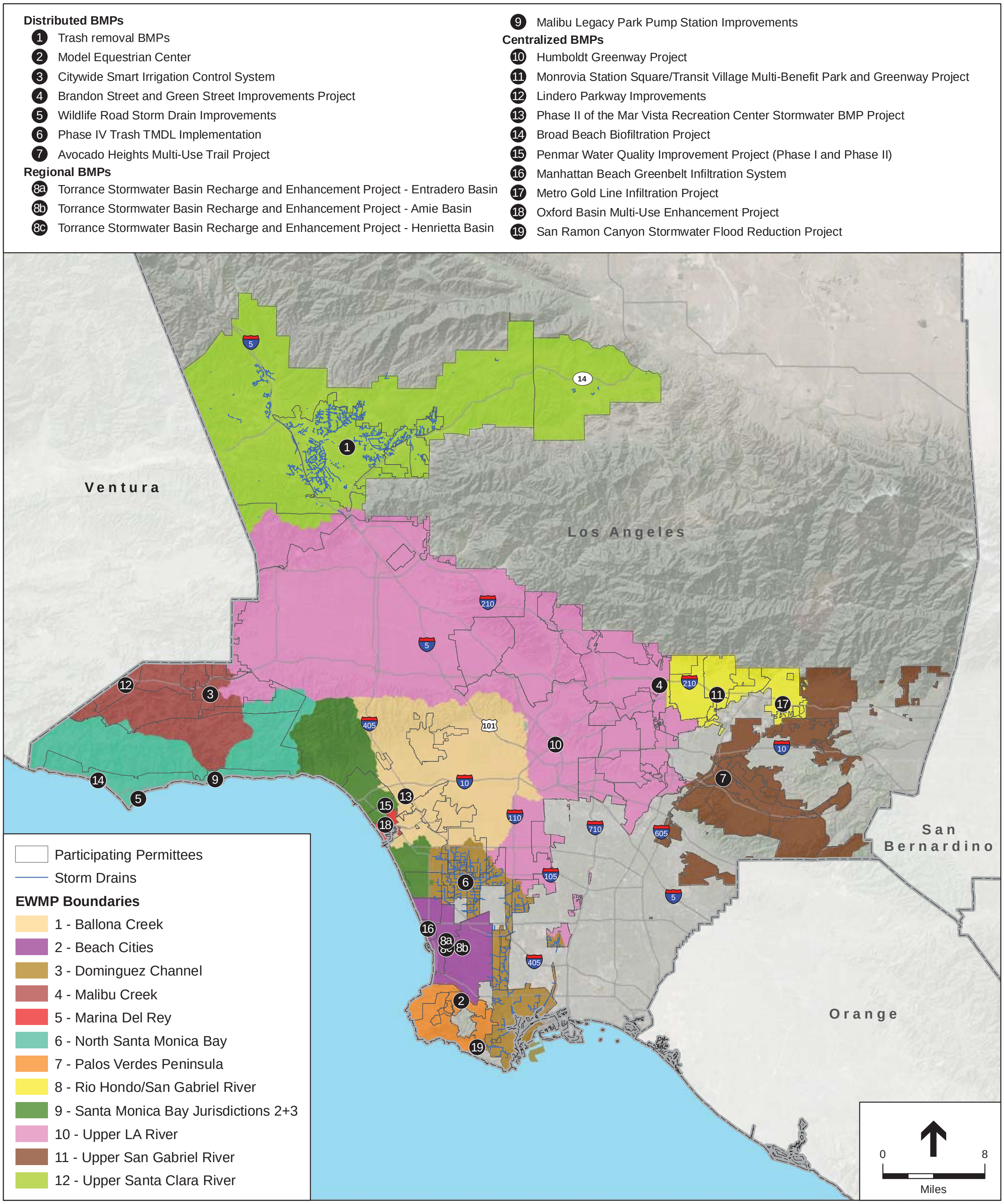

SOURCE: ESRI.

LA County PEIR EWMP . 140474

Figure 4-1
Planned EWMP Projects

4.3 Plan Consistency

General Plans

Construction of structural BMPs and adoption of non-structural BMPs would occur throughout each of the EWMP areas, encompassing 84 cities and large areas of unincorporated Los Angeles County. Each city has adopted land use plans and zoning codes covering development within their jurisdictions. Many cities including the City of Los Angeles have adopted LID ordinances that promote new development of storm flow retention and water quality BMPs. Each implementing agency would be required to evaluate the consistency of each BMP with local zoning codes. Compliance with city codes for placement of BMPs would ensure that the cumulative impact of installing multiple BMPs throughout the County would not conflict with local plans and policies.

The Los Angeles County General Plan includes land use designations covering development throughout the County. Section 3.9 Land Use and Agriculture provides a list of goals and policies in the Los Angeles County General Plan that promote storm water quality infrastructure. The installation of multiple BMPs throughout the County would be consistent with the County General Plan goals promoting LID infrastructure and improved storm water quality. Section 3.3 Biological Resources identifies the regional conservation planning efforts throughout the County including critical habitat, significant ecological areas, habitat conservation planning areas, and regional, state and federal parks. The goals of enhanced water quality and a more natural hydrology encouraged by the proposed program are consistent with the habitat conservation goals of each of these plans. Furthermore, the Permit describes the Watershed Management Program optional compliance approach as providing more opportunities for multi-benefit projects that would encourage goals of recreation and habitat value creation as part of the BMP. The proposed program would be consistent with regional General Plan goals and policies.

Resource Management Plans

In addition to the municipalities and County, resource management agencies mitigate cumulative effects of development on the environment. Several regional agencies including SCAQMD, Water Replenishment District, LARWQCB, Department of Toxic Substances Control, wildlife agencies, Coastal Conservancy, Coastal Commission, National Parks, National Forest Service, Santa Monica Mountains Conservancy, and Metropolitan Water District of Southern California manage resources cumulatively impacted by regional development. Each of these resource managers prepare resource management plans to mitigate potentially significant cumulative impacts. Consistency with these management plans minimizes impacts to cumulative impacts. **Table 4-2** lists major resource management agencies and identifies where consistency with resource management plans is discussed in the PEIR. The proposed program would be consistent with regional resource management plans.

TABLE 4-2
KEY REGIONAL RESOURCE MANAGEMENT AND/OR PROTECTION AGENCIES

Agency	Management Plan	Where Discussed in PEIR
SCAQMD	Air Quality Management Plan	Section 3.2
Water Replenishment District	Groundwater Basins Master Plan	Section 3.8
RWQCB	Basin Plan	Section 3.8
Department of Toxics Substances Control	CUPA	Section 3.7
Wildlife agencies (CDFW, USFWS, NMFS)	Critical Habitat Designations, NCCP/HCPs	Section 3.3
Coastal Conservancy and Coastal Commission	Ocean Plan	Section 3.8
National Parks and Forest Service	Forest and Parks Plans	Section 3.9
Santa Monica Mountains Conservancy	Santa Monica Mountains Comprehensive Plan	Section 3.3

SOURCE: Environmental Science Associates.

4.4 Cumulative Impacts and Mitigation Measures

For some impact issue areas (i.e., air quality, traffic, and water supply), the cumulative setting is defined by specific regional boundaries (air basin, regional roadway network, etc.) or projected regional or area-wide conditions, contributing to cumulative impacts. For the remaining impact issue areas, the cumulative setting is based on development anticipated within the vicinity of the EWMP project. The impact analysis in Chapter 3 includes a discussion of cumulative impacts for each resource area. **Table 4-3** summarizes the conclusions of the cumulative analysis in Chapter 3. As shown in the table, implementation of the BMPs would result in cumulative significant impacts to air quality, cultural resources, and noise.

TABLE 4-3
SUMMARY OF CUMULATIVE IMPACT ANALYSIS

Issue Area	Significance Determination
Aesthetics (Cumulative)	LSM
Air Quality (Cumulative)	**SU**
Biological Resources (Cumulative)	LSM
Cultural Resources (Cumulative)	**SU**
Geology and Soils/Mineral Resources (Cumulative)	LSM
Greenhouse Gas Emissions (Cumulative)	LTS
Hazards and Hazardous Materials (Cumulative)	LSM
Hydrology and Water Quality (Cumulative)	LSM
Land Use and Planning/Agriculture (Cumulative)	LTS
Noise (Cumulative)	**SU**
Population and Housing (Cumulative)	LTS
Public Services/Recreation (Cumulative)	LTS
Traffic and Transportation(Cumulative)	LSM
Utilities and Service Systems (Cumulative)	LSM

LTS = Less than Significant
LSM = Less than Significant with Mitigation
SU = Significant and Unavoidable

SOURCE: ESA 2014.

CHAPTER 5
Growth-Inducement Potential

This chapter analyzes the growth-inducement potential and associated secondary effects of growth impacts of the proposed program, as required by the California Environmental Quality Act (CEQA).

5.1 CEQA Requirements

The CEQA Guidelines require that an Environmental Impact Report (EIR) evaluate the growth-inducing impacts of a proposed action (Section 15126.2[d]). A growth-inducing impact is defined by the CEQA Guidelines as:

> [Discuss the way in which a proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth (a major expansion of a wastewater treatment plant might, for example, allow for more construction in service areas). Increases in the population may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. Also discuss the characteristic of some projects which may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.

A project can have direct and/or indirect growth-inducement potential. Direct growth inducement would result if a project involved construction of new housing. A project can have indirect growth-inducement potential if it would establish substantial new permanent employment opportunities (e.g., commercial, industrial, or governmental enterprises) or if it would involve a substantial construction effort with substantial short-term employment opportunities and indirectly stimulate the need for additional housing and services to support the new employment demand. Similarly, under CEQA, a project would indirectly induce growth if it would remove an obstacle to additional growth and development, such as removing a constraint on a required public service. An example of this indirect effect would be the expansion of a wastewater treatment plant, which might allow for more development in service areas. Under CEQA, growth is not considered necessarily detrimental or beneficial.

Based on the CEQA definition above, assessing the growth-inducement potential of the proposed program involves answering the question: "Would implementation of the proposed program directly or indirectly support economic expansion, population growth, or residential construction?" Stormwater is typically not one of the chief public services needed to support urban development; however, water supply is needed to support urban development. Additional water supply would play a role in supporting additional growth in the Enhanced Watershed Management Program (EWMP) areas, but it would not be the single impetus to such growth. In addition, factors such as the General Plans and policies of the cities and Los Angeles County (County) and/or the availability of wastewater disposal capacity, public schools, and transportation services also influence business and residential or population growth in the EWMP areas. Economic factors, in particular, greatly affect development rates and locations.

5.2 Methodology

Growth inducement may result in adverse impacts if the growth is not consistent with the land use plans and growth management plans and policies for the area affected. Local land use plans provide for land use development patterns and growth policies that allow for the orderly expansion of urban development supported by adequate urban public services, such as water supply, roadway infrastructure, sewer service, and solid waste service. A project that would induce "disorderly" growth that is in conflict with local land use plans could indirectly cause additional adverse environmental impacts and impacts to other public services. Thus, it is important to assess the degree to which the growth accommodated by a project would or would not be consistent with applicable land use plans.

To determine direct growth-inducement potential, the proposed program was evaluated to verify whether an increase in population or employment, or the construction of new housing would occur as a direct or indirect result of the program. If either of these scenarios occurred, the proposed program could result in direct growth-inducement within the EWMP areas.

5.3 Growth-Inducement Potential and Significant and Irreversible Effects

The proposed program intends to improve stormwater quality through implementation of both structural and non-structural Best Management Practices (BMPs), with the goal of complying with the requirements of the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit to reduce the impact of stormwater and non-stormwater on receiving water quality within the EWMP areas. Structural BMPs would include BMPs categorized as distributed, centralized, or regional. Distributed structural BMPs treat runoff close to the source and are typically implemented at a single- or few-parcel level. Centralized structural BMPs treat runoff from multiple parcels. Regional structural BMPs are larger in scale, and are meant to retain and/or treat the 85th percentile storm over 24 hours from a contributing area. The major functions of these three types of structural BMPs are infiltration, treatment, and storage; they may be used individually or in combination with one another. Although there would be construction involved, the structural BMPs would largely be implemented in urbanized areas including streets, sidewalks, parking lots, and parks.

The proposed program is not a land use project and its implementation would not introduce new residential or commercial buildings or any other growth-inducing land uses. The structural BMPs would augment the physical structure of established communities, blending in as part of the existing landscape and enhancing the water quality of existing communities. As a result, the proposed program would not induce population growth.

The proposed program would expand stormwater capture abilities, increasing groundwater recharge and improving the quality of stormwater runoff into receiving waters in the Los Angeles region. The program would not include construction of residential or commercial buildings and thus would not increase the demand for or require new public services and utilities facilities (including water supply, fire protection and other emergency services, public education, and parks and recreation facilities). The nature of the proposed program is to increase stormwater recharge and improve stormwater quality; such activities would not result in increased economic activity or population growth in the EWMP areas. And the amount of water recharged as part of the proposed program is anticipated to support existing water supply needs and reduce dependence on imported water supplies.

The non-structural BMPs associated with the proposed program consist of policies, actions, and activities intended to prevent pollutants from entering stormwater runoff, thus eliminating the source of the pollutants. Examples include irrigation control, covered trash receptacles, replacement of brake pads and lead in wheel weights, pet waste cleanup stations, street sweeping, catch basin cleaning, and downspout disconnect programs, all aiming to prevent and/or reduce runoff and/or pollution close to the source. These BMPs would not include construction activities and would not result in direct or indirect growth-inducement within the EWMP areas.

5.4 Secondary Effects of Growth

Implementation of the proposed program would not result in a direct or indirect increase in population or employment. The proposed program itself, therefore, is not growth-inducing and would not induce secondary effects of growth. While one of the main goals of the EWMPs is to increase infiltration and potentially increase recharge of stormwater into the groundwater basin, the amount of water potentially recharged would not be enough to indirectly support population growth and is intended to support existing water supply needs. This potential additional recharge would contribute to local water supply needs but would not alter population demographics. Therefore, there would be no secondary effects of growth.

5.5 Significant Irreversible Environmental Changes

CEQA Guidelines 21100(b) (2) and 15126.2(b) require that any significant effect on the environment that would be irreversible if the project is implemented must be identified. A project would generally result in a significant irreversible impact if:

- Primary and secondary impacts (such as roadway improvements that provide access to previously inaccessible areas, etc.) would commit future generations to similar uses.
- The project would involve a large commitment of nonrenewable resources.

- The project would involve uses in which irreversible damage could result from any potential environmental accidents associated with the project.

In accordance with Section 21100(b)(2)(B) of CEQA and Sections 15126(c) and 15126.2(c) of the CEQA Guidelines, the purpose of this section is to identify significant irreversible environmental changes that would be caused by implementation of the proposed program. Construction and operational impacts associated with implementation of the program would result in an irretrievable and irreversible commitment of natural resources through the use of fossil fuels and construction materials. Operation of the program would incrementally increase power consumption associated with stormwater BMPs requiring pump stations. The program's incremental increased use of these resources, however, would not significantly increase the overall commitment of resources associated with stormwater and would in fact increase conservation of other valuable resources. The proposed program would involve only minor incremental use of nonrenewable resources and would locate facilities primarily on lands already developed. Furthermore, since the implementing agencies would implement the mitigation measures identified in this Program Environmental Impact Report in concert with other ongoing stewardship and watershed protection activities, implementation of the proposed program would not result in significant irreversible environmental changes. When completed, the proposed program would provide a high level of water quality protection as well as increase water conservation throughout the EWMP areas.

CHAPTER 6
Alternatives Analysis

6.1 Introduction

According to the California Environmental Quality Act (CEQA) Guidelines, an Environmental Impact Report (EIR) must describe a reasonable range of alternatives to a proposed project that could feasibly attain most of the basic project objectives, and would avoid or substantially lessen any of the proposed project's significant environmental effects. This alternatives analysis summarizes the alternatives screening process conducted to identify feasible alternatives to the proposed Enhanced Watershed Management Programs (EWMPs). Information to select an "environmentally superior alternative," which may be the proposed program, is also provided in this chapter.

Section 15126.6(f) of the CEQA Guidelines provides direction on the required alternatives analysis:

> "The range of alternatives required in an EIR is governed by a 'rule of reason' that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice. The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project. Of those alternatives, the EIR need examine in detail only the ones that the lead agency determines could feasibly attain most of the basic objectives of the project. The range of feasible alternatives shall be selected and discussed in a manner to foster meaningful public participation and informed decision making."

An EIR need not consider every conceivable alternative to a project. Rather, the alternatives must be limited to ones that meet the project objectives, are feasible, and would avoid or substantially lessen at least one of the significant environmental effects of the project. "Feasible" means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors. Section 15126.6(b) of the CEQA Guidelines states that an EIR:

> "... must identify ways to mitigate or avoid the significant effects that a project may have on the environment, the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or could be more costly."

Section 15126.6 (d) of the CEQA Guidelines provides further guidance on the extent of alternatives analysis required:

> "The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project. A matrix displaying the major characteristics and significant environmental effects of each alternative may be used to summarize the comparison. If an alternative would cause one or more significant effects in addition to those that would be caused by the project as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed."

The EIR must briefly describe the rationale for selection and rejection of alternatives and the information the Lead Agency relied on when making the selection. It also should identify any alternatives considered but rejected as infeasible by the lead agency during the scoping process and briefly explain the reasons for the exclusion. Alternatives may be eliminated from detailed consideration in the EIR if they fail to meet most of the project objectives, are infeasible, or do not avoid any significant environmental effects.

Section 15126.6(e)(1) of the CEQA Guidelines also requires that the "no project" alternative be addressed in this analysis. The purpose of evaluating the "no project" alternative is to allow decision-makers to compare the potential consequences of the proposed program with the consequences that would occur without implementation of the proposed program.

Finally, an EIR must identify the environmentally superior alternative. The "no project" alternative may be environmentally superior to the proposed program based on the minimization or avoidance of physical environmental impacts. However, the "no project" alternative must also achieve the project objectives in order to be selected as the environmentally superior alternative. CEQA Guidelines Section 15126.6(e)(1) requires that if the environmentally superior alternative is the "no project" alternative, the EIR shall identify an environmentally superior alternative among other alternatives.

6.2 Review of Proposed Program Goals and Objectives

The alternatives presented in this chapter were analyzed for their abilities to reduce significant program impacts and meet the objectives of the proposed program, which are:

- To collaborate among agencies (Permittee jurisdictions) across the watershed to promote more cost-effective and multi-beneficial water quality improvement projects to comply with the Municipal Separate Storm Sewer System (MS4) Permit.
- To develop watershed-wide Enhanced Watershed Management Programs (EWMPs) that would, once implemented, remove or reduce pollutants from dry- and wet-weather urban runoff in a cost-effective manner.
- To reduce the impact of stormwater and non-stormwater on receiving water quality.

6.3 Review of Significant Environmental Impacts

CEQA Guidelines Sections 21100(b) (2) and 15126.2(b) require that any significant and unavoidable effect on the environment must be identified. In addition, CEQA Guidelines 15093(a) allows the decision-making agency to determine if the benefits of a proposed project outweigh the unavoidable adverse environmental impacts of implementing the project. The Lead Agency can approve a project with unavoidable adverse impacts if it prepares and adopts a "Statement of Overriding Considerations" setting forth the specific reasons for making such a judgment. Unavoidable adverse impacts identified in this Program Environmental Impact Report (PEIR) are discussed in this section. For each of the unavoidable adverse impacts, the Los Angeles County Flood Control District (LACFCD) must prepare and adopt a Statement of Overriding Considerations if the program is approved.

Chapters 3 and 4 provide analyses of potentially significant impacts that could result from implementation of the proposed program. **Table 6-1** identifies the potentially significant and unavoidable impacts associated with implementation of the proposed program. The range of alternatives required to be evaluated in an EIR is limited to those alternatives that would avoid or substantially lessen any significant effects of the proposed program and could feasibly attain most of the program objectives.

6.4 Program-Level Alternatives Analysis

In accordance with the CEQA "rule of reason," an EIR is required to consider a range of alternatives that permit a reasoned choice and that are "limited to ones that would avoid or substantially lessen any of the significant effects of the project" (CEQA Guidelines Section 15126.6(f)). The Lead Agency conducted an alternatives screening process to identify feasible alternatives to the proposed program. The screening process for identifying viable alternatives included consideration of the following criteria:

- Ability to meet the program objectives
- Ability to reduce significant environmental effects of the proposed program
- Economic and engineering feasibility

Based on these criteria, the Lead Agency has identified the following alternatives:

- No Program Alternative
- Non-Structural Best Management Practices (BMPs) Only Program Alternative
- Distributed Structural BMPs Only Program Alternative (no centralized and regional)

TABLE 6-1
SUMMARY OF PROGRAM IMPACT ANALYSIS

Issue Area	Significance Determination
Aesthetics	LSM
Air Quality (Construction)	**SU**
Air Quality (Operation)	LTS
Air Quality (Cumulative Construction)	**SU**
Biological Resources (Direct and Cumulative)	LSM
Cultural Resources	**SU**
Cultural Resources (Cumulative)	**SU**
Geology and Soils/Mineral Resources (Direct and Cumulative)	LSM
Greenhouse Gas Emissions	LTS
Hazards and Hazardous Materials (Direct and Cumulative)	LSM
Hydrology and Water Quality (Direct and Cumulative)	LSM
Land Use and Planning/Agriculture (Direct and Cumulative)	LTS
Noise (Construction)	**SU**
Noise (Operation)	LTS
Noise (Cumulative)	**SU**
Population and Housing and Environmental Justice (Direct and Cumulative)	LTS
Public Services/Recreation (Direct and Cumulative)	LTS
Traffic and Transportation (Direct and Cumulative)	LSM
Utilities and Service Systems (Direct and Cumulative)	LSM
Growth Inducement (Direct/Indirect)	LTS

LTS = Less than Significant
LSM = Less than Significant with Mitigation
SU = Significant and Unavoidable

SOURCE: ESA 2014.

6.4.1 No Program Alternative

The CEQA Guidelines require an analysis of the specific alternative of "no project" (CEQA Guidelines, Section 15126.6). Specifically, the CEQA Guidelines state that "[t]he purpose of describing and analyzing a 'no project' alternative is to allow decision makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project." The "no project" alternative is not necessarily the same as the baseline used to determine the environmental impacts of the proposed program. The analysis of the no project alternative includes the existing baseline environmental conditions as well as "what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services" (CEQA Guidelines, Section 15126.6 (e)(2)). The analysis of impacts related to the no project alternative includes projecting what would reasonably be expected to occur "in the foreseeable future if the project were not approved."

The No Program Alternative (please note: for the sake of this EWMP, this PEIR will use the term "No Program Alternative") would result in the non-implementation of the EWMP approach allowed in the MS4 Permit. Although this would not necessarily result in noncompliance with MS4 Permit since preparation of the EWMPs is an optional compliance method, each Permittee would be required to reach water quality objectives for MS4 discharges on their own, with no clear compliance strategy. The collaborative approach outlined in the MS4 Permit would not be available to each Permittee. Under the No Project Alternative, each Permittee would construct BMPs necessary to achieve compliance, some of which would be similar to the proposed alternative. This includes the construction of distributed, centralized, and regional BMPs necessary to achieve local discharge compliance.

Ability to Meet Program Objectives

The No Program Alternative would not meet the EWMP objective to collaborate among agencies across the watershed to promote more cost-effective and multi-beneficial water quality improvement projects, but it would meet the other objectives to remove or reduce pollutants from dry- and wet-weather urban runoff and reduce the impact of stormwater and non-stormwater on receiving water quality through implementation of structural and non-structural BMPs.

The No Project Alternative would not necessarily avoid the potential environmental impacts that would occur as a result of implementing the EWMPs, as compliance with the MS4 Permit is still required. However, to achieve compliance with the MS4 Permit, each of the BMPs would need to be installed rapidly to avoid permit violations. There would be less coordination within each watershed, which could result in inefficient or redundant BMPs based on municipal boundaries rather than watershed boundaries. Potential impacts of this alternative are discussed in the following pages.

Aesthetics

Under the No Project Alternative, each Permittee would implement BMPs within their jurisdictions that would result in aesthetic modifications similar to the proposed alternative. The impacts to aesthetics throughout the watershed would be site specific, similar to the proposed alternative. [Similar impacts]

Air Quality

Air emissions resulting from the construction of BMPs under the No Project Alternative would be similar to the proposed alternative since both alternatives would require installation of similar types of BMPs requiring similar types of construction methods. However, because the programs would need to be installed rapidly and because more BMPs would likely be required as a result of the inefficiencies of municipal boundaries, slightly more construction emissions would result. [Slightly greater impacts]

Biological Resources

Impacts to biological resources would be similar to the proposed alternative. The potential impacts to biological resources throughout the watershed would be site specific, but the BMP locations would be similar to those identified under the proposed alternative. [Similar impacts]

Cultural Resources

Impacts to cultural resources would be similar to the proposed alternative. The potential impacts to cultural resources throughout the watershed would be site specific, but the BMP locations would be similar to those identified under the proposed alternative. [Similar impacts]

Geology and Soils/Mineral Resources

Impacts to geological and mineral resources would be similar to the proposed alternative since impacts would be site specific and within similar locations. [Similar impacts]

Greenhouse Gases

Construction of the BMPs would result in only minor greenhouse gas (GHG) emissions. GHG emissions would be similar to the proposed alternative since similar BMPs would be constructed. In terms of the cumulative impact to global climate change, the impact would be similar to the proposed alternative. [Similar impacts]

Hazards and Hazardous Waste

Impacts to hazards and hazardous waste would be similar to the proposed alternative since impacts would be site specific and within similar locations. Localized subsurface contamination could be affected by any of the BMP types and individual projects would be subject to similar preconstruction evaluations to assess suitability of the location. [Similar impacts]

Hydrology and Water Quality

Achieving water quality objectives required in the MS4 Permit immediately would be difficult under the No Program Alternative since the permit does not allow for an installation grace period outside of the EWMP. The potential for noncompliance with the MS4 Permit under this alternative would result in a significant impact compared to that of the proposed alternative. [Greater impacts]

Land Use Planning/Agriculture

Impacts to land use would be similar to the proposed alternative since impacts would be site specific and within similar locations. [Similar impacts]

Noise

Noise resulting from the construction of BMPs under the No Project Alternative would be similar to the proposed alternative since both alternatives would require installation of similar types of BMPs requiring similar types of construction methods in similar locations. [Similar impact]

Population and Housing

Impacts to population and housing would be similar to the proposed alternative since impacts would be site specific and within similar locations. [Similar impact]

Recreation

Impacts to recreation would be similar to the proposed alternative since impacts would be site specific and within similar locations. [Similar impact]

Transportation and Circulation

Impacts to transportation and circulation would be similar to the proposed alternative since impacts would be site specific and within similar locations. [Similar impacts]

Utilities and Service Systems

Impacts to utilities and service systems would be similar to the proposed alternative since impacts would be site specific and within similar locations. [Similar impacts]

6.4.2 Non-Structural BMPs Only Project Alternative

The Non-Structural BMPs Only Project Alternative would involve implementation of the proposed program and its associated non-structural BMPs only. No structural BMPs would be implemented as the significant and unavoidable impacts are generally related to construction activities associated with the structural BMPs. For example, the significant and unavoidable air quality, noise, and cultural resources impacts would be avoided through implementation of non-structural BMPs only because non-structural BMPs would not result in construction activities.

The proposed program would focus on implementation of policies, actions, and activities that are intended to prevent pollutants from entering stormwater runoff, thus eliminating the source of the pollutants.

Ability to Meet Program Objectives

The Non-Structural BMPs Only Project Alternative would avoid the potential environmental impacts that would occur as a result of implementing the proposed program. While these measures would help to improve water quality in the EWMP areas, sole reliance on these non-structural BMPs may not provide the level of water quality treatment needed to meet the water quality objectives of the Regional Water Quality Control Board Basin Plan and as required by the MS4 Permit. The Non-Structural BMPs Only Project Alternative may not meet the objectives of the proposed program to collaborate among agencies to promote more cost-effective and multi-beneficial water quality improvement projects because Non-Structural BMPs are generally implemented individually in each jurisdiction, so collaboration efforts for cost-effective solutions diminishes with implementation of non-structural BMPs only. Nonetheless, potential impacts of this alternative are discussed in the following pages.

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Impact Analysis

Aesthetics

The Non-Structural BMPs Only Project Alternative would avoid construction impacts identified in the proposed alternative. However, many BMPs, such as green-streets and grassy swales, would improve local aesthetics. The Non-Structural BMPs Only Project Alternative would minimize this multi-purpose benefit of the project. [Greater impacts]

Air Quality

The Non-Structural BMPs Only Project Alternative would avoid construction impacts identified in the proposed alternative. The elimination of construction emissions throughout the region would result in the use of fewer off-road vehicles and fewer emissions. [Fewer impacts]

Biological Resources

The Non-Structural BMPs Only Project Alternative would avoid direct impacts to biological resources from construction. Although dry-weather flows would be reduced under this alternative, relying solely on non-structural BMPs would be less effective than the combination of BMPs planned in the proposed alternative. Impacts to biological resources would be less under the Non-Structural BMPs Only Project Alternative. [Fewer impacts]

Cultural Resources

The Non-Structural BMPs Only Project Alternative would avoid construction impacts, resulting in fewer impacts to cultural resources. [Fewer impacts]

Geology and Soils/Mineral Resources

The Non-Structural BMPs Only Project Alternative would avoid construction impacts and infiltration impact, resulting in fewer impacts to geological resources. The potential for increased unstable soils from infiltration would be reduced under this alternative. [Fewer impacts]

Greenhouse Gases

The Non-Structural BMPs Only Project Alternative would avoid construction impacts identified in the proposed alternative. The elimination of construction emissions throughout the region would result in fewer GHG emissions. [Fewer impacts]

Hazards and Hazardous Waste

The Non-Structural BMPs Only Project Alternative would avoid construction impacts and infiltration impact, resulting in fewer impacts to hazards. The potential for increased mobilization of contamination in soils would be reduced under this alternative. [Fewer impacts]

Hydrology and Water Quality

The water quality benefit provided by the structural BMPs would be eliminated under this alternative. Achieving water quality objectives required in the MS4 Permit with no structural

BMPs would be unlikely. The potential for non-compliance with the MS4 Permit under this alternative would result in a significant impact of the alternative. [Greater impacts]

Land Use Planning/Agriculture

The Non-Structural BMPs Only Project Alternative would avoid construction impacts and infiltration impact, resulting in fewer impacts to land uses and agriculture. [Fewer impacts]

Noise

The Non-Structural BMPs Only Project Alternative would avoid construction impacts and infiltration impact, resulting in fewer impacts to noise. [Fewer impacts]

Population and Housing

The avoidance of construction would not affect population and housing. Impacts would be similar to the proposed alternative. [Similar impacts]

Recreation

The avoidance of construction would not affect recreation. Impacts would be similar to the proposed alternative. [Similar impacts]

Transportation and Circulation

The avoidance of construction would reduce impacts to transportation and circulation. Impacts would be less than the proposed alternative. [Fewer impacts]

Utilities and Service Systems

The avoidance of construction and increased infiltration would reduce impacts to utilities and service systems. Impacts would be less than the proposed alternative. [Fewer impacts]

6.4.3 Distributed Structural and Non-Structural BMPs Only Program Alternative (No Centralized or Regional)

The Distributed Structural BMPs Only Project Alternative would involve implementation of the proposed program and only its associated distributed structural BMPs and non-structural BMPs. Since much of the impacts of program implementation would occur during construction of the large-scale regional and centralized BMPs, this alternative would result in fewer construction impacts than the proposed project.

Ability to Meet Program Objectives

The Distributed Structural BMPs Only Program Alternative would meet the objectives of the proposed program to collaborate among agencies to promote more cost-effective and multi-beneficial water quality improvement projects. However, because distributed structural BMPs tend to be smaller in nature and typically are distributed widely throughout the watershed, more BMPs may be necessary to meet water quality objectives in the MS4 Permit. The ability to meet the water quality objectives would be less certain under this alternative. Potential impacts of this alternative are discussed in the following pages.

Impact Analysis

Aesthetics

Constructing more distributed BMPs and no large-scale regional or centralized BMPs would result in similar aesthetics impacts on the regional level within each watershed. Although more widely dispersed projects would result in more locations being subjected to short-term construction activities, post-construction impacts would largely be beneficial, since green-streets and small-scale grassy swales would be installed that generally would improve local character in urban settings. In addition, any adverse post-construction impacts to local aesthetics from the larger BMPs would be avoided. [Fewer impacts]

Air Quality

Constructing fewer large-scale BMPs would result in fewer daily emissions. Although construction of more widely dispersed small-scale BMPs may increase the number of construction projects, the smaller size would result in the use of fewer off-road vehicles and fewer emissions. [Fewer impacts]

Biological Resources

Constructing fewer large-scale BMPs would result in impacts similar to biological resources as the proposed alternative. Impacts to biological resources from construction of BMPs would be site specific regardless of the type of program being implemented. The potential to reduce surface flows supporting riparian and wetland resources would be similar to the proposed alternative. [Similar impacts]

Cultural Resources

Constructing fewer large-scale BMPs, but more small-scale BMPs would have similar impacts to cultural resources as the proposed alternative. Impacts to cultural resources would be site specific regardless of the type of project being implemented. [Similar impacts]

Geology and Soils/Mineral Resources

Impacts to geological and mineral resources would be similar to the proposed alternative since impacts would be site specific regardless of the type of BMPs being built. [Similar impacts]

Greenhouse Gases

Construction of the BMPs would result in only minor GHG emissions. Constructing fewer large-scale BMPs would result in fewer GHG emissions overall, but in terms of the cumulative impact to global climate change, the impact would be similar to the proposed alternative. [Similar impacts]

Hazards and Hazardous Waste

Impacts to hazards and hazardous waste would be similar to the proposed alternative since impacts would be site specific regardless of the type of BMPs being built. Localized subsurface contamination could be affected by any of the BMP types and individual projects would be subject to similar preconstruction evaluations to assess suitability of the location. [Similar impacts]

Hydrology and Water Quality

The water quality benefit provided by the large-scale regional BMPs would be eliminated under this alternative. Achieving water quality objectives required in the MS4 Permit with a greater number of small-scale BMPs may be unlikely if larger regional BMPs are not constructed. The potential for noncompliance with the MS4 Permit under this alternative would result in a significant impact compared to that of the proposed alternative. [Greater impact]

Land Use Planning/Agriculture

Construction of a greater number of BMPs would have greater impacts to land uses within each watershed since more projects would be required. The large-scale BMPs would be located in areas with sufficient developable space. Eliminating use of these large open-space areas would disperse land use acquisition and compatibility impacts throughout the watershed. Impacts would be greater under this alternative. [Greater impacts]

Noise

Construction of more BMPs would subject a greater number of people to temporary construction noise. However, impacts from the longer-term construction of large BMPs would be avoided. Since impacts would be site specific, impacts from construction noise would be similar to the proposed alternative. [Similar impacts]

Population and Housing

Construction of more small-scale BMPs and fewer large-scale BMPs would have similar effects to population and housing as the proposed alternative. [Similar impacts]

Recreation

Construction of more small-scale BMPs and fewer large-scale BMPs would have similar effects to recreation within the watersheds. Impacts would be site specific under either alternative. [Similar impacts]

Transportation and Circulation

Construction of more small-scale BMPs and fewer large-scale BMPs would have similar effects to transportation and circulation within the watersheds. Smaller projects would have shorter duration impacts to roadways, but would occur in more locations. Impacts would be site specific under either alternative. [Similar impacts]

Utilities and Service Systems

Construction of more small-scale BMPs and fewer large-scale BMPs would have similar effects to utilities and service systems as the proposed alternative. Construction impacts would be site specific. [Similar impacts]

6.5 Comparison of Alternatives

This section provides a summary comparison of the alternatives relative to the proposed program, with respect to their ability to meet program objectives and their relative environmental impacts compared to the proposed program. **Table 6-2** summarizes the ability of the proposed program, the No Program Alternative, the Non-Structural BMPs Only Project Alternative, and the Distributed Structural and Non-Structural BMPs Only Project Alternative to meet the program objectives; it also summarizes the environmental impacts of these alternatives relative to the proposed program.

6.6 Alternatives Suggested in Scoping

Several alternatives were suggested in comment letters received during the Notice of Preparation (NOP) Scoping process. These comments are included in Appendix A. One comment letter from Dr. Tom Williams representing the Sierra Club suggested that the PEIR include an assessment of several funding mechanism alternatives, including: Single Parcel Fee Assessment, Parcel Area Fee Assessment, Hybrid Parcel Area Fee Assessment, Zero Discharge Assessment, and Large Parcel Assessment. These suggested alternatives would not lessen any significant environmental impacts of the Program and were therefore not considered in this PEIR. Although CEQA allows for discussion of economic impacts and project costs as measures of feasibility, the funding mechanisms required to implement projects are generally not susceptible to environmental analysis. For these reasons, these suggested alternatives were not evaluated as program alternatives for CEQA compliance.

In addition to the fee assessment alternatives, the comment suggested a Full Capture and Recharge of Flows Greater than 100 cfs Alternative. This suggested alternative was rejected from further consideration because of the infeasibility of capturing all storm flows in Los Angeles County. The retention basins required to retain all storm flows in the County would be unrealistic, requiring most of the developed land in the County to be accomplished. The comment may have been suggesting full capture of all flows less than 100 cfs, but, again, this alternative was rejected from further consideration for the same reason: that the retention basins needed to retain and recharge all flows in Los Angeles County waterways less than 100 cfs would require enormous areas of undeveloped lands that are currently developed. Furthermore, groundwater recharge is only feasible in certain areas of the County because of the poor percolation capacity of surficial soils in some areas. The accumulation of subsurface clay lenses creates recharge barriers in many places of the County, making retention and recharge of large quantities of stormwater infeasible in these locations.

TABLE 6-2
ABILITY OF PROJECT ALTERNATIVES TO MEET PROJECT OBJECTIVES

	Proposed Program	No Project	Non-Structural BMPs Only	Distributed Structural/Non-Structural BMPs Only
Project Objectives				
To collaborate among agencies (Permittee jurisdictions) across the watershed to promote more cost-effective and multi-beneficial water quality improvement projects to comply with the MS4 Permit.	Yes	No	No	No
To develop watershed-wide EWMPs that will, once implemented, remove or reduce pollutants from dry- and wet-weather urban runoff in a cost-effective manner.	Yes	No	No	No
To reduce the impact of stormwater and non-stormwater on receiving water quality.	Yes	Yes	No	Yes
Environmental Impacts				
Aesthetics	LSM	Similar	Greater	Fewer
Air Quality (construction/operation)	SU/LTS	Similar	Fewer	Similar
Biology	LSM	Similar	Fewer	Similar
Cultural Resources	SU	Similar	Fewer	Similar
Geology/Mineral Resources	LSM	Similar	Fewer	Similar
Greenhouse Gases	LTS	Similar	Fewer	Similar
Hazards and Hazardous Materials	LSM	Similar	Fewer	Similar
Hydrology and Water Quality	LSM	Greater	Greater	Greater
Land Use/Agriculture	LTS	Similar	Similar	Greater
Noise (construction/operation)	SU/LTS	Similar	Fewer	Similar
Public Services/Recreation	LTS	Similar	Similar	Similar
Population and Housing and Environmental Justice	LTS	Similar	Similar	Similar
Transportation and Traffic	LSM	Similar	Fewer	Similar
Utilities and Service Systems	LSM	Similar	Fewer	Similar

LTS = Less than Significant
LSM = Less than Significant with Mitigation
SU = Significant and Unavoidable

6.7 Environmentally Superior Alternative

CEQA requires that an EIR identify the environmentally superior alternative(s) of a project other than the proposed program or the "no project" alternative (CEQA Guidelines Section 15126.6 (e)(2)). As stated at the beginning of this chapter, the purpose of this alternatives analysis is to consider a reasonable range of alternatives that could feasibly attain most of the basic project objectives and avoid or substantially lessen significant program impacts.

The No Program Alternative would require that individual Permittees design and construct BMPs locally to achieve MS4 Permit compliance. As a result, impacts from construction of large and small BMPs would be similar to the proposed alternative. None of the significant and unavoidable impacts of the proposed alternative would be avoided by this alternative. Furthermore, since the ability to achieve compliance with MS4 Permit water quality objectives would be reduced if each Permittee were on their own, impacts to water quality would be greater under this alternative.

The Distributed Structural BMPs Only Alternative would result in construction of an increased number of distributed BMPs, but would avoid construction and operational impacts associated with the large-scale centralized and regional BMPs. Many of the significant and unavoidable impacts of the proposed alternative would be avoided or substantially minimized under this alternative, including construction impacts involving noise and air emissions. However, since the ability to achieve compliance with MS4 Permit water quality objectives would be reduced without the larger-scale centralized and regional BMPs, impacts to water quality would be greater under this alternative.

The Non-Structural BMPs Only Alternative would avoid all of the significant and unavoidable impacts associated with construction of the structural BMPs. In addition, nearly all of the impacts associated with the proposed alternative would be avoided, including impacts from infiltration to neighboring subsurface structures, mobilization of contaminants, and site-specific impacts to cultural and biological resources. However, since the ability to achieve compliance with MS4 Permit water quality objectives would be substantially reduced, impacts to water quality would be greater under this alternative, and compliance with the MS4 Permit would be unlikely. Even though this alternative would avoid significant and unavoidable impacts of construction and operation of structural BMPs, the failure to meet water quality objectives and achieve MS4 Permit compliance would outweigh the avoidance of the other impacts. In order to reduce overall potential impacts, the EWMPs will emphasize the use of non-structural BMPs that include true source control measures , e.g. reduction of copper in brake pads through enacted state-wide legislation. Furthermore, as discussed, due to the difficultly of locating larger regional BMPs, the use of distributed BMPs with a lower potential for impact will be emphasized in the EWMPs as well. 6-16,

As a result, since the proposed alternative would provide the best chance of achieving regional water quality objectives, it is considered the environmentally superior alternative.

CHAPTER 7
Organizations and Persons Contacted

7.1 Participating Permittees

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1. Dominguez Channel – Alfredo Magallanes , City of Los Angeles
2. Peninsula Cities – Andy Winje, Rancho Palos Verdes
3. Upper Los Angeles River - Alfredo Magallanes , City of Los Angeles
4. Marina del Rey – Bruce Hamamoto, County of Los Angeles
5. Santa Monica Bay Jurisdictional Group 2 & 3 – Huub Cox, City of Los Angeles
6. Beach Cities – Elaine Jeng, Redondo Beach
7. Ballona Creek – Huub Cox, City of Los Angeles
8. Santa Clara – Heather Merenda, Santa Clarita
9. Rio Hondo/San Gabriel River – Jane Carlson, Sierra Madre
10. Malibu Creek Watershed – Alex Farassati, City of Calabasas
11. North Santa Monica Bay Coastal Watersheds – Jennifer Brown, Malibu
12. Upper San Gabriel River – Jolene Guerrero, County of Los Angeles

7.2 NOP and Distribution List

Refer to **Appendix A** for a copy of the Notice of Preparation and distribution/mailing list.

CHAPTER 8
Report Preparers

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CHAPTER 9
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Appendix A
Notice of Preparation

Notice of Preparation

Date	August 29, 2014
To:	California Office of Planning and Research, Responsible and Trustee Agencies and Interested Parties
Subject:	Notice of Preparation of a Draft Program Environmental Impact Report
Project:	Enhanced Watershed Management Programs
Lead Agency:	Los Angeles County Flood Control District
Review Period:	August 29, 2014 through September 29, 2014

The Los Angeles County Flood Control District (LACFCD) will be the Lead Agency and will prepare a Program Environmental Impact Report (PEIR) for the project identified in this notice. We need to know the views of you or your agency as to the scope and content of the environmental information which is germane to your agency's statutory responsibilities in connection with the proposed project. This Notice of Preparation (NOP) has been prepared to notify agencies and interested parties that the LACFCD is beginning preparation of a PEIR pursuant to the California Environmental Quality Act (CEQA) for its proposed Enhanced Watershed Management Programs (EWMPs, or “program”).

The Los Angeles County Flood Control Act was adopted by the State Legislature in 1915 and established the LACFCD and empowered it to provide flood risk management, water conservation, and recreation and aesthetic enhancement within its boundaries. The LACFCD is governed as a separate entity by the Board of Supervisors of the County of Los Angeles and is operated by the County's Department of Public Works. The LACFCD encompasses more than 3,000 square miles, 85 cities, and approximately 2.1 million land parcels. The LACFCD, the County of Los Angeles, and 84 incorporated cities within Los Angeles County (collectively referred to as Permittees) are covered under a Municipal Separate Storm Sewer System (MS4) Permit (Order No. R4-2012-0175; National Pollutant Discharge Elimination System [NPDES] Permit No. CAS004001) for the discharge of urban runoff to waters of the United States. The purpose of the MS4 Permit is to ensure Permittees are not causing or contributing to exceedances of water quality objectives or impairments of beneficial uses in the receiving waters of the Los Angeles region.

The 2012 MS4 Permit for Los Angeles County gives Permittees the option of implementing an innovative approach to Permit compliance through development of EWMPs. The LACFCD and participating Permittees have opted to exercise this option and have submitted 12 separate Notices of Intent (NOIs) for the development of 12 EWMPs in their respective watershed groups to the Los Angeles Regional Water Quality Control Board (LARWQCB). The LARWQCB is responsible for approval of the EWMPs in compliance with the MS4 Permit. Implementation of the EMWPs would occur following approval by the LARWQCB. The preparation of the 12 separate EWMPs will be a collective effort among the LACFCD and the applicable agencies in each respective EWMP. The 12 EWMPs will vary for each watershed group, but will generally provide the opportunity for Permittees to customize their stormwater programs to achieve compliance with applicable receiving water limitations (RWLs) and water-quality-based effluent limits (WQBELs) in accordance with the MS4 Permit through implementation of stormwater best management practices (BMPs) or watershed control measures. BMPs vary in function and type, with each BMP providing unique design characteristics and benefits from implementation. The overarching goal of BMPs in the EWMP is to reduce the impact of stormwater and non-stormwater on receiving water

quality and address the water quality priorities as defined by the MS4 Permit. The development of each EWMP will involve the evaluation and selection of multiple BMP types, including nonstructural (institutional) and distributed, centralized, and regional structural watershed control measures, that will be implemented to meet compliance goals and strategies under the 2012 MS4 Permit.

The LACFCD, as a regional agency charged with conserving stormwater for use in our local water supply, has a vested interest in increasing opportunities for stormwater capture and groundwater recharge. The LACFCD has flood control infrastructure in each of the EWMP areas and is participating in all 12 EWMPs. The LACFCD will be working with the applicable Permittees and other stakeholders in all 12 EWMP watersheds to develop the EWMPs, which will be implemented by the Permittees that have jurisdiction within each EWMP area. The Permittees implementing the projects defined in the EWMPs, or "implementing agencies," will vary between EWMPs and individual projects. The LACFCD will be an implementing agency only on those projects for which it has been identified in an EWMP as a responsible implementing party.

Project Location: The proposed program would be located in several watersheds of Los Angeles County and would include the following enhanced watershed management groups: Ballona Creek, Beach Cities, Dominguez Channel, Malibu Creek, Marina del Rey, North Santa Monica Bay Coastal Watersheds (NSMBCW), Palos Verdes Peninsula, Rio Hondo/San Gabriel River Water Quality Group (RH/SGRWQG), Santa Monica Bay, Upper Los Angeles River, Upper San Gabriel River, and Upper Santa Clara River. The project area is indicated in Figure 1.

Broad Range of Potential Benefits from EWMPs: If implemented, the proposed EWMP-generated benefits would include:

- Improved Water Quality
- Reduction in Impairment of Water Bodies for Designated Beneficial Uses
- Promotion of Water Conservation and Supply
- Enhanced Recreation Opportunities
- Support for Public Education Opportunities
- Improved Local Aesthetics
- Management of Flood Risks

Public Comments: The LACFCD is soliciting the views of interested persons and agencies as to the scope and content of the environmental information to be evaluated in the PEIR. In accordance with CEQA, agencies are requested to review the project description in this NOP and provide their comments on environmental issues related to the statutory responsibilities of the agency. The PEIR will be used by LACFCD's governing Board, the Los Angeles County Board of Supervisors, when considering approval of the proposed EWMPs as well as for any related discretionary approvals.

Due to the time limits mandated by state law, all comments to the NOP are due no later than September 29, 2014. Please send your comments to the address shown below. Include a return address or email address and a contact name in your agency with your comments.

Gregg BeGell, P.E.
County of Los Angeles Department of Public Works
Project Management Division II
900 South Fremont Avenue, 5th Floor
Alhambra, CA 91803
(626) 300-3298
gbegell@dpw.lacounty.gov

This NOP and other PEIR information, as it becomes available, can be accessed at:
www.LACoH2Osheds.com

Scoping Meetings: Three scoping meetings will be held to receive public comments regarding the scope and content of the PEIR. The scoping meetings will include a brief presentation providing an overview of the proposed program and the CEQA process. After the presentation, oral comments will be accepted. Written comment forms will be supplied for those who wish to submit comments in writing at the scoping meeting. Written comments also may be submitted anytime during the NOP review period. The scoping meetings will be held as follows:

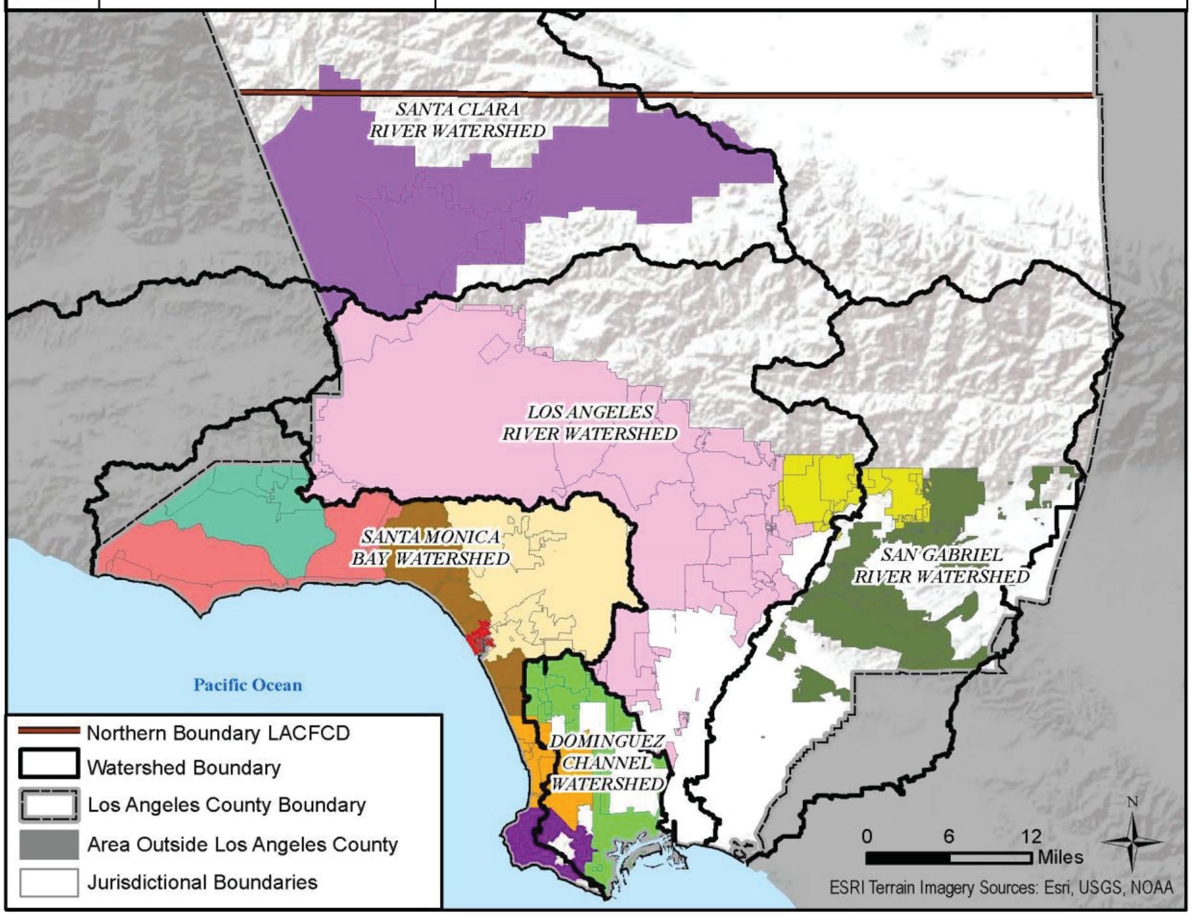
DATE:	Tuesday, September 9, 2014
TIME:	6:00 P.M.
LOCATION:	Chace Park Community Room TBD 13650 Mindanao Way Marina del Rey, CA 90292

DATE:	Wednesday, September 10, 2014
TIME:	6:00 P.M.
LOCATION:	County of Los Angeles Department of Public Works 900 South Fremont Avenue First Floor Conference Room C Alhambra, CA 91803

DATE:	Monday, September 15, 2014
TIME:	6:30 P.M.
LOCATION:	K Dalton Room Community Center 119 W Palm Ave Monrovia, CA 91016

Figure 1: Overview EWMP Groups

	Group Name	Cities/Permittees Involved
	Ballona Creek	Beverly Hills, Culver City, Inglewood, Los Angeles, Santa Monica, West Hollywood, LA County, LACFCD
	Beach Cities Watershed Management Group	Hermosa Beach, Manhattan Beach, Redondo Beach, Torrance, LACFCD
	Dominguez Channel Watershed Management Group	El Segundo, Hawthorne, Inglewood, Los Angeles, Lomita, LA County, LACFCD
	Malibu Creek Watershed	Agoura Hills, Calabasas, Hidden Hills, Westlake Village, LA County, LACFCD
	Marina del Rey	Culver City, Los Angeles, LA County, LACFCD
	North Santa Monica Bay Coastal Watersheds	LA County, Malibu, LACFCD
	Palos Verdes Peninsula EWMP Agencies	Palos Verdes Estates, Rancho Palos Verdes, Rolling Hills Estates, LA County, LACFCD
	Rio Hondo/San Gabriel River Water Quality Group	Arcadia, Azusa, Bradbury, Duarte, Monrovia, LA County, Sierra Madre, LACFCD
	Santa Monica Bay Watershed Jurisdictions 2 & 3	Los Angeles, El Segundo, Santa Monica, LA County, LACFCD
	Upper Los Angeles River Watershed	Alhambra, Burbank, Calabasas, Glendale, Hidden Hills, La Canada Flintridge, Los Angeles, Montebello, Monterey Park, Pasadena, Rosemead, San Gabriel, San Marino, South Pasadena, Temple City, LA County, LACFCD
	Upper San Gabriel River	Baldwin Park, Covina, Glendora, Industry, La Puente, LA County, LACFCD
	Upper Santa Clara River Watershed	LA County, Santa Clarita, LACFCD



1. Introduction

The LACFCD along with other applicable Permittees have submitted NOIs to the LARWQCB to develop EWMPs for 12 watershed groups, in accordance with the 2012 MS4 Permit, Order No. R4-2012-0175. The LARWQCB is responsible for approval of the final EWMPs in compliance with the MS4 Permit. Implementation of the EMWPs would occur following approval of the final plan. To begin preparing the EWMPs, the Permittees collaborated on, developed, and submitted Draft Work Plans to the LARWQCB, outlining the proposed approach to preparation of each of their respective EWMPs. The primary approach to each of the EWMPs, as identified in the Draft Work Plans, includes identifying community-friendly, cost-effective methods of reducing urban runoff pollution and incorporating distributed and centralized structural and nonstructural watershed control measures for a multi-pollutant, multi-benefit approach. The EWMPs will also evaluate multi-benefit regional projects that will retain (through infiltration or capture and reuse) the stormwater quality design volume (85th percentile storm for 24 hours) for the runoff from the contributing drainage area.

The proposed project includes the potential nonstructural (institutional) and distributed, centralized, and regional structural watershed control measures described in the Draft Work Plans and detailed in the EWMPs currently under preparation. These measures will be evaluated in the PEIR. The PEIR will provide a program-level assessment of the overall permit compliance effort, focusing particularly on the structural watershed control measures proposed in each of the 12 EWMP areas.

1.1 Project Location

The proposed program includes several watershed management groups of Los Angeles County, which include the following EWMP groups: Ballona Creek, Beach Cities, Dominguez Channel, Malibu Creek, Marina del Rey, North Santa Monica Bay Coastal Watersheds (NSMBCW), Palos Verdes Peninsula, Rio Hondo/San Gabriel River Water Quality Group (RH/SGRWQG), Santa Monica Bay, Upper Los Angeles River, Upper San Gabriel River, and Upper Santa Clara River. The geographic scope covered by each of these 12 EWMPs is described in further detail below and shown in Figure 1.

- Ballona Creek – The Ballona Creek EWMP area covers the Ballona Creek watershed. The Permittees within this EWMP are the Cities of Beverly Hills, West Hollywood, Los Angeles, Inglewood, Culver City, Santa Monica, and West Hollywood; County of Los Angeles; and LACFCD.

- Beach Cities – The Beach Cities EWMP area covers portions of three watersheds: Santa Monica Bay Watershed Jurisdictional Group (SMB JG) 5 & 6, Dominguez Channel Watershed, and Machado Lake Watershed. The Permittees within this EWMP are the Cities of Redondo Beach, Manhattan Beach, Hermosa Beach, and Torrance; and the LACFCD.

- Dominguez Channel – The Dominguez Channel EWMP area covers portions of three watersheds: Dominguez Channel Watershed, the Machado Lake Watershed, and the Los Angeles/Long Beach Harbors Watershed. The Permittees within this EWMP are the Cities of El Segundo, Hawthorne, Inglewood, Lomita, and Los Angeles; County of Los Angeles; and the LACFCD.

- Malibu Creek – The Malibu Creek Watershed (MCW) EWMP area covers the majority of the MCW. The Permittees within this EWMP are the Cities of Agoura Hills, Calabasas, Hidden Hills, , and Westlake Village; County of Los Angeles; and the LACFCD.

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- Marina del Rey – The Marina del Rey EWMP area covers the Marina del Rey Watershed. The Permittees within this EWMP are the Cities of Los Angeles and Culver City; County of Los Angeles; and LACFCD.

- North Santa Monica Bay – The NSMBCW EWMP area covers the SMB JG 1, SMB JG 4, and a portion of Malibu Creek within the City of Malibu's borders. The Permittees within this EWMP are the City of Malibu; County of Los Angeles; and LACFCD.

- Palos Verdes Peninsula – The Palos Verdes Peninsula watershed management area covers most of the SMB JG7, the Los Angeles Harbor subwatershed, and the Machado Lake subwatershed. The Permittees within this EWMP are the Cities of Rancho Palos Verdes, Palos Verdes Estates, and Rolling Hills Estates; County of Los Angeles; and LACFCD.

- Rio Hondo/San Gabriel River – The RH/SGRWQG EWMP area covers portions of the Los Angeles and San Gabriel River watersheds. The Permittees within this EWMP are the Cities of Arcadia, Azusa, Bradbury, Duarte, Monrovia, and Sierra Madre; County of Los Angeles; and LACFCD.

- Santa Monica Bay – The Santa Monica Bay EWMP area covers the central region of the Santa Monica Bay Watershed (SMB JG2 and SMB JG3) and includes the urbanized Dockweiler and Santa Monica subwatersheds, as well as natural open space located in the Castle Rock, Pulga Canyon, Temescal Canyon, and Santa Monica Canyon subwatersheds. The Permittees within this EWMP include the Cities of Los Angeles, Santa Monica, and El Segundo; County of Los Angeles; and LACFCD.

- Upper Los Angeles River – The Upper Los Angeles River EWMP area covers the upper reaches of the Los Angeles River Watershed. The Permittees within this EWMP are the Cities of Alhambra, Burbank, Calabasas, Glendale, Hidden Hills, La Cañada Flintridge, Los Angeles, Montebello, Monterey Park, Pasadena, Rosemead, San Gabriel, San Marino, South Pasadena, and Temple City; County of Los Angeles; and LACFCD.

- Upper San Gabriel River – The Upper San Gabriel River EWMP area covers portions of the San Gabriel River Watershed. The Permittees within this EWMP are the Cities of Baldwin Park, Covina, Glendora, Industry, and La Puente; County of Los Angeles; and LACFCD.

- Upper Santa Clara River – The Upper Santa Clara River EWMP area covers the Upper Santa Clara River Watershed. The Permittees within this EWMP are the City of Santa Clarita; County of Los Angeles; and LACFCD.

2. Background

2.1 Stormwater/Water Quality

MS4 discharges consist of stormwater and non-stormwater generated from municipal land uses that are ultimately discharged into surface waters throughout the region. The MS4 system includes curbs and gutters, man-made channels, catch basins, and storm drains throughout the Los Angeles region. Discharges may adversely affect receiving surface water quality with pollutants such as bacteria, nutrients (nitrogen and phosphorus), aluminum, copper, lead, zinc, diazinon, and cyanide. Aquatic toxicity, particularly during wet weather, is also a concern. Stormwater and non-stormwater discharges of debris and trash are also a pervasive water quality problem in the Los Angeles region. Pollutants in stormwater and non-stormwater may have damaging effects on both human health and aquatic ecosystems.

Water quality assessments conducted by the LARWQCB have identified impairment of beneficial uses of water bodies in the Los Angeles region possibly caused or contributed to by pollutant loading from municipal stormwater and non-stormwater discharges. The MS4 Permit described below is designed to reduce pollutant loads into local surface waters.

2.2 Total Maximum Daily Loads

The federal Clean Water Act (CWA), Section 303(d), requires states to identify waters that do not meet water quality standards despite the treatment by pollution-control technology. States are required not only to identify these “water quality limited segments” but also to prioritize such waters for the purpose of developing Total Maximum Daily Loads (TMDLs). A TMDL is defined as the “sum of the individual waste load allocations (WLAs) for point sources and load allocations for nonpoint sources and natural background” (40 CFR 130.2), such that the capacity of the water body to assimilate constituent loads (the loading capacity) is not exceeded. A TMDL represents an amount of pollution that can be released into a specific water body without causing a decline in water quality and impairment of beneficial uses. The TMDL also allocates the loads among current and future pollutant sources to the water body and forms the basis for WQBELs and RWLs assigned in NPDES permits. LARWQCB and United States Environmental Protection Agency (USEPA) have established 33 TMDLs that identify Los Angeles County MS4 discharges as one of the pollutant sources causing or contributing to these water quality impairments.

2.3 MS4 Permit

On November 8, 2012, the LARWQCB adopted the fourth NPDES MS4 Permit (Order No. R4-2012-0175) for discharges from the MS4 within the coastal watersheds of Los Angeles County. The MS4 Permit became effective on December 28, 2012. The 2012 MS4 Permit establishes the waste discharge requirement for stormwater and non-stormwater discharges within the watersheds of Los Angeles County. The MS4 Permit identifies conditions, requirements, and programs that municipalities must comply with to protect regional water resources from adverse impacts associated with pollutants in stormwater and urban runoff. The MS4 Permit contains effluent limitations, RWLs, Minimum Control Measures (MCMs), TMDL provisions, and outlines the process for developing watershed management programs, including the EWMP.

The 2012 MS4 Permit includes provisions that allow Permittees to voluntarily choose to implement an EWMP to achieve permit compliance with RWLs. The intent of the EWMP is to comprehensively evaluate opportunities, within the participating Permittees' collective jurisdictional boundaries, for collaboration among Permittees and other partners on multi-benefit regional projects that, wherever feasible, retain non-stormwater runoff and also address flood control and/or water supply. Twelve EWMP groups have formed to implement a collaborative approach to meeting the requirements of the 2012 MS4 Permit.

3. Enhanced Watershed Management Plans

The MS4 Permittees listed in Figure 1 submitted 12 NOIs for the development of 12 EWMPs to the LARWQCB. The 12 NOIs were approved by the LARWQCB. The 12 EWMPs being developed in Los Angeles County for the applicable watersheds have been a collaborative effort by the various EWMP agencies.

The EWMPs provide for their respective areas a comprehensive stormwater management plan that optimizes the stormwater and financial resources under the stewardship of the EWMP groups. The EWMPs include multi-benefit stormwater management projects that may also provide environmental, aesthetic, recreational, water supply, and/or other community enhancements in a cost-effective manner.

To begin preparing the EWMPs, the Permittees collaborated on, developed, and submitted Draft Work Plans to the LARWQCB, outlining the proposed approach to preparation of each of their respective EWMPs. The EWMP Work Plans establish the basis for the EWMPs. The EWMP Draft Work Plans describe the path that MS4 Permittees propose to complete the Watershed Management Program requirements of the 2012 MS4 Permit.

In accordance with the provisions of the MS4 permit, the work plans describe the following steps to EWMP development:

1. Identification of water quality priorities, including evaluation of existing water quality conditions, classification of pollutants, assessment of known and suspected pollutant sources in the watershed, and prioritization of water quality issues in the watershed

2. Characterization of existing and potential control measures within the watershed

3. Addressing the approach to incorporate reasonable assurance analysis (RAA) in the optimization of watershed control measures

The LARWQCB is responsible for approval or denial of the EWMPs in compliance with the MS4 Permit. Implementation of the EMWPs would occur following approval by the LARWQCB.

4. EWMP Watershed Control Measures

The MS4 Permit requires Permittees to identify strategies, control measures, and BMPs that will be implemented. Improvements to water quality will be achieved through implementation of watershed control measures that consist of both structural and nonstructural BMPs. BMPs vary in function and type, with each BMP providing unique design characteristics and benefits from implementation. Opportunities for BMP implementation are driven by locations where BMPs are feasible/desirable. The overarching goal of BMPs in the EWMPs is to reduce the impact of stormwater and non-stormwater on receiving water quality and to address water conservation and the water quality priorities. The development of the

EWMPs will involve the evaluation and selection of multiple BMP types, as described in the following pages.

4.1 Structural BMPs

Structural BMPs involve the construction of a physical control measure to alter the hydrology and/or water quality of incoming stormwater or non-stormwater. The three major functions for structural BMPs are infiltration, water quality treatment, and storage, as follows:

- Infiltration – Runoff is directed to percolate into the underlying soils. Infiltration generally reduces the volume of runoff and increases groundwater recharge.
- Water quality treatment – Pollutants are removed through various unit processes, including filtration, settling, sedimentation, sorption, straining, and biological or chemical transformations.
- Storage – Runoff is captured, stored (detained), and slowly released into downstream waters. Storage can reduce the peak flow rate from a site, but does not directly reduce runoff volume.

There are three categories of structural BMPs—regional, centralized, and distributed; they are defined by the runoff area treated by the BMP and the required retention volume in accordance with the Permit. Structural BMPs fall under a variety of subcategories that correspond to their function and water quality benefit. Each of these three categories is described below.

4.1.1 Regional Structural BMPs

"Regional EWMP projects" are defined by the MS4 Permit as multi-benefit regional projects that, wherever feasible, retain all non-stormwater runoff and all stormwater runoff from the 85th percentile, 24-hour storm event for the contributing drainage area, while also achieving other benefits such as flood control and/or water supply. Examples of regional structural BMPs include:

- Infiltration BMPs
  - Surface Infiltration BMPs (Infiltration Basins, Infiltration Trenches, Infiltration Galleries, and Bioretention-implemented as single or multiple types)
  - Multi-Directional Infiltration BMPs (Dry Wells, Hybrid Bioretention, and Dry Wells)
- Detention Basins (promote settling out of larger particles)
- Capture and Use BMPs (underground cisterns, storage, and use as irrigation)

Regional BMPs include infiltration facilities that promote groundwater recharge and detention facilities that encourage settling of larger particles in stormwater flows. Infiltration and detention regional BMPs can be either constructed as open-surface basins or subsurface galleries. Capture and Use BMPs collect and use stormwater where applicable for purposes such as irrigation. All of these BMP types must retain the required design storm volume without release into the MS4 or receiving waters.

Opportunities for Regional BMPs will be identified and evaluated within and across subwatersheds, with focus on the multi-benefit potential for capture and reuse of wet-weather flows within variable drainage areas. Availability of public land will be the first criteria for identifying the location and type of BMP. Potential project locations may include areas with open spaces, whether they are within parks, large parking lots, or vacant spaces.

Regional BMPs that may be included in the EWMPs will be identified and described further in the PEIR.

4.1.2 Centralized Structural BMPs

Centralized structural BMPs are constructed structural practices intended to treat runoff from a contributing area of multiple parcels. Generally, centralized structural BMPs are installed on large public parcels or adjacent to storm drain outfalls and receiving waters. Some examples of centralized structural BMPs include the following:

- Bioinfiltration BMPs (Bioretention with underdrain, bioinfiltration, highflow biotreatment, and raised underdrain, vegetated swales, filter strips—implemented as single or multiple types)
- Constructed wetlands (aboveground and belowground)
- Treatment BMPs/Low-flow diversion
- Creek/river/floodplain/estuary restoration

4.1.3 Distributed Structural BMPs

Distributed structural BMPs are constructed structural practices intended to treat runoff close to the source and are typically implemented at a single- or few-parcel level. The following list includes common distributed BMPs that can be implemented at the parcel level:

- Site scale detention (dry/wet detention ponds, detention chambers)
- Green infrastructure/Low Impact Development (LID)
  - Biofiltration
  - Bioretention
  - Porous/permeable pavers
  - Green streets
  - Infiltration BMPs
  - Bioswales/buffer strips
  - Planter boxes
  - Rainfall harvesting (green roofs, rain barrels, and cisterns)
- Flow-Through Treatment BMPs
  - Media/cartridge filters
  - High-flow biotreatment
- Source Control Treatment BMPs
  - Catch basin inserts/screens
  - Hydrodynamic separators
  - Gross solids removal devices (GSRDs)
  - Low flow diversions

4.2 Institutional BMPs/ Non-Structural Control Measures

These are policies, actions, and activities which are intended to prevent pollutants from entering stormwater runoff, thus eliminating the source of the pollutants. Most institutional BMPs are implemented to meet Minimum Control Measure (MCM) requirements in the MS4 permit; MCMs are considered a subset of institutional BMPs. MCMs do not involve construction of facilities that physically remove pollutants, but may involve costs associated with the procurement and installation of items such as signage or spill response kits. The six categories of MCMs outlined in the MS4 permit are as follows:

- Development Construction Program
- Planning and Land Development Program
- Industrial Commercial Facilities Control Program
- Illicit Connections and Illicit Discharges Detection and Elimination Program
- Public Agency Activities Program
- Public Information and Participation Program

Nonstructural BMPs or Institutional Controls are often implemented as programs or strategies which seek to prevent and/or reduce runoff and/or pollution close to the source. Nonstructural BMPs include but are not limited to:

- Irrigation control (runoff reduction) and water-efficient landscaping
- Brake pad replacement
- Covered trash receptacles
- Replacement of lead in wheel weights, or reduction in the copper content of brake pads
- Pet waste cleanup stations
- Street sweeping
- Catch basin cleaning
- Downspout disconnect program

The MS4 permit allows Permittees to customize MCMs to address high-priority water quality goals within their watersheds. Customization can range from eliminating an MCM (with the exception of the Planning and Land Development Program requirement), proposing actions within an MCM to target specific water quality issues, and increasing or decreasing activities within an MCM (with appropriate justification).

Because the LACFCD does not have jurisdictional authority for ordinance and code enactment or enforcement, they are limited in application of MCMs for Public Information and Participation Programs.

5. Potential Environmental Impacts

The LACFCD is considering having the PEIR evaluate the following preliminary listing of potential environmental issues. The environmental issues to be addressed will be finalized after the close of the public comment period and comments on the NOP are received.

The PEIR will focus on potential effects that could result from implementation of the projects and management actions identified in each EWMP. The PEIR will assess the physical changes to the environment that would likely result from the construction and operation of EWMP projects, including direct, indirect, and cumulative impacts. Potential impacts are summarized below. The PEIR will identify mitigation measures if necessary to minimize potentially significant impacts of each EWMP. The PEIR is anticipated to evaluate, at a minimum, the following preliminary listing of environmental issues.

Aesthetics

Potential direct and indirect impacts could occur both during construction and after the proposed EWMP facilities are built and operating. Potential issues associated with aesthetics in relation to the proposed EWMP BMPs could include obstruction of high-quality or important views during either construction or operation of EWMP BMPs, impacts to local character, or construction of facilities incompatible with local recreation facilities or open-space areas. The PEIR will identify the potential visible physical changes to the natural and man-made environment, including the addition of new BMPs into the viewshed (temporary and permanent) and the removal of other components from the view (i.e., blocking of views). The PEIR will also identify the potential effects of the proposed EWMP BMPs on the existing light, glare, shadow, and shade environments.

Air Quality

Construction and operation of EWMP projects could cause air emissions. Air emissions could result from construction equipment exhaust, ground disturbance during construction, material hauling, construction employee-commute travel, vehicle operational maintenance trips, and vehicle trips associated with any increases in employment. Operation of some of the proposed EWMP facilities may potentially generate emissions associated with energy use. The PEIR will evaluate the effects of construction and operational activities on air quality and also will develop mitigation measures if necessary to reduce potential impacts.

Biological Resources

Implementation of the EWMP projects could occur within existing sensitive habitats. The projects could result in changes to wildlife habitat, disruption of natural movement corridors, fragmentation or isolation of wildlife habitats, and disturbance of sensitive species during construction or operation. In particular, reduced flows in downstream segments resulting from runoff retention could alter riparian and aquatic habitats. The PEIR will evaluate the potential for such facilities to impact biological resources and will also discuss local ordinances and state and federal regulations governing biological resources.

Cultural Resources

The proposed EWMP BMPs would require construction of structural BMPs which could be above and/or below ground. Issues regarding cultural resources during construction activities could include disturbance of known or unknown archeological sites, paleontological resources, and/or human remains where groundbreaking activities occur as well as disturbance or alteration of structures with historical importance. The PEIR will assess the potential effects of the proposed EWMP BMPs on cultural resources, including archaeological, paleontological, and Native American resources. Mitigation measures will be identified if necessary to reduce the level of impact where possible.

Geology, Soils, and Seismicity

Southern Los Angeles County is a seismically active region. The proposed EWMP BMPs would require construction of structural BMPs that could be subject to potential seismic and geologic hazards, including ground shaking, liquefaction, soil stability conditions, soil erosion rates, expansive soils, and landslides. Policies provided in the County's General Plan and applicable standard County requirements will be evaluated as to their effect of mitigating or avoiding any potentially significant effects. The PEIR will identify mitigation measures if necessary to reduce potential adverse effects to proposed facilities.

Greenhouse Gas Emissions

Implementation of proposed EWMP BMPs could result in the generation of greenhouse gas (GHG) emissions associated with construction and operations. The PEIR will estimate construction-related emissions and long-term operational emissions, including total CO_2-equivalent emissions for evaluating the effects of GHGs. The PEIR will examine the project's effects on global climate change and evaluate consistency of the project with the State's GHG emissions reduction goals.

Hazards and Hazardous Materials

Excavation during construction of proposed EWMP BMPs could uncover contaminated soils or hazardous substances that pose a substantial hazard to human health or the environment. Construction activities could result in the release of hazardous materials. Potential hazards will be evaluated and assessed by reviewing the data collected by the California State Water Resources Control Board (SWRCB) GeoTracker and the California Department of Toxic Substances Control (DTSC) Envirostor databases. The policies provided in the County's General Plan and any standard County requirements will be evaluated as to their effect of mitigating or avoiding any potentially significant effects. The PEIR will evaluate the potential for EWMP projects to result in the release of hazardous materials. Mitigation measures will be proposed if necessary to reduce any significant effects of the project that may involve hazardous material issues to ensure that any hazards encountered during construction would be handled in accordance with applicable regulations.

Hydrology and Water Quality

Implementation of the proposed EWMP BMPs may change local drainage patterns at construction sites, which could affect the volume, quality, and rates of surface runoff that in turn could affect local surface water resources. Considered cumulatively, the proposed EWMP facilities may also change regional drainage patterns, which could affect the hydrology, hydraulics, and/or water quality of streams, rivers, and other receiving waters. The PEIR will identify relevant federal, state, and local regulations and agencies, including provisions of the federal Clean Water Act, the state Porter-Cologne Water Quality Control Act, and the permitting and regulatory authority of the RWQCB. The PEIR will identify stormwater quality protection measures required during construction and operation of proposed facilities. The PEIR also will evaluate potential impacts to flood control capacity and develop mitigation strategies if necessary to avoid significant impacts.

Implementation of the proposed EWMP BMPs would likely result in increased infiltration and recharge in various locations throughout the EWMP watersheds. Such activities could affect local groundwater levels and water quality. The PEIR will evaluate potential effects of increased storm water recharge and will identify mitigation measures if necessary to ensure that potentially necessary significant impacts are reduced or avoided.

Land Use and Recreation

Implementation of the proposed EWMP BMPs would include implementation of structural BMPs throughout the EWMP watershed areas. Issues associated with land use and planning could result from construction of new BMPs from the proposed EWMP. Issues associated with these components could include compatibility with adjacent land uses or zoning designations, consistency with relevant land use policies, and access to adjacent land during new construction or repairs of existing flood control or recharge facilities. The PEIR will evaluate the compatibility of the proposed EWMP BMPs with existing and planned land uses within the EWMP watershed areas.

Noise

Implementation of the proposed EWMP BMPs would require implementation of structural BMPs that would potentially generate noise and vibration. Construction activities that could be a significant source of noise and vibrations include trucking operations, use of heavy construction equipment (e.g., graders, cranes, and frontend loaders), pile driving activities, and blasting. Fixed sources of noise may include pumps and motors at pump stations. Construction noise and vibration impacts related to the proposed EWMP facilities will be evaluated at a program level. The PEIR will recommend mitigation strategies to ensure that proposed EWMP projects implemented by local agencies comply with local noise policies and ordinances.

Population and Housing/Growth Inducement

Implementation of the proposed EWMP BMPs will include implementation of structural and nonstructural BMPs that would improve water quality and increase stormwater infiltration. The proposed EWMP BMPs are unlikely to affect population and housing or induce growth. In addition, construction of the proposed EWMP BMPs or alteration of current facilities is not anticipated to lead to displacement or interruption of operation of businesses during construction. The PEIR will, however, identify current population and employment projections and identify local planning jurisdictions with the authority to approve growth and mitigate secondary effects of growth.

Public Services

Implementation of the proposed EWMP BMPs is unlikely to affect demand for public services, or, by itself, to require new or expanded facilities for public service providers. Potential issues related to the construction and operation of the proposed EWMP facilities include disruption or impediment of fire, police, or other emergency services to areas/facilities where proposed EWMP facilities would be constructed or operated. However, the PEIR will assess the potential for the proposed EWMP BMPs to affect police and fire protection services, schools, parks, and recreational facilities, such that new or expanded buildings or structures may be required that would, in turn, affect the environment.

Traffic and Transportation

Construction of the proposed EWMP BMPs could affect traffic on local roadways as a result of vehicle trips associated with hauling of material and equipment, road closures and detours, increased demand for parking to serve construction workers, and increase in traffic hazards caused by construction activities. The PEIR will evaluate the potential for additional construction vehicles, lane closures, or road closures to impact traffic and circulation. The PEIR will identify mitigation strategies to reduce any potential effects.

Utilities and Energy

Potential issues related to the construction and operation of the proposed BMPs include the disruption or impediment of service to areas where the proposed BMPs would be constructed or operated. Existing and projected regional supplies, demands, and facilities will be described along with any existing constraints, deficiencies, or service issues for the proposed EWMP BMPs. The PEIR will evaluate the project's potential to affect utilities and will identify mitigation measures to minimize the effects.

Implementation of the proposed EWMP BMPs would also result in implementation of watershed control measures that may potentially increase the amount of energy required locally to operate some of these BMPs. The PEIR will evaluate potential energy consumption associated with implementation of structural and nonstructural BMPs.

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BALLONA CREEK

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Sanitation Districts of LA County
1955 Workman Mill Road
Whittier, CA 90607-4998

Attn: Gregg Grammer
City of Rolling Hills Estates
4045 Palos Verdes Drive North
Rolling Hills Estates , California 90274

Attn: CEQA Review
Palos Verdes Land Conservancy
916 Silver Spur Rd Ste 207
Rolling Hills, CA 90274

Attn: Allan Rigg
City of Palos Verdes Estates
340 Palos Verdes Dr West,
Palos Verdes Estates, CA 90274

Attn: Andy Winje
City of Rancho Palos Verdes
30940 Hawthorne Blvd,
Rancho Palos Verdes, CA 90275

Attn: CEQA Review
LA County Parks
433 S Vermont Ave Fl 4
Los Angeles, CA 90020

Attn: CEQA Review
Heal the Bay
1444 9th Street
Santa Monica, CA 90401

RIO HONDO / SAN GABRIEL

Attn: CEQA Review
San Gabriel Valley Council of Governments
1000 S. Fremont Avenue Unit 42
Alhambra, CA 91803

Attn: Heather Maloney
City of Monrovia
600 South Mountain Avenue
Monrovia, CA 91016-3611

Attn: Carl E. Hassel
City of Azusa
213 E. Foothill Blvd.
Azusa, CA 91702

Attn: Michelle Keith
City of Bradbury
600 Winston Avenue
Bradbury, CA 91008

Attn: Vanessa Hevener
City of Arcadia
11800 Goldring Road
Post Office Box 60021
Arcadia, CA 91066-

Attn: CEQA Review
Metro Gold Line Foothill Extension Construction Authority
406 East Huntington Drive, Suite 202
Monrovia, California 91016

Attn: Bruce Iman
City of Sierra Madre
Public Works Department
232 West Sierra Madre Boulevard
Sierra Madre, CA 91024

Attn: Rafael Casillas
City of Duarte
1600 Huntington Drive
Duarte, CA
91010-2592

SANTA MONICA BAY

Attn: Stephanie Katsouleas
City of El Segundo
350 Main Street
El Segundo, CA 90245

UPPER LOS ANGELES RIVER

Attn: Elroy Kiepke
Willdan Engineering
13187 Crossroads Pkwy N, La Puente, CA 91746

Attn: John Hunter
John L Hunter and Associates
6131 Orangethorpe Ave Ste 350
Buena Park, CA

Attn: David Dolphin
City of Alhambra
111 South First Street
Alhambra, CA 91801

Attn: Alvin Cruz
City of Burbank
Public Works Department
150 N. Third St
Burbank, CA 91502

Attn: Maurice Oillataguerre
City of Gendale
633 East Broadway, Room 209
Glendale, CA 91206-4385

Attn: Steve Freeland
City of Hidden Hills
6165 Spring Valley Road
Hidden Hills, CA 91302

Attn: Edward Hitti
City of La Cañada Flintridge
1327 Foothill Blvd
La Cañada Flintridge, CA 91011

Attn: Norma Salinas
City of Montebello
1600 West Beverly Boulevard
Montebello, CA 90640-3932

Attn: Amy Ho
City of Monterey Park
320 West Newmark Avenue
Monterey Park, CA 91754-2896

Attn: Shin Furukawa
City of South Pasadena
Office of the City Manager
1414 Mission Street
South Pasadena, CA 91030

Attn: Stephen Walker
City of Pasadena
100 North Garfield Avenue N. 306
PO Box 7115
Pasadena, CA 91109-7215

Attn: Elroy Kiepke
City of Rosemead
8838 E. Valley Boulevard
PO Box 399
Rosemead, CA 91770

Attn: CEQA Review
City of San Fernando
San Fernando City Hall, 117 Macneil Street, San Fernando, CA 91340

Attn: Daren Grilley
City of San Gabriel
PO Box 130
San Gabriel, CA 91778-0130

Attn: Kevin Sales
City of San Marino
2200 Huntington Drive
San Marino, CA 91108

Attn: Mark Persico
City of Temple City
9701 Las Tunas Drive
Temple City, CA 91780-2249

UPPER SAN GABRIEL RIVER

Attn: Daniel Wall
City of Baldwin Park
14403 East Pacific Avenue
Baldwin Park, California 91706

Attn: David A. Davies
City of Glendora
116 E. Foothill Blvd
Glendora, CA 91741-3380

Attn: John D. Ballas
City of Industry
15625 Stafford St
City of Industry, CA 91744

Attn: Vivian Castro
City of Covina
Covina City Hall
125 E. College Street
Covina, CA 91723-2199

Attn: John Di Mario
La Puente City Hall
City of La Puente
15900 Main Street
La Puente CA 91744

UPPER SANTA CLARITA RIVER

Attn: CEQA Review
City of Santa Clarita
23920 Valencia Boulevard
Santa Clarita CA 91355

Appendix B

Scoping Report and Comment Letters

ESA

Scoping Report

Introduction and EWMP Overview

The Los Angeles County Flood Control District (LACFCD) is the Lead Agency for the proposed Enhanced Watershed Management Programs (EWMPs) Environmental Impact Report. The Los Angeles County Flood Control Act was adopted by the State Legislature in 1915 and established the LACFCD and empowered it to provide flood risk management, water conservation, and recreation and aesthetic enhancement within its boundaries. The LACFCD, the County of Los Angeles, and 84 incorporated cities within Los Angeles County (collectively referred to as Permittees) are covered under a Municipal Separate Storm Sewer System (MS4) Permit (Order No. R4-2012-0175; National Pollutant Discharge Elimination System [NPDES] Permit No. CAS004001) for the discharge of urban runoff to waters of the United States. The purpose of the MS4 Permit is to ensure Permittees are not causing or contributing to exceedances of water quality objectives or impairments of beneficial uses in the receiving waters of the Los Angeles region.

The 2012 MS4 Permit for Los Angeles County gives Permittees the option of implementing an innovative approach to MS4 Permit compliance through development of EWMPs. The LACFCD, along with participating Permittees, has opted to exercise this option and has submitted 12 separate Notices of Intent (NOIs) for the development of 12 EWMPs in their respective watershed groups to the Los Angeles Regional Water Quality Control Board (LARWQCB). The intent of the EWMP is to comprehensively evaluate opportunities for collaboration on multi-benefit regional projects that retain non-stormwater runoff and also address flood control and/or water supply within the participating Permittees' collective jurisdictional boundaries. The LARWQCB is responsible for approval of the EWMPs in compliance with the MS4 Permit. Implementation of the EMWPs would occur following approval by the LARWQCB.

The primary goals and objectives of the EWMPs are:

- To collaborate among agencies (Permittee jurisdictions) across the watershed to promote more cost-effective and multi-beneficial water quality improvement projects to comply with the MS4 Permit;
- To develop watershed-wide EWMPs that will, once implemented, remove or reduce pollutants from dry- and wet-weather urban runoff in a cost-effective manner; and
- To reduce the impact of stormwater and non-stormwater on receiving water quality.

Following the adoption of the MS4 permit by the RWQCB, Permittees in each EWMP area formed Watershed Management Groups (WMGs) to collaborate on the development of EWMPs. The proposed program includes several watershed management groups of Los Angeles County, covering the following EWMP areas: Ballona Creek, Beach Cities, Dominguez Channel, Malibu Creek, Marina del Rey, North Santa Monica Bay, Palos Verdes Peninsula, Rio Honda/San Gabriel River, Santa Monica Bay, Upper Los Angeles River, Upper San Gabriel River, and Upper Santa Clara River.

Notice of Preparation

Pursuant to Section 15082 of *CEQA Guidelines*, the lead agency is required to send a Notice of Preparation (NOP) stating that an EIR will be prepared to the State Office of Planning and Research (OPR), responsible and trustee agencies, and federal agencies involved in funding or approving the project. The NOP must provide sufficient information in order for responsible agencies to make a meaningful response. At a minimum, the NOP must include a description of the project, location of the project, and probable environmental effects of the project (*CEQA Guidelines*, Section 15082(a)(1)). Within 30 days after receiving the NOP, responsible and trustee agencies and OPR shall provide the lead agency with specific detail about the scope and content of the environmental information related to that agency's area of statutory responsibility that must be included in the draft EIR (*CEQA Guidelines*, Section 15082(b)).

A Notice of Preparation (NOP) was published by the LACFCD on August 29, 2014. The NOP was circulated to federal, state, and local agencies, as well as other interested parties, for a period of 30 days. The NOP was made available in print and electronic form, and the LACFCD accepted comments on the NOP for a 30-day period, closing on September 29, 2014. In addition, an email notification regarding the availability of the NOP was sent to over 700 interested EWMP stakeholders. Reports of email notification deliveries and bounce-backs are located in Attachment 3. A lack of comments from interested parties prompted LACFCD to extend the public comment period an additional 30 days; it ultimately closed on October 29, 2014. Additionally, the LACFCD posted a Twitter message regarding the comment period extension, and uploaded a recording of the Scoping Meeting Presentation to the project website, to augment the public outreach activities. The NOP was also made available on the project website: www.LACoH2Osheds.com. The NOP discussed the purpose of the EWMPs and their management strategies, identified the EWMP Study Areas, and provided a brief and preliminary list of environmental issue areas that could be impacted.

Table 1-1 provides a list of the commenters that sent comments on the NOP. The comment letters are located in Attachment 9.

TABLE 1-1
NOP COMMENTERS

	Date	Name	Organization
1	10/16/2014	Enrique Huerta	At-Large Stakeholder (Downey, CA)
2	10/23/2014	Enrique Huerta	At-Large Stakeholder (Downey, CA)
3	10/28/2014	George Ball	Citizen
4	10/29/2014	Jane Williams	Los Angeles County Arboretum
5	10/27/2014	Kenneth Hill	Los Angeles County Arboretum Foundation, President
6	10/23/2014	Marsha Perez	Citizen, Los Angeles County Arboretum
7	09/29/2014	Rex Frankel	Ballona Ecosystem Education Project, Director
8	10/29/2014	Rex Frankel	Ballona Ecosystem Education Project, Director
9	10/29/2014	Tom Williams	Sierra Club, Water Committee
10	10/08/2014	Elizabeth Byrne Debreu	Los Angeles Arboretum Foundation
11	09/29/2014	Dianna Watson	Department of Transportation
12	09/24/2014	Deirdre West	Metropolitan Water District

	Date	Name	Organization
13	09/25/2014	Katy Sanchez	NAHC
14	09/29/2014	Douglas Fay	Citizen
15	09/29/2014	Donna Murray	Citizen
16	09/29/2014	Joyce Dillard	Citizen
17	10/03/2014	Patricia McPherson	Grassroots Coalition
18	10/14/2014	Jane Florentinus	Citizen
19	10/29/2014	Dale Carter	Arboretum volunteer and docent
20	08/29/2014	Scott Morgan	State Clearinghouse

Scoping Meetings

Pursuant to *CEQA Guidelines* Section 15083, the LACFCD held three public scoping meetings on September 9, 10, and 15 of 2014 to receive comments on the NOP. The purpose of the meetings was to present the proposed EWMPs to the interested stakeholders and receive public input regarding the proposed scope of the PEIR analysis. Attendees were provided an opportunity to voice comments or concerns regarding potential effects of the program. The Scoping Meeting Presentation (Attachment 4), Sign-In Sheets (Attachment 5), and summary of verbal comments made at the meetings (Attachment 6) are found in this report.

The next formal opportunity for the public to comment on the proposed project will occur when the Draft PEIR is distributed for a 45-day review period, anticipated to occur between January and March of 2015.

Attachments to this Report

This Scoping Report contains documents pertinent to the scoping process. The following items are included:

Attachment 1: Notice of Preparation
Attachment 2: Notice of Completion
Attachment 3: Summary of NOP Availability Emails
Attachment 4: Scoping Meeting Presentation
Attachment 5: Scoping Meeting Sign-In Sheets
Attachment 6: Scoping Meeting Public Comments
Attachment 7: State Clearinghouse Distribution of NOP
Attachment 8: Comment Period Extension Letter
Attachment 9: Public Comment Letters Received

Attachment 1
Notice of Preparation

ORIGINAL FILED

AUG 29 2014

LOS ANGELES. COUNTY CLERK

Notice of Preparation

Date	August 29, 2014
To:	California Office of Planning and Research, Responsible and Trustee Agencies and Interested Parties
Subject:	Notice of Preparation of a Draft Program Environmental Impact Report
Project:	Enhanced Watershed Management Programs
Lead Agency:	Los Angeles County Flood Control District
Review Period:	August 29, 2014 through September 29, 2014

The Los Angeles County Flood Control District (LACFCD) will be the Lead Agency and will prepare a Program Environmental Impact Report (PEIR) for the project identified in this notice. We need to know the views of you or your agency as to the scope and content of the environmental information which is germane to your agency's statutory responsibilities in connection with the proposed project. This Notice of Preparation (NOP) has been prepared to notify agencies and interested parties that the LACFCD is beginning preparation of a PEIR pursuant to the California Environmental Quality Act (CEQA) for its proposed Enhanced Watershed Management Programs (EWMPs, or "program").

The Los Angeles County Flood Control Act was adopted by the State Legislature in 1915 and established the LACFCD and empowered it to provide flood risk management, water conservation, and recreation and aesthetic enhancement within its boundaries. The LACFCD is governed as a separate entity by the Board of Supervisors of the County of Los Angeles and is operated by the County's Department of Public Works. The LACFCD encompasses more than 3,000 square miles, 85 cities, and approximately 2.1 million land parcels. The LACFCD, the County of Los Angeles, and 84 incorporated cities within Los Angeles County (collectively referred to as Permittees) are covered under a Municipal Separate Storm Sewer System (MS4) Permit (Order No. R4-2012-0175; National Pollutant Discharge Elimination System [NPDES] Permit No. CAS004001) for the discharge of urban runoff to waters of the United States. The purpose of the MS4 Permit is to ensure Permittees are not causing or contributing to exceedances of water quality objectives or impairments of beneficial uses in the receiving waters of the Los Angeles region.

The 2012 MS4 Permit for Los Angeles County gives Permittees the option of implementing an innovative approach to Permit compliance through development of EWMPs. The LACFCD and participating Permittees have opted to exercise this option and have submitted 12 separate Notices of Intent (NOIs) for the development of 12 EWMPs in their respective watershed groups to the Los Angeles Regional Water Quality Control Board (LARWQCB). The LARWQCB is responsible for approval of the EWMPs in compliance with the MS4 Permit. Implementation of the EMWPs would occur following approval by the LARWQCB. The preparation of the 12 separate EWMPs will be a collective effort among the LACFCD and the applicable agencies in each respective EWMP. The 12 EWMPs will vary for each watershed group, but will generally provide the opportunity for Permittees to customize their stormwater programs to achieve compliance with applicable receiving water limitations (RWLs) and water-quality-based effluent limits (WQBELs) in accordance with the MS4 Permit through implementation of stormwater best management practices (BMPs) or watershed control measures. BMPs vary in function and type, with each BMP providing unique design characteristics and benefits from implementation. The overarching goal of BMPs in the EWMP is to reduce the impact of stormwater and non-stormwater on receiving water

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Lead Agency:	Los Angeles County Flood Control District
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quality and address the water quality priorities as defined by the MS4 Permit. The development of each EWMP will involve the evaluation and selection of multiple BMP types, including nonstructural (institutional) and distributed, centralized, and regional structural watershed control measures, that will be implemented to meet compliance goals and strategies under the 2012 MS4 Permit.

The LACFCD, as a regional agency charged with conserving stormwater for use in our local water supply, has a vested interest in increasing opportunities for stormwater capture and groundwater recharge. The LACFCD has flood control infrastructure in each of the EWMP areas and is participating in all 12 EWMPs. The LACFCD will be working with the applicable Permittees and other stakeholders in all 12 EWMP watersheds to develop the EWMPs, which will be implemented by the Permittees that have jurisdiction within each EWMP area. The Permittees implementing the projects defined in the EWMPs, or "implementing agencies," will vary between EWMPs and individual projects. The LACFCD will be an implementing agency only on those projects for which it has been identified in an EWMP as a responsible implementing party.

Project Location: The proposed program would be located in several watersheds of Los Angeles County and would include the following enhanced watershed management groups: Ballona Creek, Beach Cities, Dominguez Channel, Malibu Creek, Marina del Rey, North Santa Monica Bay Coastal Watersheds (NSMBCW), Palos Verdes Peninsula, Rio Hondo/San Gabriel River Water Quality Group (RH/SGRWQG), Santa Monica Bay, Upper Los Angeles River, Upper San Gabriel River, and Upper Santa Clara River. The project area is indicated in Figure 1.

Broad Range of Potential Benefits from EWMPs: If implemented, the proposed EWMP-generated benefits would include:

- Improved Water Quality
- Reduction in Impairment of Water Bodies for Designated Beneficial Uses
- Promotion of Water Conservation and Supply
- Enhanced Recreation Opportunities
- Support for Public Education Opportunities
- Improved Local Aesthetics
- Management of Flood Risks

Public Comments: The LACFCD is soliciting the views of interested persons and agencies as to the scope and content of the environmental information to be evaluated in the PEIR. In accordance with CEQA, agencies are requested to review the project description in this NOP and provide their comments on environmental issues related to the statutory responsibilities of the agency. The PEIR will be used by LACFCD's governing Board, the Los Angeles County Board of Supervisors, when considering approval of the proposed EWMPs as well as for any related discretionary approvals.

Due to the time limits mandated by state law, all comments to the NOP are due no later than September 29, 2014. Please send your comments to the address shown below. Include a return address or email address and a contact name in your agency with your comments.

Gregg BeGell, P.E.
County of Los Angeles Department of Public Works
Project Management Division II
900 South Fremont Avenue, 5th Floor
Alhambra, CA 91803
(626) 300-3298
gbegell@dpw.lacounty.gov

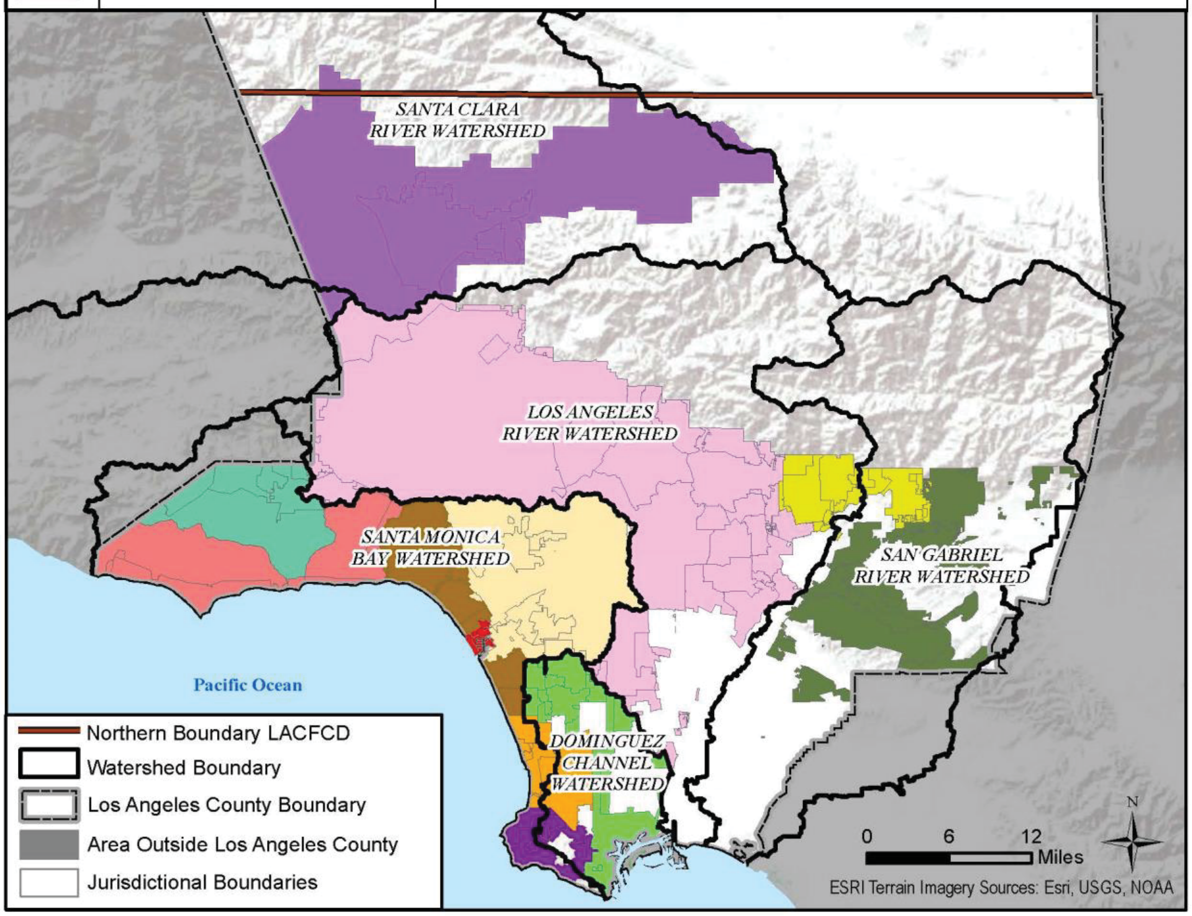
This NOP and other PEIR information, as it becomes available, can be accessed at:
www.LACoH2Osheds.com

Scoping Meetings: Three scoping meetings will be held to receive public comments regarding the scope and content of the PEIR. The scoping meetings will include a brief presentation providing an overview of the proposed program and the CEQA process. After the presentation, oral comments will be accepted. Written comment forms will be supplied for those who wish to submit comments in writing at the scoping meeting. Written comments also may be submitted anytime during the NOP review period. The scoping meetings will be held as follows:

DATE:	Tuesday, September 9, 2014
TIME:	6:00 P.M.
LOCATION:	Chace Park Community Room TBD 13650 Mindanao Way Marina del Rey, CA 90292
DATE:	Wednesday, September 10, 2014
TIME:	6:00 P.M.
LOCATION:	County of Los Angeles Department of Public Works 900 South Fremont Avenue First Floor Conference Room C Alhambra, CA 91803
DATE:	Monday, September 15, 2014
TIME:	6:30 P.M.
LOCATION:	K Dalton Room Community Center 119 W Palm Ave Monrovia, CA 91016

Figure 1: Overview EWMP Groups

Group Name		Cities/Permittees Involved
	Ballona Creek	Beverly Hills, Culver City, Inglewood, Los Angeles, Santa Monica, West Hollywood, LA County, LACFCD
	Beach Cities Watershed Management Group	Hermosa Beach, Manhattan Beach, Redondo Beach, Torrance, LACFCD
	Dominguez Channel Watershed Management Group	El Segundo, Hawthorne, Inglewood, Los Angeles, Lomita, LA County, LACFCD
	Malibu Creek Watershed	Agoura Hills, Calabasas, Hidden Hills, Westlake Village, LA County, LACFCD
	Marina del Rey	Culver City, Los Angeles, LA County, LACFCD
	North Santa Monica Bay Coastal Watersheds	LA County, Malibu, LACFCD
	Palos Verdes Peninsula EWMP Agencies	Palos Verdes Estates, Rancho Palos Verdes, Rolling Hills Estates, LA County, LACFCD
	Rio Hondo/San Gabriel River Water Quality Group	Arcadia, Azusa, Bradbury, Duarte, Monrovia, LA County, Sierra Madre, LACFCD
	Santa Monica Bay Watershed Jurisdictions 2 & 3	Los Angeles, El Segundo, Santa Monica, LA County, LACFCD
	Upper Los Angeles River Watershed	Alhambra, Burbank, Calabasas, Glendale, Hidden Hills, La Canada Flintridge, Los Angeles, Montebello, Monterey Park, Pasadena, Rosemead, San Gabriel, San Marino, South Pasadena, Temple City, LA County, LACFCD
	Upper San Gabriel River	Baldwin Park, Covina, Glendora, Industry, La Puente, LA County, LACFCD
	Upper Santa Clara River Watershed	LA County, Santa Clarita, LACFCD



1. Introduction

The LACFCD along with other applicable Permittees have submitted NOIs to the LARWQCB to develop EWMPs for 12 watershed groups, in accordance with the 2012 MS4 Permit, Order No. R4-2012-0175. The LARWQCB is responsible for approval of the final EWMPs in compliance with the MS4 Permit. Implementation of the EMWPs would occur following approval of the final plan. To begin preparing the EWMPs, the Permittees collaborated on, developed, and submitted Draft Work Plans to the LARWQCB, outlining the proposed approach to preparation of each of their respective EWMPs. The primary approach to each of the EWMPs, as identified in the Draft Work Plans, includes identifying community-friendly, cost-effective methods of reducing urban runoff pollution and incorporating distributed and centralized structural and nonstructural watershed control measures for a multi-pollutant, multi-benefit approach. The EWMPs will also evaluate multi-benefit regional projects that will retain (through infiltration or capture and reuse) the stormwater quality design volume (85^{th} percentile storm for 24 hours) for the runoff from the contributing drainage area.

The proposed project includes the potential nonstructural (institutional) and distributed, centralized, and regional structural watershed control measures described in the Draft Work Plans and detailed in the EWMPs currently under preparation. These measures will be evaluated in the PEIR. The PEIR will provide a program-level assessment of the overall permit compliance effort, focusing particularly on the structural watershed control measures proposed in each of the 12 EWMP areas.

1.1 Project Location

The proposed program includes several watershed management groups of Los Angeles County, which include the following EWMP groups: Ballona Creek, Beach Cities, Dominguez Channel, Malibu Creek, Marina del Rey, North Santa Monica Bay Coastal Watersheds (NSMBCW), Palos Verdes Peninsula, Rio Hondo/San Gabriel River Water Quality Group (RH/SGRWQG), Santa Monica Bay, Upper Los Angeles River, Upper San Gabriel River, and Upper Santa Clara River. The geographic scope covered by each of these 12 EWMPs is described in further detail below and shown in Figure 1.

- Ballona Creek – The Ballona Creek EWMP area covers the Ballona Creek watershed. The Permittees within this EWMP are the Cities of Beverly Hills, West Hollywood, Los Angeles, Inglewood, Culver City, Santa Monica, and West Hollywood; County of Los Angeles; and LACFCD.

- Beach Cities – The Beach Cities EWMP area covers portions of three watersheds: Santa Monica Bay Watershed Jurisdictional Group (SMB JG) 5 & 6, Dominguez Channel Watershed, and Machado Lake Watershed. The Permittees within this EWMP are the Cities of Redondo Beach, Manhattan Beach, Hermosa Beach, and Torrance; and the LACFCD.

- Dominguez Channel – The Dominguez Channel EWMP area covers portions of three watersheds: Dominguez Channel Watershed, the Machado Lake Watershed, and the Los Angeles/Long Beach Harbors Watershed. The Permittees within this EWMP are the Cities of El Segundo, Hawthorne, Inglewood, Lomita, and Los Angeles; County of Los Angeles; and the LACFCD.

- Malibu Creek – The Malibu Creek Watershed (MCW) EWMP area covers the majority of the MCW. The Permittees within this EWMP are the Cities of Agoura Hills, Calabasas, Hidden Hills, , and Westlake Village; County of Los Angeles; and the LACFCD.

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- Marina del Rey – The Marina del Rey EWMP area covers the Marina del Rey Watershed. The Permittees within this EWMP are the Cities of Los Angeles and Culver City; County of Los Angeles; and LACFCD.

- North Santa Monica Bay – The NSMBCW EWMP area covers the SMB JG 1, SMB JG 4, and a portion of Malibu Creek within the City of Malibu's borders. The Permittees within this EWMP are the City of Malibu; County of Los Angeles; and LACFCD.

- Palos Verdes Peninsula – The Palos Verdes Peninsula watershed management area covers most of the SMB JG7, the Los Angeles Harbor subwatershed, and the Machado Lake subwatershed. The Permittees within this EWMP are the Cities of Rancho Palos Verdes, Palos Verdes Estates, and Rolling Hills Estates; County of Los Angeles; and LACFCD.

- Rio Hondo/San Gabriel River – The RH/SGRWQG EWMP area covers portions of the Los Angeles and San Gabriel River watersheds. The Permittees within this EWMP are the Cities of Arcadia, Azusa, Bradbury, Duarte, Monrovia, and Sierra Madre; County of Los Angeles; and LACFCD.

- Santa Monica Bay – The Santa Monica Bay EWMP area covers the central region of the Santa Monica Bay Watershed (SMB JG2 and SMB JG3) and includes the urbanized Dockweiler and Santa Monica subwatersheds, as well as natural open space located in the Castle Rock, Pulga Canyon, Temescal Canyon, and Santa Monica Canyon subwatersheds. The Permittees within this EWMP include the Cities of Los Angeles, Santa Monica, and El Segundo; County of Los Angeles; and LACFCD.

- Upper Los Angeles River – The Upper Los Angeles River EWMP area covers the upper reaches of the Los Angeles River Watershed. The Permittees within this EWMP are the Cities of Alhambra, Burbank, Calabasas, Glendale, Hidden Hills, La Cañada Flintridge, Los Angeles, Montebello, Monterey Park, Pasadena, Rosemead, San Gabriel, San Marino, South Pasadena, and Temple City; County of Los Angeles; and LACFCD.

- Upper San Gabriel River – The Upper San Gabriel River EWMP area covers portions of the San Gabriel River Watershed. The Permittees within this EWMP are the Cities of Baldwin Park, Covina, Glendora, Industry, and La Puente; County of Los Angeles; and LACFCD.

- Upper Santa Clara River – The Upper Santa Clara River EWMP area covers the Upper Santa Clara River Watershed. The Permittees within this EWMP are the City of Santa Clarita; County of Los Angeles; and LACFCD.

2. Background

2.1 Stormwater/Water Quality

MS4 discharges consist of stormwater and non-stormwater generated from municipal land uses that are ultimately discharged into surface waters throughout the region. The MS4 system includes curbs and gutters, man-made channels, catch basins, and storm drains throughout the Los Angeles region. Discharges may adversely affect receiving surface water quality with pollutants such as bacteria, nutrients (nitrogen and phosphorus), aluminum, copper, lead, zinc, diazinon, and cyanide. Aquatic toxicity, particularly during wet weather, is also a concern. Stormwater and non-stormwater discharges of debris and trash are also a pervasive water quality problem in the Los Angeles region. Pollutants in stormwater and non-stormwater may have damaging effects on both human health and aquatic ecosystems.

Water quality assessments conducted by the LARWQCB have identified impairment of beneficial uses of water bodies in the Los Angeles region possibly caused or contributed to by pollutant loading from municipal stormwater and non-stormwater discharges. The MS4 Permit described below is designed to reduce pollutant loads into local surface waters.

2.2 Total Maximum Daily Loads

The federal Clean Water Act (CWA), Section 303(d), requires states to identify waters that do not meet water quality standards despite the treatment by pollution-control technology. States are required not only to identify these "water quality limited segments" but also to prioritize such waters for the purpose of developing Total Maximum Daily Loads (TMDLs). A TMDL is defined as the "sum of the individual waste load allocations (WLAs) for point sources and load allocations for nonpoint sources and natural background" (40 CFR 130.2), such that the capacity of the water body to assimilate constituent loads (the loading capacity) is not exceeded. A TMDL represents an amount of pollution that can be released into a specific water body without causing a decline in water quality and impairment of beneficial uses. The TMDL also allocates the loads among current and future pollutant sources to the water body and forms the basis for WQBELs and RWLs assigned in NPDES permits. LARWQCB and United States Environmental Protection Agency (USEPA) have established 33 TMDLs that identify Los Angeles County MS4 discharges as one of the pollutant sources causing or contributing to these water quality impairments.

2.3 MS4 Permit

On November 8, 2012, the LARWQCB adopted the fourth NPDES MS4 Permit (Order No. R4-2012-0175) for discharges from the MS4 within the coastal watersheds of Los Angeles County. The MS4 Permit became effective on December 28, 2012. The 2012 MS4 Permit establishes the waste discharge requirement for stormwater and non-stormwater discharges within the watersheds of Los Angeles County. The MS4 Permit identifies conditions, requirements, and programs that municipalities must comply with to protect regional water resources from adverse impacts associated with pollutants in stormwater and urban runoff. The MS4 Permit contains effluent limitations, RWLs, Minimum Control Measures (MCMs), TMDL provisions, and outlines the process for developing watershed management programs, including the EWMP.

The 2012 MS4 Permit includes provisions that allow Permittees to voluntarily choose to implement an EWMP to achieve permit compliance with RWLs. The intent of the EWMP is to comprehensively evaluate opportunities, within the participating Permittees' collective jurisdictional boundaries, for collaboration among Permittees and other partners on multi-benefit regional projects that, wherever feasible, retain non-stormwater runoff and also address flood control and/or water supply. Twelve EWMP groups have formed to implement a collaborative approach to meeting the requirements of the 2012 MS4 Permit.

3. Enhanced Watershed Management Plans

The MS4 Permittees listed in Figure 1 submitted 12 NOIs for the development of 12 EWMPs to the LARWQCB. The 12 NOIs were approved by the LARWQCB. The 12 EWMPs being developed in Los Angeles County for the applicable watersheds have been a collaborative effort by the various EWMP agencies.

The EWMPs provide for their respective areas a comprehensive stormwater management plan that optimizes the stormwater and financial resources under the stewardship of the EWMP groups. The EWMPs include multi-benefit stormwater management projects that may also provide environmental, aesthetic, recreational, water supply, and/or other community enhancements in a cost-effective manner.

To begin preparing the EWMPs, the Permittees collaborated on, developed, and submitted Draft Work Plans to the LARWQCB, outlining the proposed approach to preparation of each of their respective EWMPs. The EWMP Work Plans establish the basis for the EWMPs. The EWMP Draft Work Plans describe the path that MS4 Permittees propose to complete the Watershed Management Program requirements of the 2012 MS4 Permit.

In accordance with the provisions of the MS4 permit, the work plans describe the following steps to EWMP development:

1. Identification of water quality priorities, including evaluation of existing water quality conditions, classification of pollutants, assessment of known and suspected pollutant sources in the watershed, and prioritization of water quality issues in the watershed
2. Characterization of existing and potential control measures within the watershed
3. Addressing the approach to incorporate reasonable assurance analysis (RAA) in the optimization of watershed control measures

The LARWQCB is responsible for approval or denial of the EWMPs in compliance with the MS4 Permit. Implementation of the EMWPs would occur following approval by the LARWQCB.

4. EWMP Watershed Control Measures

The MS4 Permit requires Permittees to identify strategies, control measures, and BMPs that will be implemented. Improvements to water quality will be achieved through implementation of watershed control measures that consist of both structural and nonstructural BMPs. BMPs vary in function and type, with each BMP providing unique design characteristics and benefits from implementation. Opportunities for BMP implementation are driven by locations where BMPs are feasible/desirable. The overarching goal of BMPs in the EWMPs is to reduce the impact of stormwater and non-stormwater on receiving water quality and to address water conservation and the water quality priorities. The development of the

EWMPs will involve the evaluation and selection of multiple BMP types, as described in the following pages.

4.1 Structural BMPs

Structural BMPs involve the construction of a physical control measure to alter the hydrology and/or water quality of incoming stormwater or non-stormwater. The three major functions for structural BMPs are infiltration, water quality treatment, and storage, as follows:

- Infiltration – Runoff is directed to percolate into the underlying soils. Infiltration generally reduces the volume of runoff and increases groundwater recharge.
- Water quality treatment – Pollutants are removed through various unit processes, including filtration, settling, sedimentation, sorption, straining, and biological or chemical transformations.
- Storage – Runoff is captured, stored (detained), and slowly released into downstream waters. Storage can reduce the peak flow rate from a site, but does not directly reduce runoff volume.

There are three categories of structural BMPs—regional, centralized, and distributed; they are defined by the runoff area treated by the BMP and the required retention volume in accordance with the Permit. Structural BMPs fall under a variety of subcategories that correspond to their function and water quality benefit. Each of these three categories is described below.

4.1.1 Regional Structural BMPs

"Regional EWMP projects" are defined by the MS4 Permit as multi-benefit regional projects that, wherever feasible, retain all non-stormwater runoff and all stormwater runoff from the 85th percentile, 24-hour storm event for the contributing drainage area, while also achieving other benefits such as flood control and/or water supply. Examples of regional structural BMPs include:

- Infiltration BMPs
  - Surface Infiltration BMPs (Infiltration Basins, Infiltration Trenches, Infiltration Galleries, and Bioretention-implemented as single or multiple types)
  - Multi-Directional Infiltration BMPs (Dry Wells, Hybrid Bioretention, and Dry Wells)
- Detention Basins (promote settling out of larger particles)
- Capture and Use BMPs (underground cisterns, storage, and use as irrigation)

Regional BMPs include infiltration facilities that promote groundwater recharge and detention facilities that encourage settling of larger particles in stormwater flows. Infiltration and detention regional BMPs can be either constructed as open-surface basins or subsurface galleries. Capture and Use BMPs collect and use stormwater where applicable for purposes such as irrigation. All of these BMP types must retain the required design storm volume without release into the MS4 or receiving waters.

Opportunities for Regional BMPs will be identified and evaluated within and across subwatersheds, with focus on the multi-benefit potential for capture and reuse of wet-weather flows within variable drainage areas. Availability of public land will be the first criteria for identifying the location and type of BMP. Potential project locations may include areas with open spaces, whether they are within parks, large parking lots, or vacant spaces.

Regional BMPs that may be included in the EWMPs will be identified and described further in the PEIR.

4.1.2 Centralized Structural BMPs

Centralized structural BMPs are constructed structural practices intended to treat runoff from a contributing area of multiple parcels. Generally, centralized structural BMPs are installed on large public parcels or adjacent to storm drain outfalls and receiving waters. Some examples of centralized structural BMPs include the following:

- Bioinfiltration BMPs (Bioretention with underdrain, bioinfiltration, highflow biotreatment, and raised underdrain, vegetated swales, filter strips—implemented as single or multiple types)
- Constructed wetlands (aboveground and belowground)
- Treatment BMPs/Low-flow diversion
- Creek/river/floodplain/estuary restoration

4.1.3 Distributed Structural BMPs

Distributed structural BMPs are constructed structural practices intended to treat runoff close to the source and are typically implemented at a single- or few-parcel level. The following list includes common distributed BMPs that can be implemented at the parcel level:

- Site scale detention (dry/wet detention ponds, detention chambers)
- Green infrastructure/Low Impact Development (LID)
    - Biofiltration
    - Bioretention
    - Porous/permeable pavers
    - Green streets
    - Infiltration BMPs
    - Bioswales/buffer strips
    - Planter boxes
    - Rainfall harvesting (green roofs, rain barrels, and cisterns)
- Flow-Through Treatment BMPs
    - Media/cartridge filters
    - High-flow biotreatment
- Source Control Treatment BMPs
    - Catch basin inserts/screens
    - Hydrodynamic separators
    - Gross solids removal devices (GSRDs)
    - Low flow diversions

4.2 Institutional BMPs/ Non-Structural Control Measures

These are policies, actions, and activities which are intended to prevent pollutants from entering stormwater runoff, thus eliminating the source of the pollutants. Most institutional BMPs are implemented to meet Minimum Control Measure (MCM) requirements in the MS4 permit; MCMs are considered a subset of institutional BMPs. MCMs do not involve construction of facilities that physically remove pollutants, but may involve costs associated with the procurement and installation of items such as signage or spill response kits. The six categories of MCMs outlined in the MS4 permit are as follows:

- Development Construction Program
- Planning and Land Development Program
- Industrial Commercial Facilities Control Program
- Illicit Connections and Illicit Discharges Detection and Elimination Program
- Public Agency Activities Program
- Public Information and Participation Program

Nonstructural BMPs or Institutional Controls are often implemented as programs or strategies which seek to prevent and/or reduce runoff and/or pollution close to the source. Nonstructural BMPs include but are not limited to:

- Irrigation control (runoff reduction) and water-efficient landscaping
- Brake pad replacement
- Covered trash receptacles
- Replacement of lead in wheel weights, or reduction in the copper content of brake pads
- Pet waste cleanup stations
- Street sweeping
- Catch basin cleaning
- Downspout disconnect program

The MS4 permit allows Permittees to customize MCMs to address high-priority water quality goals within their watersheds. Customization can range from eliminating an MCM (with the exception of the Planning and Land Development Program requirement), proposing actions within an MCM to target specific water quality issues, and increasing or decreasing activities within an MCM (with appropriate justification).

Because the LACFCD does not have jurisdictional authority for ordinance and code enactment or enforcement, they are limited in application of MCMs for Public Information and Participation Programs.

5. Potential Environmental Impacts

The LACFCD is considering having the PEIR evaluate the following preliminary listing of potential environmental issues. The environmental issues to be addressed will be finalized after the close of the public comment period and comments on the NOP are received.

The PEIR will focus on potential effects that could result from implementation of the projects and management actions identified in each EWMP. The PEIR will assess the physical changes to the environment that would likely result from the construction and operation of EWMP projects, including direct, indirect, and cumulative impacts. Potential impacts are summarized below. The PEIR will identify mitigation measures if necessary to minimize potentially significant impacts of each EWMP. The PEIR is anticipated to evaluate, at a minimum, the following preliminary listing of environmental issues.

Aesthetics

Potential direct and indirect impacts could occur both during construction and after the proposed EWMP facilities are built and operating. Potential issues associated with aesthetics in relation to the proposed EWMP BMPs could include obstruction of high-quality or important views during either construction or operation of EWMP BMPs, impacts to local character, or construction of facilities incompatible with local recreation facilities or open-space areas. The PEIR will identify the potential visible physical changes to the natural and man-made environment, including the addition of new BMPs into the viewshed (temporary and permanent) and the removal of other components from the view (i.e., blocking of views). The PEIR will also identify the potential effects of the proposed EWMP BMPs on the existing light, glare, shadow, and shade environments.

Air Quality

Construction and operation of EWMP projects could cause air emissions. Air emissions could result from construction equipment exhaust, ground disturbance during construction, material hauling, construction employee-commute travel, vehicle operational maintenance trips, and vehicle trips associated with any increases in employment. Operation of some of the proposed EWMP facilities may potentially generate emissions associated with energy use. The PEIR will evaluate the effects of construction and operational activities on air quality and also will develop mitigation measures if necessary to reduce potential impacts.

Biological Resources

Implementation of the EWMP projects could occur within existing sensitive habitats. The projects could result in changes to wildlife habitat, disruption of natural movement corridors, fragmentation or isolation of wildlife habitats, and disturbance of sensitive species during construction or operation. In particular, reduced flows in downstream segments resulting from runoff retention could alter riparian and aquatic habitats. The PEIR will evaluate the potential for such facilities to impact biological resources and will also discuss local ordinances and state and federal regulations governing biological resources.

Cultural Resources

The proposed EWMP BMPs would require construction of structural BMPs which could be above and/or below ground. Issues regarding cultural resources during construction activities could include disturbance of known or unknown archeological sites, paleontological resources, and/or human remains where groundbreaking activities occur as well as disturbance or alteration of structures with historical importance. The PEIR will assess the potential effects of the proposed EWMP BMPs on cultural resources, including archaeological, paleontological, and Native American resources. Mitigation measures will be identified if necessary to reduce the level of impact where possible.

Geology, Soils, and Seismicity

Southern Los Angeles County is a seismically active region. The proposed EWMP BMPs would require construction of structural BMPs that could be subject to potential seismic and geologic hazards, including ground shaking, liquefaction, soil stability conditions, soil erosion rates, expansive soils, and landslides. Policies provided in the County's General Plan and applicable standard County requirements will be evaluated as to their effect of mitigating or avoiding any potentially significant effects. The PEIR will identify mitigation measures if necessary to reduce potential adverse effects to proposed facilities.

Greenhouse Gas Emissions

Implementation of proposed EWMP BMPs could result in the generation of greenhouse gas (GHG) emissions associated with construction and operations. The PEIR will estimate construction-related emissions and long-term operational emissions, including total CO_2-equivalent emissions for evaluating the effects of GHGs. The PEIR will examine the project's effects on global climate change and evaluate consistency of the project with the State's GHG emissions reduction goals.

Hazards and Hazardous Materials

Excavation during construction of proposed EWMP BMPs could uncover contaminated soils or hazardous substances that pose a substantial hazard to human health or the environment. Construction activities could result in the release of hazardous materials. Potential hazards will be evaluated and assessed by reviewing the data collected by the California State Water Resources Control Board (SWRCB) GeoTracker and the California Department of Toxic Substances Control (DTSC) Envirostor databases. The policies provided in the County's General Plan and any standard County requirements will be evaluated as to their effect of mitigating or avoiding any potentially significant effects. The PEIR will evaluate the potential for EWMP projects to result in the release of hazardous materials. Mitigation measures will be proposed if necessary to reduce any significant effects of the project that may involve hazardous material issues to ensure that any hazards encountered during construction would be handled in accordance with applicable regulations.

Hydrology and Water Quality

Implementation of the proposed EWMP BMPs may change local drainage patterns at construction sites, which could affect the volume, quality, and rates of surface runoff that in turn could affect local surface water resources. Considered cumulatively, the proposed EWMP facilities may also change regional drainage patterns, which could affect the hydrology, hydraulics, and/or water quality of streams, rivers, and other receiving waters. The PEIR will identify relevant federal, state, and local regulations and agencies, including provisions of the federal Clean Water Act, the state Porter-Cologne Water Quality Control Act, and the permitting and regulatory authority of the RWQCB. The PEIR will identify stormwater quality protection measures required during construction and operation of proposed facilities. The PEIR also will evaluate potential impacts to flood control capacity and develop mitigation strategies if necessary to avoid significant impacts.

Implementation of the proposed EWMP BMPs would likely result in increased infiltration and recharge in various locations throughout the EWMP watersheds. Such activities could affect local groundwater levels and water quality. The PEIR will evaluate potential effects of increased storm water recharge and will identify mitigation measures if necessary to ensure that potentially necessary significant impacts are reduced or avoided.

Land Use and Recreation

Implementation of the proposed EWMP BMPs would include implementation of structural BMPs throughout the EWMP watershed areas. Issues associated with land use and planning could result from construction of new BMPs from the proposed EWMP. Issues associated with these components could include compatibility with adjacent land uses or zoning designations, consistency with relevant land use policies, and access to adjacent land during new construction or repairs of existing flood control or recharge facilities. The PEIR will evaluate the compatibility of the proposed EWMP BMPs with existing and planned land uses within the EWMP watershed areas.

Noise

Implementation of the proposed EWMP BMPs would require implementation of structural BMPs that would potentially generate noise and vibration. Construction activities that could be a significant source of noise and vibrations include trucking operations, use of heavy construction equipment (e.g., graders, cranes, and frontend loaders), pile driving activities, and blasting. Fixed sources of noise may include pumps and motors at pump stations. Construction noise and vibration impacts related to the proposed EWMP facilities will be evaluated at a program level. The PEIR will recommend mitigation strategies to ensure that proposed EWMP projects implemented by local agencies comply with local noise policies and ordinances.

Population and Housing/Growth Inducement

Implementation of the proposed EWMP BMPs will include implementation of structural and nonstructural BMPs that would improve water quality and increase stormwater infiltration. The proposed EWMP BMPs are unlikely to affect population and housing or induce growth. In addition, construction of the proposed EWMP BMPs or alteration of current facilities is not anticipated to lead to displacement or interruption of operation of businesses during construction. The PEIR will, however, identify current population and employment projections and identify local planning jurisdictions with the authority to approve growth and mitigate secondary effects of growth.

Public Services

Implementation of the proposed EWMP BMPs is unlikely to affect demand for public services, or, by itself, to require new or expanded facilities for public service providers. Potential issues related to the construction and operation of the proposed EWMP facilities include disruption or impediment of fire, police, or other emergency services to areas/facilities where proposed EWMP facilities would be constructed or operated. However, the PEIR will assess the potential for the proposed EWMP BMPs to affect police and fire protection services, schools, parks, and recreational facilities, such that new or expanded buildings or structures may be required that would, in turn, affect the environment.

Traffic and Transportation

Construction of the proposed EWMP BMPs could affect traffic on local roadways as a result of vehicle trips associated with hauling of material and equipment, road closures and detours, increased demand for parking to serve construction workers, and increase in traffic hazards caused by construction activities. The PEIR will evaluate the potential for additional construction vehicles, lane closures, or road closures to impact traffic and circulation. The PEIR will identify mitigation strategies to reduce any potential effects.

Utilities and Energy

Potential issues related to the construction and operation of the proposed BMPs include the disruption or impediment of service to areas where the proposed BMPs would be constructed or operated. Existing and projected regional supplies, demands, and facilities will be described along with any existing constraints, deficiencies, or service issues for the proposed EWMP BMPs. The PEIR will evaluate the project's potential to affect utilities and will identify mitigation measures to minimize the effects.

Implementation of the proposed EWMP BMPs would also result in implementation of watershed control measures that may potentially increase the amount of energy required locally to operate some of these BMPs. The PEIR will evaluate potential energy consumption associated with implementation of structural and nonstructural BMPs.

Attachment 2
Notice of Completion

ESA

Notice of Completion & Environmental Document Transmittal

Mail to: State Clearinghouse, P. O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

SCH # ____________

Project Title: Enhanced Watershed Management Programs (EWMP) Program EIR

Lead Agency: Los Angeles County Flood Control District (LACFCD) | Contact Person: Gregg BeGell
Mailing Address: 900 South Fremont Avenue, 11th Floor | Phone: (626) 300-3298
City: Alhambra | Zip: 91803 | County: Los Angeles

Project Location: County: Los Angeles | City/Nearest Community: Greater Los Angeles Area
Cross Streets: Throughout Los Angeles County | Zip Code: Other
Lat. / Long.: Other N/ Other W | Total Acres: Various
Assessor's Parcel No.: Various throughout Los Angeles County | Section: Various | Twp.: Various | Range: Various | Base: Various
Within 2 Miles: State Hwys #: 1, 2, 19, 27, 47, 60, 90, 91, 101, 103, 107, 187 | Waterways: Ballona Creek, Los Angeles River, San Gabriel River, Santa Clara River, Malibu Creek, Dominguez Channel, Santa Monica Bay and Marina del Rey
Airports: LAX, Burbank | Railways: Throughout LA County | Schools: Throughout LA County

RECEIVED
AUG 29 2014
STATE CLEARING HOUSE

Document Type:

CEQA: ☒ NOP ☐ Early Cons ☐ Neg Dec ☐ Mit Neg Dec ☐ Draft EIR ☐ Supplement/Subsequent EIR (Prior SCH No.) ____ Other ____
NEPA: ☐ NOI ☐ EA ☐ Draft EIS ☐ FONSI
Other: ☐ Joint Document ☐ Final Document ☐ Other ____

Local Action Type:

☐ General Plan Update ☐ General Plan Amendment ☐ General Plan Element ☐ Community Plan ☒ Other: MS4 Compliance Projects
☐ Specific Plan ☐ Master Plan ☐ Planned Unit Development ☐ Site Plan
☐ Rezone ☐ Prezone ☐ Use Permit ☐ Land Division (Subdivision, etc.)
☐ Annexation ☐ Redevelopment ☐ Coastal Permit

Development Type:

☐ Residential: Units ____ Acres ____
☐ Office: Sq.ft. ____ Acres ____ Employees ____
☐ Commercial: Sq.ft. ____ Acres ____ Employees ____
☐ Industrial: Sq.ft. ____ Acres ____ Employees ____
☐ Educational ____
☐ Recreational ____
☒ Water Facilities: Type Stormwater MGD ____
☐ Transportation: Type ____
☐ Mining: Mineral ____
☐ Power: Type ____ MW ____
☐ Waste Treatment: Type ____ MGD ____
☐ Hazardous Waste: Type ____
☐ Other: ____

Project Issues Discussed in Document:

☒ Aesthetic/Visual
☒ Agricultural Land
☒ Air Quality
☒ Archeological/Historical
☒ Biological Resources
☐ Coastal Zone
☒ Drainage/Absorption
☐ Economic/Jobs
☐ Fiscal
☒ Flood Plain/Flooding
☐ Forest Land/Fire Hazard
☒ Geologic/Seismic
☒ Minerals
☒ Noise
☒ Population/Housing Balance
☒ Public Services/Facilities
☒ Recreation/Parks
☐ Schools/Universities
☐ Septic Systems
☐ Sewer Capacity
☒ Soil Erosion/Compaction/Grading
☐ Solid Waste
☒ Toxic/Hazardous
☒ Traffic/Circulation
☒ Vegetation
☒ Water Quality
☒ Water Supply/Groundwater
☒ Wetland/Riparian
☒ Wildlife
☐ Growth Inducing
☒ Land Use
☒ Cumulative Effects
☒ Other Cultural Resources

Present Land Use/Zoning/General Plan Designation:

Various land uses throughout the County.

Project Description: *(please use a separate page if necessary)*

The development of the EWMP will involve the evaluation and selection of multiple watershed control measures or best management practices (BMP) types including non-structural and distributed, centralized and regional structural BMPs. These BMPs will be implemented to meet compliance goals and strategies under the 2012 MS4 Permit. Structural BMPs involve the construction of a physical control measure to alter the hydrology and/or water quality of incoming stormwater or non-stormwater. The three major functions for structural BMPs are infiltration, water quality treatment, and storage. There are three categories of structural BMPs, defined by the runoff area treated by the BMP and the required retention volume in accordance with the Permit. "Regional EWMP projects" are defined by the MS4 Permit as multi-benefit regional projects that, wherever feasible, retain all non-storm water runoff and all storm water runoff from the 85th percentile, 24-hour storm event for the contributing drainage areas, while also achieving other benefits including flood control and/or water supply. These structural BMPs are defined as "regional" BMPs based on this Permit retention requirement. Example of regional structural BMPs include infiltration BMPs, detention basins and capture and use BMPs. Centralized structural BMPs capture and treat stormwater from a contributing area of multiple parcels, and include bio-infiltration BMPs, constructed wetlands, and creek/stream restoration projects. Generally, centralized BMPs are installed on large public parcels or adjacent to storm drain outfalls and receiving waters. Distributed structural BMPs are constructed structural practices intended to treat runoff close to the source and are typically implemented at a single- or few-parcel level.

Reviewing Agencies Checklist

Lead Agencies may recommend State Clearinghouse distribution by marking agencies below with and "X".
If you have already sent your document to the agency please denote that with an "S".

	Air Resources Board		Office of Emergency Services
	Boating & Waterways, Department of		Office of Historic Preservation
	California Highway Patrol		Office of Public School Construction
	CalFire	S	Parks & Recreation
S	Caltrans District # 7		Pesticide Regulation, Department of
	Caltrans Division of Aeronautics		Public Utilities Commission
	Caltrans Planning (Headquarters)	S	Regional WQCB # 4
	Central Valley Flood Protection Board		Resources Agency
	Coachella Valley Mountains Conservancy		S.F. Bay Conservation & Development Commission
	Coastal Commission	X	San Gabriel & Lower L.A. Rivers and Mtns Conservancy
	Colorado River Board		San Joaquin River Conservancy
	Conservation, Department of	X	Santa Monica Mountains Conservancy
	Corrections, Department of		State Lands Commission
	Delta Protection Commission		SWRCB: Clean Water Grants
	Education, Department of	X	SWRCB: Water Quality
	Energy Commission		SWRCB: Water Rights
S	Fish & Game Region # South Coast Region		Tahoe Regional Planning Agency
	Food & Agriculture, Department of	S	Toxic Substances Control, Department of
	General Services, Department of		Water Resources, Department of
S	Health Services, Department of		
	Housing & Community Development	S	Other County of Los Angeles, Board of Supervisors Dist 1, 2, 3, 4, 5
	Integrated Waste Management Board		

Local Public Review Period (to be filled in by lead agency)

Starting Date 8/29/2014 Ending Date 9/29/2014

Lead Agency (Complete if applicable):

Consulting Firm: Environmental Science Associates
Address: 626 Wilshire Blvd.
City/State/Zip: Los Angeles/CA/90017
Contact: David Pohl
Phone: (213) 599-4300

Applicant: Los Angeles County Flood Control District (LACFCD)
Address: 900 S Fremont Ave
City/State/Zip: Alhambra/CA/91803
Phone: 626-458-4300

Signature of Lead Agency Representative: Angela R. George **Date:** 8/28/2014

Authority cited: Section 21083, Public Resources Code. Reference: Section 21161, Public Resources Code.

Attachment 3
Summary of NOP Availability Emails

Email address - other	Email Lists	Source Name	Created At	Updated At	Opened At
llee@dpw.lacounty.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/15/2014 9:46am
diane.marcussen@altadenatowncouncil.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/12/2014 6:03pm
alfredo.magallanes@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/12/2014 5:36pm
angeles.chapter@sierraclub.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/12/2014 5:11pm
srobinson@jlha.net	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/12/2014 12:36pm
rasmusjb@bv.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	9/11/2014 7:10pm
andrea.crumpacker@westonsolutions.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	9/11/2014 3:48pm
rlaveaga@cityofpasadena.net	LACFC EWMP PEIRS,MIG eNews External		10/10/2013 10:56	8/29/2014 14:55	9/11/2014 12:32pm
twest@carollo.com	LACFC EWMP PEIRS,CWCB Updates		2/8/2013 17:43	8/29/2014 14:55	9/11/2014 11:16am
bobbigold@ucla.edu	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/10/2014 8:01pm
info@adtowncouncil.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/10/2014 8:00pm
atwater.richard@gmail.com	LACFC EWMP PEIRS,CWCB Updates		2/12/2013 13:54	8/29/2014 14:18	9/10/2014 5:37pm
dbloome@treepeople.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	9/10/2014 5:06pm
petra.schneider@netzero.net	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/10/2014 3:17pm
sandiaennis@castaicareatowncouncil.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/10/2014 2:22pm
tmm@arroyoseco.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/10/2014 12:36pm
greg.good@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/9/2014 7:50pm
cicwater@gmail.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/9/2014 12:46pm
mklee@jlha.net	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/9/2014 10:52am
tavalos@dpw.lacounty.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/9/2014 10:23am
andyw@rpv.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/8/2014 8:31pm
lenny@lcwstewards.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/8/2014 7:11pm
tlee@cityofinglewood.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/8/2014 6:54pm
maria.agustin@dot.ca.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/8/2014 4:07pm
environment@asnc.us	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/8/2014 3:03pm
razz.berry@verizon.net	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/8/2014 2:34pm
kcurtis@portla.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	9/8/2014 1:05pm
jthorsen@malibucity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/8/2014 12:22pm
danielle.sevilla@gmail.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	9/8/2014 11:28am
davejohnson@sgvmwd.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/8/2014 9:44am
winter@theriverproject.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	9/6/2014 4:20pm
jsamson@larivercorp.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/5/2014 9:08pm
jkitz@mountainstrust.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/5/2014 2:36pm

First name

Black & Veatch
Weston Solutions

So CA Water Committee - Stormwater task force
TreePeople

Port of Los Angeles

The River Project

johng@sccwrp.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/5/2014 1:11pm
jgamble@lvmwd.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/5/2014 11:41am
pherzog@surfrider.org	LACFC EWMP PEIRS,CWCB Updates		2/12/2013 13:54	8/29/2014 14:18	9/4/2014 8:57pm
stevenmwilliams99@gmail.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/4/2014 8:44pm
steve.williams@rcdsmm.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/4/2014 8:44pm
jsk1.2007@gmail.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/4/2014 8:37pm
jguerrer@dpw.lacounty.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/4/2014 7:20pm
mike@watershedhealth.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	9/4/2014 5:34pm
mvoong@waterboards.ca.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	9/4/2014 5:25pm
dillardjoyce@yahoo.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/4/2014 2:39pm
adrienne@southcoastbotanicgarden.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/4/2014 1:57pm
christine.frey@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/4/2014 1:31pm
elaine.jeng@redondo.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/4/2014 12:38pm
ddolphin@cityofalhambra.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/4/2014 12:28pm
mgalvez@jlha.net	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/4/2014 1:52am
info@wearemdr.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/4/2014 1:10am
wetlandact@earthlink.net	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/3/2014 5:35pm
afarassati@cityofcalabasas.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/3/2014 5:26pm
rmechsner@westranchtowncouncil.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/3/2014 5:18pm
hamid.tadayon@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/3/2014 5:00pm
leclairejp@cdmsmith.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	9/3/2014 4:17pm
sho@paramountcity.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/3/2014 3:34pm
g.wolfberg@verizon.net	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/3/2014 3:16pm
jhendra@rcdsmm.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/3/2014 1:39pm
drennanmd@bv.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	9/3/2014 12:57pm
michael.scaduto@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/3/2014 12:53pm
richard.haimann@hdrinc.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	9/3/2014 12:10pm
charlie.yu@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/3/2014 12:04pm
amho@montereypark.ca.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/3/2014 11:17am
adelgado@fs.fed.us	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/3/2014 2:27am
cstevens@rcdsmm.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/3/2014 1:47am
jpereira@cwecorp.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 11:16pm
kjames@healthebay.org	LACFC EWMP PEIRS,CWCB Updates		2/8/2013 17:43	8/29/2014 14:18	9/2/2014 8:08pm
kharrel@cwecorp.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 6:55pm

Surf Rider

Council for Watershed Health
LARWQCB

CDM Smith

Black & Veatch

HDR

Heal the Bay

smoraleschoate@santafesprings.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 6:55pm
michael.affeldt@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 6:05pm
gold@ioes.ucla.edu	LACFC EWMP PEIRS,LAFCD Public Health		12/20/2012 17:29	8/29/2014 14:18	9/2/2014 5:57pm
education@coloradolagoon.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 5:34pm
editor@coloradolagoon.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 5:23pm
ajirik@portla.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	9/2/2014 5:16pm
seth_riley@nps.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 5:10pm
mhall@glacvcd.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 5:09pm
lynn.rodriguez@ventura.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 5:06pm
douglaspfay@aol.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 4:50pm
bjensen@valleyconnect.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 4:48pm
blake@watershedhealth.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 4:37pm
info@rcdsmm.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 4:33pm
gosmena@dpw.lacounty.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 4:29pm
victor.ruiz@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 4:13pm
csarabia@pvplc.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 4:07pm
davidthomas@vrsd.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 3:50pm
ewelina.mutkowska@ventura.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 3:06pm
friends@coloradolagoon.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 2:43pm
tpiasky@bialav.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	9/2/2014 2:33pm
obrownson@larivercorp.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	9/2/2014 2:28pm
katy_delaney@nps.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 2:07pm
denise_kamradt@nps.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 1:55pm
barbara.romero@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 1:20pm
cgeorge@malibucity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 1:11pm
brai@cityofinglewood.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 1:09pm
charles.herbertson@culvercity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 1:08pm
melissa.guerrero@mrca.ca.gov	LACFC EWMP PEIRS,MIG eNews External		10/10/2013 11:15	8/29/2014 14:18	9/2/2014 12:56pm
farhana.mohamed@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 12:55pm
chien.pei.yu@dot.ca.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	9/2/2014 12:54pm
shokoufe.marashi@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 12:52pm
jill.taylor@ccc.ca.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 12:35pm
kvivanti@lakewoodcity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 12:28pm
leighannek@westbasin.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 12:27pm

UCLA Institute of the Environment & Sustainability

Port of Los Angeles

Building Industry Association
Los Angeles Conservation Corps

Mountains Recreation & Conservation Authority

DOT Div 7, Division of Design

dcartagena@beverlyhills.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	9/2/2014 12:21pm
bhamamo@dpw.lacounty.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 12:13pm
chair@lbsurfrider.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 12:01pm
nutritwarehouse@yahoo.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 11:59am
jennifer@lancasterbiology.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 11:58am
bromley.eugene@epa.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 11:44am
jdettle@torrnet.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	9/2/2014 11:42am
lrocha@esassoc.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 11:39am
sperlstein@weho.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	9/2/2014 11:35am
lenise.marrero@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 11:35am
sabrina.rivera@aecom.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 11:33am
megan.whalen@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 11:20am
cmccullough@jlha.net	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 11:19am
joshua.carvalho@smgov.net	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	9/2/2014 11:15am
kendrick.okuda@lacity.org		Added by you	8/29/2014 14:55	9/2/2014 11:10	9/2/2014 11:04am
mtripp@bh.lacounty.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 11:04am
dkrauss@cityofhawthorne.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 11:01am
ys@cityofrh.net	LACFC EWMP PEIRS,MIG eNews External		10/10/2013 11:24	8/29/2014 14:55	9/2/2014 10:58am
susan.shu@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 10:53am
nadiac@rpv.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 10:50am
info@amigosdelosrios.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 10:42am
dsharpton@mountainstrust.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 10:36am
pmarkle@lacsd.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 10:34am
tony.li@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 10:34am
dawn.petschauer@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 10:33am
sbirosik@waterboards.ca.gov	LACFC EWMP PEIRS,CWCB Updates		2/8/2013 17:43	8/29/2014 14:55	9/2/2014 10:29am
ioannice.lee@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 10:28am
juan.benitez@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 10:25am
zora.baharians@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 10:23am
javier.solis@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 10:17am
lcelaya@ci.agoura-hills.ca.us	LACFC EWMP PEIRS,CWCB Updates		2/8/2013 17:43	8/29/2014 14:55	9/2/2014 10:06am
vijay.desai@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 10:04am
henry.yuan@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 10:02am
jeichler@citruscollege.edu	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 10:00am

City of Beverly Hills

City of West Hollywood

City of Santa Monica

taraneh.nik-khah@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 10:00am
wjohnson@dpw.lacounty.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 10:00am
hubertus.cox@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 9:42am
kaden.young@culvercity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	9/2/2014 9:26am
roulene.diego@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 9:25am
jon.ball@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 9:13am
marsa.chan@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 9:10am
member@tnc.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 9:08am
bineris@hotmail.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 12:42am
kjserv@aol.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/2/2014 12:04am
codyender@gmail.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/1/2014 10:44pm
rene.a.vermeeren@usace.army.mil	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	9/1/2014 9:22pm
dmueller@downeyca.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/1/2014 9:00pm
ctwilliams2012@yahoo.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/1/2014 5:22pm
ksusilo@geosyntec.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	9/1/2014 5:09pm
montgomerylizzy@gmail.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/1/2014 4:34pm
adel.hagekhalil@lacity.org	LACFC EWMP PEIRS,CWCB Updates		2/8/2013 17:43	8/29/2014 14:55	9/1/2014 2:31pm
kkemmler@scc.ca.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	9/1/2014 1:22am
coconnell@westranchtowncouncil.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/31/2014 11:17pm
jim.lamm@ballonacreek.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	8/31/2014 7:19pm
kellyquick@castaicareatowncouncil.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/31/2014 5:25pm
tmoon@dpw.lacounty.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	8/31/2014 1:50pm
lakesidemedia@earthlink.net	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/31/2014 1:38pm
dlippman@lvmwd.com	LACFC EWMP PEIRS,CWCB Updates		2/8/2013 17:43	8/29/2014 14:55	8/31/2014 9:58am
mark.capelli@noaa.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/31/2014 3:43am
jhignite@charter.net	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/31/2014 1:13am
djacobs@ucla.edu	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/31/2014 12:39am
ehuerta28@gmail.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/30/2014 11:40pm
cristorey@charter.net	LACFC EWMP PEIRS,sbX eNewsletter,sbX		12/18/2009 18:16	8/29/2014 14:55	8/30/2014 11:08pm
info@pacpalicc.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/30/2014 6:27pm
lisaf@ballonafriends.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	8/30/2014 6:19pm
alisonlinder@yahoo.com	LACFC EWMP PEIRS,GoodsMovement		4/20/2009 17:31	8/29/2014 14:55	8/30/2014 5:45pm
dan@covina.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/30/2014 5:32pm
ian@aquatechnex.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/30/2014 3:53pm

Culver City

USACE

Geosyntec

Ballona Creek Renaissance

County of Los Angeles/

Friends of Ballona Wetlands
Ms. Alison

ksander@usc.edu	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	8/30/2014 2:44pm
rexfrankel@yahoo.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/30/2014 1:57pm
retamoser@gmail.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/30/2014 1:33pm
lrapp@lakewoodcity.org	LACFC EWMP PEIRS,MIG eNews External		10/10/2013 11:15	8/29/2014 14:55	8/30/2014 1:19pm
craig.collins@silverlakereservoirs.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:55	8/30/2014 1:06pm
salbers@rcdsmm.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/30/2014 1:01pm
karen@longbeachmarine.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/30/2014 12:50pm
lesliepurcell@gmail.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/30/2014 12:45pm
martykreisler@castaicareatowncouncil.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/30/2014 11:45am
robert.thiel@cox.net	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/30/2014 11:36am
patrickatwater@gmail.com		Added by you	8/29/2014 14:55	8/30/2014 11:24	8/30/2014 11:23am
bdingman@lvmwd.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/30/2014 10:35am
njohn@lawa.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/30/2014 1:35am
naturetrust@earthlink.net	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/30/2014 12:34am
nicoleshu718@gmail.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/30/2014 12:24am
david.a.ford@sce.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/30/2014 12:11am
clarkdeblasio@gmail.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/30/2014 12:00am
chair@surfrider-southbay.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 11:41pm
stevefreee@gmail.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 11:10pm
wernerdesign@verizon.net	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 11:02pm
camswift@pacbell.net	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 10:54pm
gardens@rodsatt.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 10:54pm
sean.anderson@csuci.edu	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 10:19pm
wrigleyisgoinggreen@hotmail.com	LACFC EWMP PEIRS,I-710 Interested Pers		7/26/2012 15:45	8/29/2014 14:55	8/29/2014 10:12pm
mstevens@kinneticlabs.net	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 10:09pm
reymundo@usgvmwd.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 9:57pm
robert.vega@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 9:48pm
ggreene@cwecorp.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 9:43pm
jeffpreach@castaicareatowncouncil.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 9:29pm
pamela.hirneisen@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 9:16pm
wing.tam@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 9:16pm
rcdsmm.edu@gmail.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 9:12pm
jbellomo@willdan.com	LACFC EWMP PEIRS,CWCB Updates		2/12/2013 13:54	8/29/2014 14:55	8/29/2014 8:58pm
annette@expogreenway.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	8/29/2014 8:54pm

USC

Ballona Creek Renaissance

djohns@crpd.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 8:46pm
garcia.crystal.1990@gmail.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 8:42pm
angelica.hernandez@sen.ca.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 8:29pm
ghildeb@dpw.lacounty.gov	LACFC EWMP PEIRS,LAFCD Public Health		12/20/2012 17:49	8/29/2014 14:18	8/29/2014 8:28pm
ninh.hong@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 8:28pm
cunguyen@dpw.lacounty.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	8/29/2014 8:14pm
khostert@swwc.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 8:04pm
rwatson@rwaplanning.com	LACFC EWMP PEIRS,I-710 Interested Pers		6/12/2013 15:01	8/29/2014 14:55	8/29/2014 8:03pm
travislongcore@losangelesaudubon.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	8/29/2014 8:00pm
johngrap@ucla.edu	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 8:00pm
skennedy@enfact.net	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 7:58pm
oaksrus@verizon.net	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 7:53pm
dkoo@waterboards.ca.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 7:49pm
spincetl@ioes.ucla.edu	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	8/29/2014 7:43pm
ghanraha@callutheran.edu		Added by you	8/29/2014 14:55	8/29/2014 19:43	8/29/2014 7:43pm
llamonte@malibucity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 7:42pm
rod.merl@smgov.net	LACFC EWMP PEIRS,MIG eNews External		10/10/2013 11:18	8/29/2014 14:55	8/29/2014 7:39pm
jbrown@malibucity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 7:39pm
jsimes@usbr.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	8/29/2014 7:38pm
shane@usgvmwd.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 7:38pm
ccash@paramountcity.com	LACFC EWMP PEIRS,I-710 Master,I-710 C		6/29/2010 18:24	8/29/2014 14:55	8/29/2014 7:36pm
sgroner@sga-inc.net	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 7:31pm
traci.minamide@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 7:30pm
svalor@santamonicabay.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 7:30pm
tim.pershing@asm.ca.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 7:29pm
crivers@cwecorp.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 7:25pm
dragos@blue-tomorrow.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 7:24pm
miguel@gdmlonline.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	8/29/2014 7:23pm
gbrideau@therobertgroup.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 7:23pm
miguel@dakeluna.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 7:23pm
fwu@dpw.lacounty.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	8/29/2014 7:22pm
bsaito@lacorps.org	LACFC EWMP PEIRS,CWCB Updates		2/12/2013 13:54	8/29/2014 14:18	8/29/2014 7:21pm
ysim@dpw.lacounty.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	8/29/2014 7:20pm
lalexanderson@dpw.lacounty.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	8/29/2014 7:19pm

Director of Operations/Manager of Watersheds, LADW

LADWP

The Audubon Society

UCLA Institute of the Environment & Sustainability

US BOR

Raymond

The Green Coalition

LADWP
Los Angeles Conservation Corps
LADWP
LADWP

jennifer@la-bike.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	8/29/2014 7:18pm
belindafaustinos@gmail.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 7:17pm
aosheagreenfield@bialav.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 7:15pm
eileen.k.takata@usace.army.mil	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	8/29/2014 7:09pm
susie.santilena@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 7:09pm
jmaret@dfg.ca.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 7:09pm
tcontreras@fs.fed.us	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 7:05pm
nancy@watershedhealth.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	8/29/2014 7:04pm
mgbrown@bialav.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 7:04pm
gpidwb@gmail.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 7:02pm
judithdavies66@gmail.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 7:01pm
dwayman@scc.ca.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 7:00pm
jdougall@lvmwd.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 6:59pm
kristy@watershedhealth.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 6:58pm
helsleyn@gmail.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 6:58pm
kfisher@ci.agoura-hills.ca.us	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 6:58pm
info@hillsforeveryone.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 6:57pm
wendy.dinh@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 6:56pm
jbiggs@brwncald.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 6:54pm
vicepresident@asnc.us	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 6:52pm
michelle.mattson@westonsolutions.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	8/29/2014 6:51pm
fbarros@usc.edu	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	8/29/2014 6:49pm
president@asnc.us	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 6:49pm
gusm@westbasin.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 6:46pm
kim@saveourbeach.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 6:46pm
mkbartl@gmail.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 6:46pm
eric.vuong@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 6:45pm
jon@expogreenway.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	8/29/2014 6:44pm
elopez@wrd.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 6:44pm
ggalindo@lapuentewater.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 6:44pm
troy.ezeh@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 6:43pm
snissman@lacbos.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 6:42pm
domingo.orosco@lacity.org	LACFC EWMP PEIRS,CWCB Updates		2/8/2013 17:43	8/29/2014 14:55	8/29/2014 6:41pm
javier@bikesgv.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 6:41pm

Los Angeles County Bicycle Coalition

USACE

Council for Watershed Health

Weston Solutions
USC

Ballona Creek Renaissance

cleanlb@halloworld.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 6:40pm
stephanieebia@castaicareatowncouncil.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 6:39pm
dflores@rmcwater.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 6:39pm
trisham@aol.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 15:39	8/29/2014 6:38pm
gderas@pico-rivera.org	LACFC EWMP PEIRS,CWCB Updates		2/8/2013 17:43	8/29/2014 14:55	8/29/2014 6:37pm
srapoport@waterboards.ca.gov	LACFC EWMP PEIRS,CWCB Updates		2/8/2013 17:43	8/29/2014 14:18	8/29/2014 6:37pm
bryan.truong@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 6:37pm
ramon.barajas@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 6:37pm
vivian.marquez@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 6:37pm
dpedersen@lvmwd.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 6:37pm
irina_irvine@nps.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 6:37pm
anne_dove@nps.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 6:35pm
g3owl1@gmail.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 6:35pm
lhempe@lynwood.ca.us	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 6:35pm
rbryden@dpw.lacounty.gov	LACFC EWMP PEIRS,LAFCD Public Health		12/20/2012 17:49	8/29/2014 14:18	8/29/2014 6:34pm
dpelser@cityofwhittier.org	LACFC EWMP PEIRS,CWCB Updates		2/8/2013 17:43	8/29/2014 14:55	8/29/2014 6:34pm
azya.jackson@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 6:34pm
jbrickey@jlha.net	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 6:34pm
anthony.spina@noaa.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 6:34pm
rick.valte@smgov.net	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42	8/29/2014 6:33pm
bthompson@willdan.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 6:33pm
ogalang@brwncald.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 18:36	8/29/2014 6:33pm
pavlova.vitale@waterboards.ca.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 6:33pm
sarah@landspaces.net	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55	8/29/2014 6:32pm

LARWQCB

LADWP

City of Santa Monica

Oliver

Email address - other	Email Lists	Source Name	Created At	Updated At
dave.jones@ch2mhill.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
dfleming@westranchtowncouncil.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
amousavi@infeng.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
rwinter@westranchtowncouncil.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
btoqe@westranchtowncouncil.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
jzimmerman@westranchtowncouncil.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
debbie@downtownsm.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
dave.weshoff@sfvaudobon.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42
jeanette@grassrootscoalation.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42
gregg@ci.rolling.hillsestates.ca.us	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
virginia.wei@iadwp.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
tatiana@lawaterkeeper.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42
alexander.vasquez@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
chris.demonbun@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
clayton.yoshida@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
david.cheung@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
emerverto.cheng@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
megan.whalen@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
ninh.hong@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
pamela.hirneisen@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
robert.vega@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
rnezhad@ennncald.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
roxana.marashi@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
sergio.u.perez@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
shahram.kharagani@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
tfinney@parks.lacounty.gob	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
arne_anselm@ventura.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
peter@epa.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
rick.bush@noaa.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
acervantes@sogate.org	LACFC EWMP PEIRS,I-710 Master,I-710 ESW		7/19/2010 14:48	8/29/2014 14:55
mpestrella@dpw.lacounty.gov	LACFC EWMP PEIRS,CWCB Updates		2/12/2013 13:54	8/29/2014 14:18
phong@bos.lacounty.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42
nancy@watershedhealth.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42

Bounce Reason	First name
Undeliverable	
Mailbox full	
Undeliverable	
Mailbox full	
Mailbox full	
Mailbox full	
Undeliverable	
Undeliverable	The Audubon Society
Undeliverable	Ballona Creek Renaissance
Undeliverable	
Undeliverable	
Non-existent	Los Angeles Waterkeeper
Other	
Other	
Other	
Vacation / Auto reply	
Other	
Vacation / Auto reply	
Vacation / Auto reply	
Vacation / Auto reply	
Vacation / Auto reply	
Undeliverable	
Other	
Other	
Other	
Undeliverable	
Non-existent	
Non-existent	
Vacation / Auto reply	
Non-existent	Arturo
Non-existent	Assistant Director, LADWP
Non-existent	LA County Board of Supervisorial District 2
Vacation / Auto reply	Council for Watershed Health

mike@watershedhealth.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42
bishop.john@epa.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42
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feldman@uci.edu	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42
titushz@bv.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42
steven.finton@culvercity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42
sarahh@sbcglobal.net	LACFC EWMP PEIRS	Added by you	8/29/2014 14:18	8/29/2014 14:42
andy.niknafs@water.ladwp.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
hcike@ularawatermaster.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
tony@watermaster.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
armando.yanez@asm.ca.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
barbarailor@gmail.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
chrism@iwa.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
claudia.goytia@asm.ca.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
damian.skinner@culvercity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
david.mcneill@n0spam.bhc.ca.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
dawnfaulconer@castaicareatowncouncil.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
hmaldonedo@parks.lacounty.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
jeff.r.catalano@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
landtrust@ballona.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
johnkunak@castaicareatowncouncil.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
julie.sauter@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
khaberson@tvmwd.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
kluoe@lacsd.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
kmcgowan@geosyntec.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
kendrick.okuda@lacity.org		Added by you	8/29/2014 14:55	9/2/2014 11:10
kristamjohnson@sox.net	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
twatts@seyfarth.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
motto@geosyntec.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
raulleon@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
robinkirke1@yahoo.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
ryan.thiha@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
shahriar.eftekharzadeh@aecom.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
stefanie.smith@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55

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stevemyrter@cityofsignalhill.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
tom.gibson@lacity.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
ayala_z@sgusd.k12.ca.us	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
cfelixso@ucla.edu	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
contact@thecvcouncil.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
davidw@epamail.epa.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
deborah@waterboards.ca.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
development@treepeople.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
information@coyotehills.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
jkitz@mountainstrust.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
kbelzer@fionahuttonassoc.com	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
margie_steigerwald@nps.gov	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
mikeb@unitedwater.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
rdagit@rcdsmm.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
steveh@unitedwater.org	LACFC EWMP PEIRS	Added by you	8/29/2014 14:55	8/29/2014 14:55
liangbingl001@hotmail.com	LACFC EWMP PEIRS	Added by you	8/29/2014 15:39	8/29/2014 15:39

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Other
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Attachment 4

Scoping Meeting Presentation

Enhanced Watershed Management Programs

Program Environmental Impact Report
Scoping Meeting

Los Angeles County Flood Control District

September 9, 2014

Chace Park Community Room

13650 Mindanao Way

Marina del Rey, CA 90292

Welcome and Introductions

- Los Angeles County Flood Control District (LACFCD)
  - Gregg BeGell, P.E., Project Manager
  - TJ Moon
- Weston Solutions, Inc.
  - Andrea Crumpacker
- Environmental Science Associates
  - Environmental Consultant: ESA
    - Tom Barnes, Project Director
    - David Pohl, Project Manager

Scoping Meeting Agenda

- Municipal Separate Storm Sewer System (MS4) Discharge Permit
  - Enhanced Watershed Management Program (EWMP)
  - LACFCD Role
- California Environmental Quality Act (CEQA) Overview and Process
- Issues to be analyzed in the Program Environmental Impact Report (PEIR)
- CEQA Schedule
- Receive Public Comments

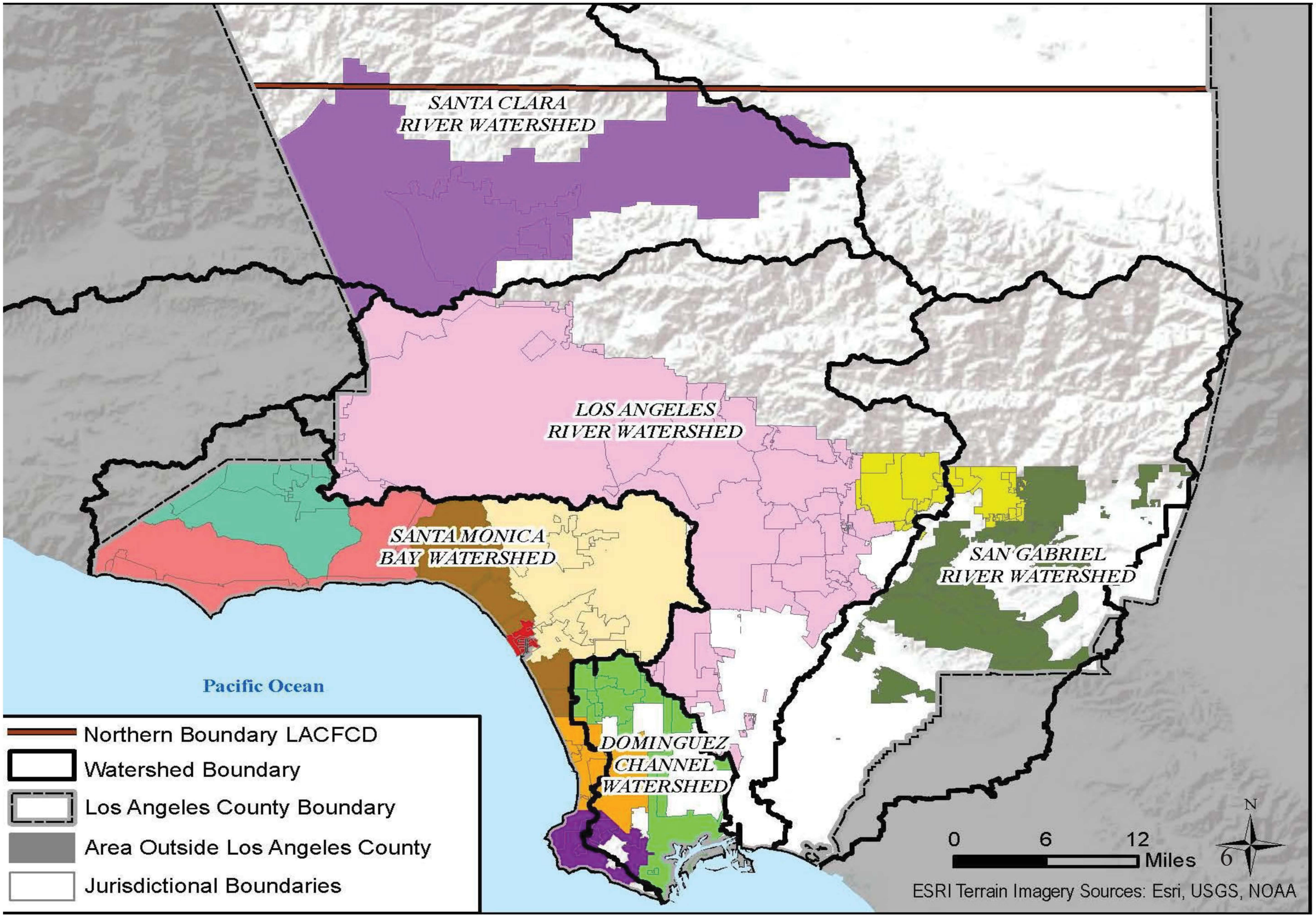
MS4 Permit Compliance

- **Project Purpose:** MS4 Permit Compliance (R4-2012-0175)
  - Each Permittee is responsible for its local MS4 compliance
  - Permit compliance through EWMPs
    - 12 NOIs submitted to LARWQCB
    - Collectively prepared by participating Permittees
  - Los Angeles Regional Water Quality Control Board (LARWQCB) approves EWMPs

Enhanced Watershed Management Program (EWMP)

- Identify Watershed Control Measures
  - Structural Best Management Practices (BMPs)
  - Non-Structural BMPs
- Reasonable Assurance Analysis
- Priority Ranking
- Implementation by each participating Permittee

MS4 EWMP Participating Permittees



MS4 EWMP Participating Permittees

Group Name	Permittees Involved
Ballona Creek	Beverly Hills, Culver City, Inglewood, Los Angeles, Santa Monica, West Hollywood, LA County, LACFCD
Beach Cities Watershed Management Group	Hermosa Beach, Manhattan Beach, Redondo Beach, Torrance, LACFCD
Dominguez Channel Watershed Management Group	El Segundo, Hawthorne, Inglewood, Los Angeles, Lomita, LA County, LACFCD
Malibu Creek Watershed	Agoura Hills, Calabasas, Hidden Hills, Westlake Village, LA County, LACFCD
Marina Del Rey	Culver City, Los Angeles, LA County, LACFCD
North Santa Monica Bay Coastal Watersheds	LA County, Malibu, LACFCD
Palos Verdes Peninsula EWMP Agencies	Palos Verdes Estates, Rancho Palos Verdes, Rolling Hills Estates, LA County, LACFCD
Rio Hondo/San Gabriel River Water Quality Group	Arcadia, Azusa, Bradbury, Duarte, Monrovia, LA County, Sierra Madre, LACFCD
Santa Monica Bay Watershed Jurisdictions 2 & 3	Los Angeles, El Segundo, Santa Monica, LA County, LACFCD
Upper Los Angeles River Watershed	Alhambra, Burbank, Calabasas, Glendale, Hidden Hills, La Canada Flintridge, Los Angeles, Montebello, Monterey Park, Pasadena, Rosemead, San Gabriel, San Marino, South Pasadena, Temple City, LA County, LACFCD
Upper San Gabriel River	Baldwin Park, Covina, Glendora, Industry, La Puente, LA County, LACFCD
Upper Santa Clara River Watershed	LA County, Santa Clarita, LACFCD

California Environmental Quality Act (CEQA)

Disclosure	Decision-Making Tool	Mitigation
Identifies potential impacts to the environment	Informs the public and decision makers about potential environmental impacts	Identifies ways to avoid or reduce potential impacts

Overview – Why is LACFCD leading this PEIR?

- LACFCD operates and maintains flood control facilities in all 12 EWMP Groups
- LACFCD has vested interest in increasing opportunities for stormwater capture and groundwater recharge
- LACFCD will be working with Permittees and other stakeholders in all 12 EWMP watersheds to identify potential projects
- The proposed projects may have an environmental impact

Overview - Role of Permittees

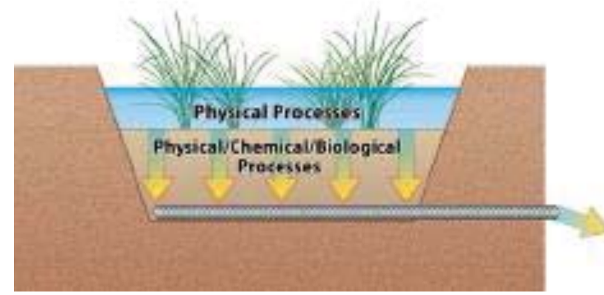
- EWMPs will be implemented by the Permittees with jurisdiction in EWMP area
- The Permittees implementing the proposed projects, or "Implementing Agencies," will vary between EWMPs and individual projects

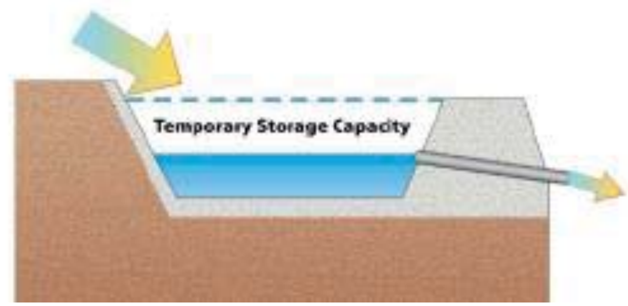
Proposed Project Objectives

- Achieve Water Quality Performance goals through EWMP implementation
- Regional Compliance with the MS4 Permit
  - Coordinated implementation of compliance strategies
  - Watershed-specific compliance strategies
- Environmentally Responsible Opportunities
  - Beneficial flood control, water supply, and habitat

Watershed Control Measures

- Structural BMPs or Physical Control Measures
  - Infiltration
  - Water quality treatment
  - Storage



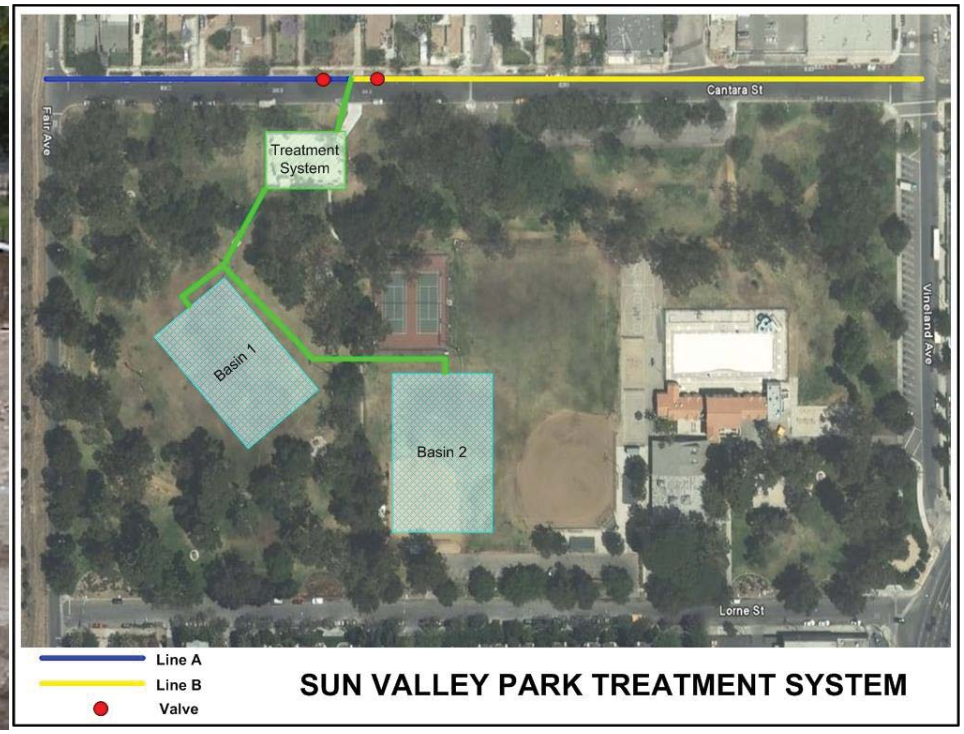


- Categories of Structural BMPs
  - Regional
  - Centralized
  - Distributed
- Non-Structural BMPs

Regional EWMP Projects

- Retain all runoff from the 85^{th} percentile, 24-hour storm event for tributary drainage area
  - Infiltration BMPs
  - Retention basins
  - Capture and Use BMPs
- May include use of public lands with open space areas, e.g., parks, large parking lots, or vacant space

Example Regional EWMP Project – Retention and Infiltration Basin



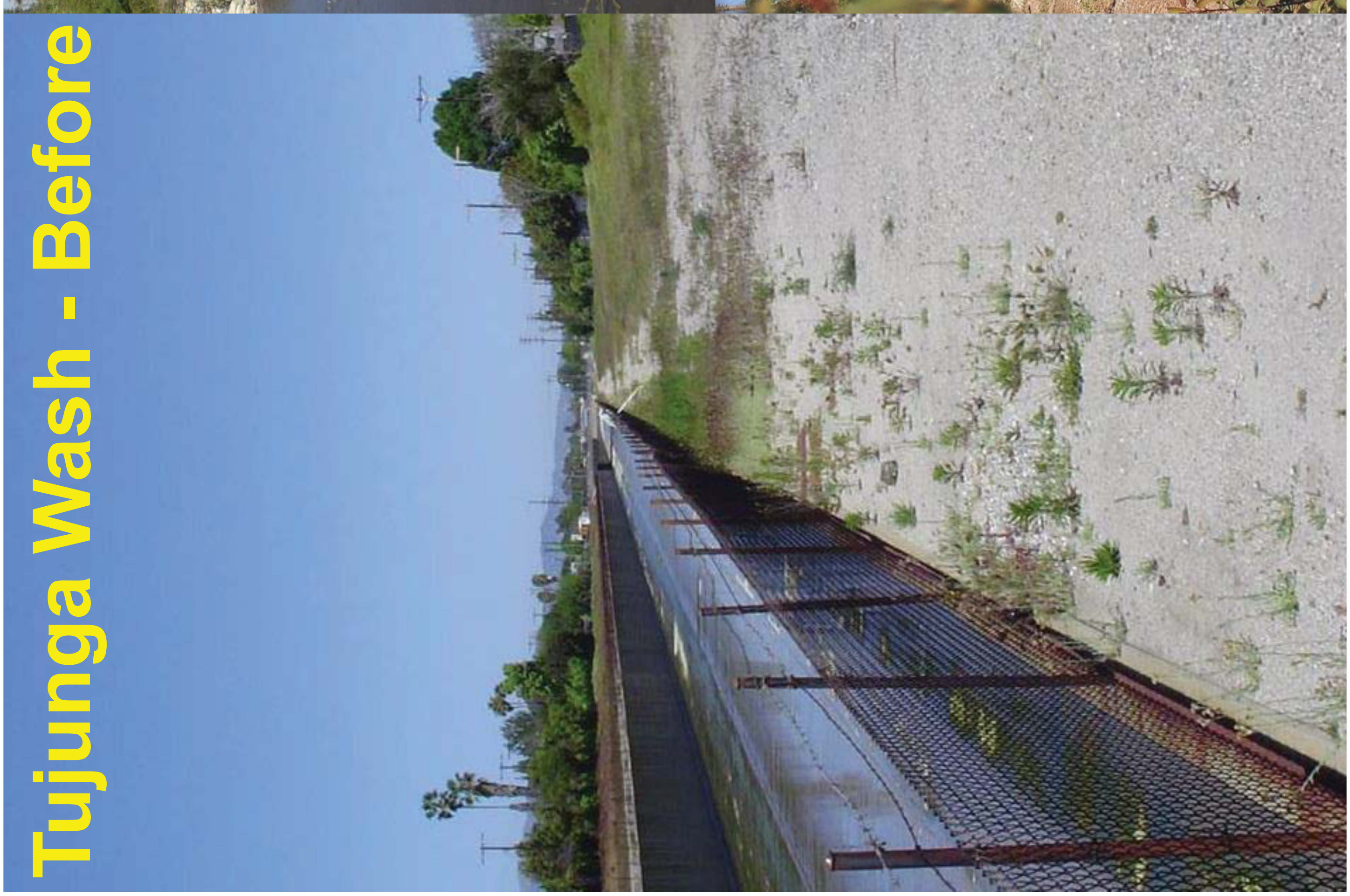
RB-AR 8782

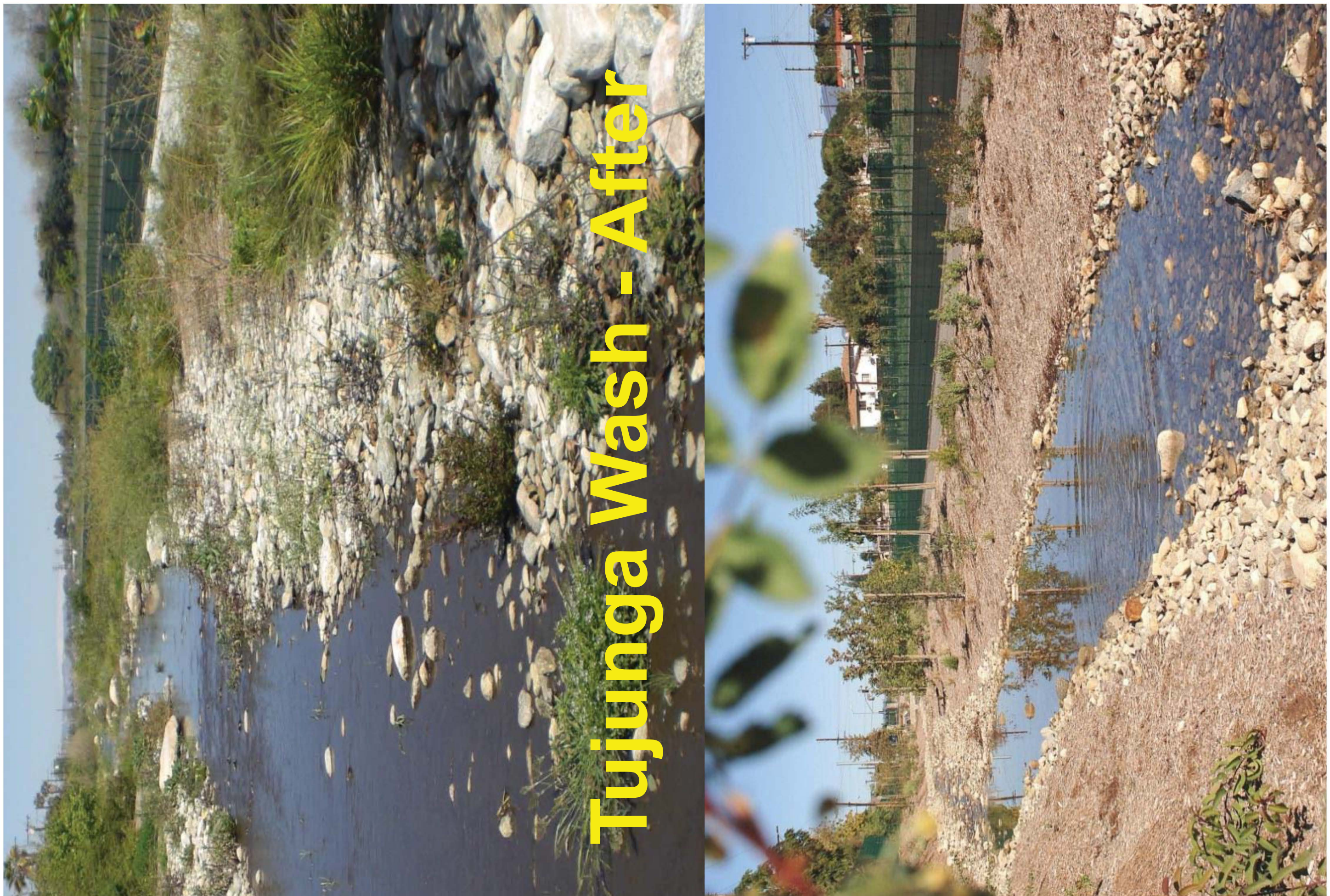
Sun Valley Park Drain and Infiltration System

RB-AR 8784

Centralized Structural BMPs

- Constructed structural practices intended to treat runoff from a contributing area of multiple parcels
- Generally installed on large public parcels or adjacent to storm drain outfalls and receiving waters
- Examples:
  - Bio-filtration BMPs
  - Constructed wetlands
  - Treatment BMPs low-flow diversion
  - Creek/River restoration


Tujunga Wash - Before


Tujunga Wash - After

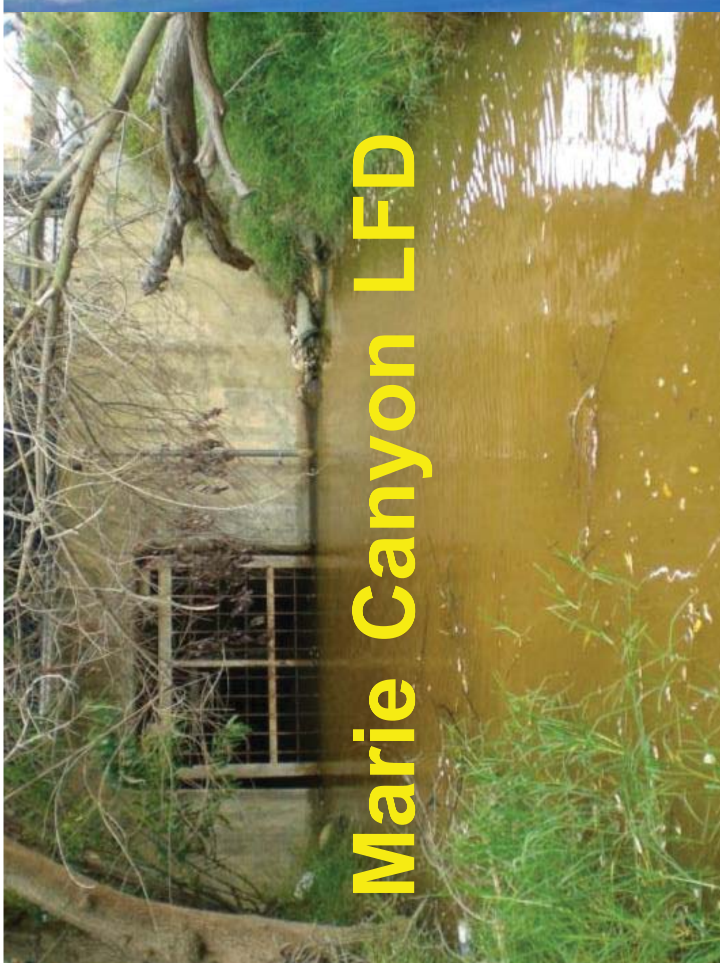
Example Centralized Structural BMP – Dominguez Gap Wetlands Project

Before

After

Example Centralized Structural BMP – Marie Canyon Low Flow Diversion (LFD)

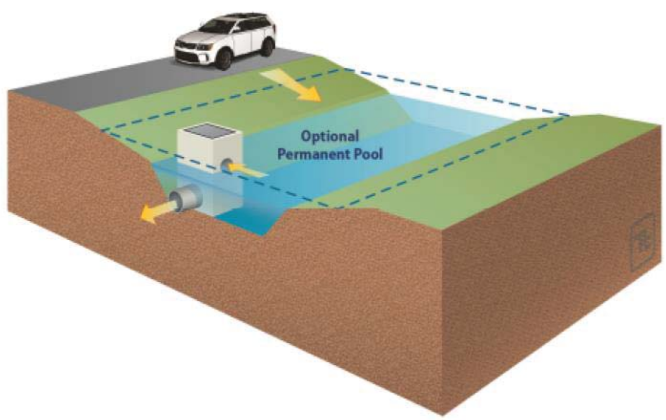
Marie Canyon LFD



Distributed Structural BMPs

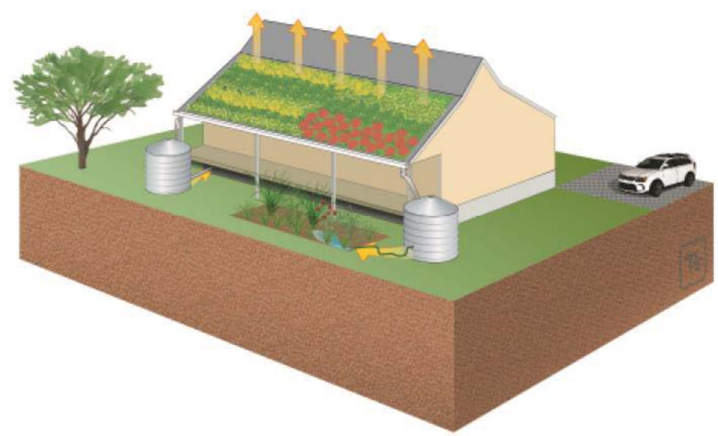
- Constructed BMPs that treat runoff close to the source and typically implemented at a single- or few-parcel level
- Green Infrastructure / Low Impact Development
  - Biofiltration
  - Bioretention
  - Bioswales / buffer strips
  - Green streets
  - Infiltration BMPs
  - Rainfall harvesting
  - Porous / permeable pavers
  - Planter boxes
- Flow-Through Treatment BMPs
  - Media / Cartridge filters
  - High-flow biotreatment
- Source Control Treatment BMPs
  - Catch basin inserts / screens
  - Gross solids removal devices
  - Hydrodynamic separators

Distributed Structural BMP Proposed Projects



Typical distributed site-scale detention schematic (arrows indicate water pathways).

Typical distributed bioretention and biofiltration schematic showing underdrain option (arrows indicate water pathways).



Typical distributed rainfall harvest schematic (arrows indicate water pathways).

Valinda Greenway Project (2009)

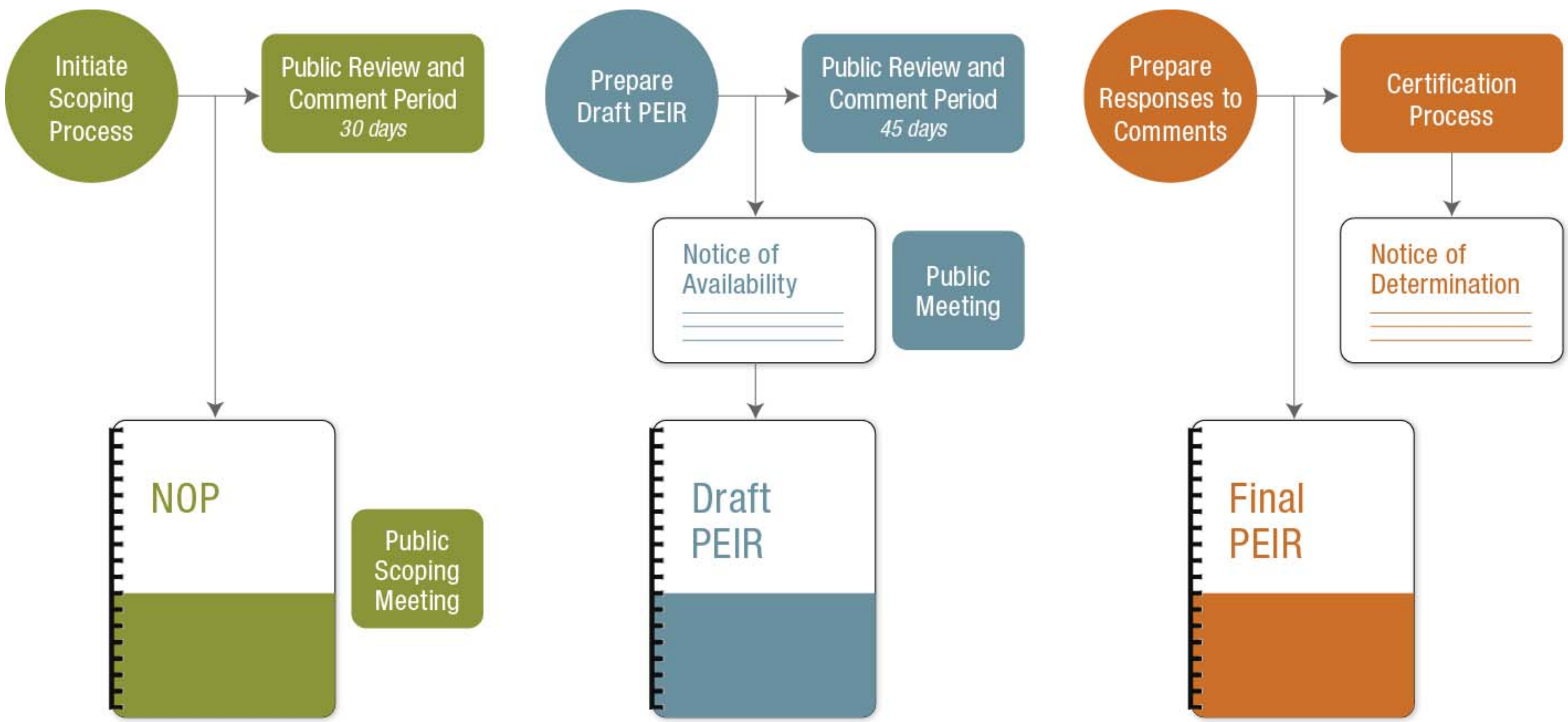
Non-Structural BMPs

- Prevent and/or reduce runoff and/or pollution close to the source
- Nonstructural BMPs part of overall EWMP implementation program – Examples:
  - Irrigation control
  - Covered trash receptacles
  - Replacement of brake pads & lead in wheel weights
  - Pet waste cleanup stations
  - Street sweeping
  - Catch basin cleaning
  - Downspout disconnect program

Program-Level Assessment

- Program assessment for LACFCD to submit EWMPs to LARWQCB
  - LARWQCB Responsible Agency for Approving EWMPs
- Used to evaluate a plan or program that has multiple components or actions
  - Focuses on the Effects of Implementing EWMPs
- Individual projects will be reviewed as they are further developed to determine what if any further review under CEQA is necessary

CEQA Process for an EIR



Issues to be Analyzed in the PEIR

- Aesthetics
- Air Quality
- Agriculture and Forestry
- Biological Resources
- Cultural Resources
- Geology, Soils & Seismicity
- Greenhouse Gas Emissions
- Hazards & Hazardous Materials
- Mandatory Findings of Significance

- Hydrology & Water Quality
- Land Use and Planning
- Mineral Resources
- Noise
- Population & Housing
- Public Services
- Recreation
- Traffic & Transportation
- Utilities & Energy
- Alternatives
- Cumulative Projects

PEIR Schedule Estimate

2014 - 2015	Deliverable/Milestone
August - September	• 30-Day public review of Notice of Preparation • Three scoping meetings
October - December	• Draft PEIR preparation
January - March	• 45-Day public review period for PEIR • Public review meetings
March	• Response to Comments • Final PEIR preparation
April	• Submission to Board of Supervisors for consideration of project approval and certification of PEIR

NOP Comments

- Comment period closes September 29, 2014 by 5:00 PM

- NOP and other project information can be downloaded from www.LACoH2Osheds.com

- Submit Comments
  - At scoping meeting: verbal or written comments
  - Or mail or email comments no later than September 29th to:

Gregg BeGell, P.E.
County of Los Angeles Department of Public Works
900 South Fremont Avenue, 5th Floor
Alhambra, CA 91803

gbegell@dpw.lacounty.gov

Attachment 5
Scoping Meeting Sign-In Sheets

EWMP PEIR Scoping Meeting **September 9, 2014 6-8PM**

Burton Chace Park—13650 Mindanao Way, Marina del Rey

SIGN-IN SHEET

Please Sign In (kindly print)

Name	Phone	Address, City, Zip Code
1. Rex Frankel		
E-mail address RexFRANKel@yahoo.com		
2. Ken Susilo		
E-mail address ksusilo@geosyntec.com		
3.		
E-mail address		
4.		
E-mail address		
5.		
E-mail address		
6.		
E-mail address		
7.		
E-mail address		
8.		
E-mail address		
9.		
E-mail address		
10.		
E-mail address		

EWMP PEIR Scoping Meeting **September 9, 2014 6-8PM**

LAC Dept. of Public Works—900 South Freemont Ave. Conf Rm. C, Alhambra

SIGN-IN SHEET

Please Sign In (kindly print)

Name	Phone	Address, City, Zip Code
1. Aidon Mousavi E-mail address: Amousavi@infeng.co	(951) 203-2595	
2. Bruce Hamamoto E-mail address: bhamamo@dpw.lacounty.gov	626 458 5918	
3. RAFAEL CASILLAS E-mail address: rcasillas@accessduarte.com	(626) 357-7931	City of Duarte 1600 Huntington Dr. Duarte 91010
4. SAM KOUTI E-mail address:	323 887-1200 x471	MONTEBELLO
5. Erik Conard E-mail address:		Culver City
6. E-mail address:		
7. E-mail address:		
8. E-mail address:		
9. E-mail address:		
10. E-mail address:		

EWMP PEIR Scoping Meeting **September 15, 2014 6:30-8:30PM**

Monrovia Community Center, K. Dalton Rm.—119 W. Palm Ave., Monrovia

SIGN-IN SHEET

Please Sign In (kindly print)

Name	Phone	Address, City, Zip Code
1. Anthony Ty	(626) 932-5573	
E-mail address		
2. Charles L Seitz		491 Ida May Ln
E-mail address Charles.L.Seitz@gmail.com		Sierra Madre 91024
3. Richard Schulhof		301 N. Baldwin
E-mail address Richard.Schulhof	626 821 3231	Arcadia 91001
4. Genevieve Osmena	626-458-3978	900 S. Fremont Ave.
E-mail address gosmena@dpw.lacounty.gov		Alhambra, CA 91803
5. JUN CERVANTES	626-932-5575	600 S. MTN. AVE.
E-mail address jcervantes@ci.monrovia.ca.us		MONROVIA, CA 91016
6. HUGO MALDONADO		265 Cloverleaf Drive
E-mail address hmaldonado@parks.lacounty.gov	626 523-1232	BALDWIN PARK, CA 91706
7.		
E-mail address		
8.		
E-mail address		
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E-mail address		
10.		
E-mail address		

Attachment 6

Scoping Meeting Public Comments

EWMP PEIR Scoping Meeting
Burton Chace Park, Marina del Rey
September 9, 2014

Comments and questions following the presentation by Tom Barnes, Project Director from Environmental Services, Inc.

- Will this program require 12 environmental impact reports (EIRs), one for each of the 12 watershed within the LACFCD that will be participating in the development of an Enhanced Watershed Management Plan (EWMP) or just one EIR for all 12 watersheds?
    - Only one EIR will be required.

- How does the EWMP relate to the TDML plans? Will this effort end up replacing the TDML implementation plans that have been developed for each of these 12 watersheds?
    - That question cannot be answered at this time.

- Each watershed has a specific pollutant type and a TMDL implementation plan designed to address that pollutant. Given the variety of different problem pollutants in each of these watersheds, the EWMP should not replace the TMDL implementation plans. Are these TMDL implementation plans now on hold while this EWMP is being developed?

- The reason there is no one else here tonight is that there are no specific projects being presented for us to analyze. Over the years, the same set of water quality improvement objectives are presented in every meeting but never with any specific projects. We need to know specifically what is being planned. The EIRs are just words but give us nothing specific.

- Regarding the Santa Monica Bay Plan, the City of LA did not meet water quality objectives. From 2006, the City has had 8 years to comply with the consent decree but it has never reached the mandated goals. We heard that it would take the equivalent of 25 Hyperion Treatment Plants to achieve these water quality goals, and at a tremendous cost. So, how can you ask for public input without presenting us specific projects to review including the costs associated with those projects? Today, we have agencies with plans that are never implemented and taxing us without telling us what we are paying for.

- You can have no plans without public involvement but there can be no meaningful public involvement without specifics.

- Questions that should be addressed during these meetings: Will the Plan (or proposed project?) comply with the TMDL implementation plans and what will it really cost to implement? We have heard costs as high as $150 billion for LA County to fully meet is water quality goals and that $3 billion is being spent on the Ballona Creek treatment wetlands. People want to know what bang what they are really going to get for their buck since they have been repeatedly disappointed by past programs.

- You are heading into years of litigation from people who actually would support this project, if you do not provide more specific project information.   The piece meal approach to solving these water quality projects does not cut it. Over the years we have seen politically motivated plans developed for each city council district rather than comprehensive plans that can realistically achieve the objectives of the Clean Water Act. What is needed now is for you to make a list of projects a part of the Notice of Preparation (NOP) and not wait for the EIR.

- What we want to know and it needs to be included in the EIR are the environmental impacts from specific projects. What we want to see is a plan that is designed to actually comply with the Clean Water Act and to see that funding is available for that plan, to see those dollars actually spent on the projects, and result in actual, tangible cleaning up of our water.

- If you already have a projects lined up, where can I go to see that list of projects?
    - A link is available which we will send to you.

- The process is faulty if the NOP does not contain a list of projects from the very start of this process.
    - The reason we are doing it this way is that the EWMP programs is being designed to launch the whole compliance effort.

LA County Flood Control District
Enhanced Watershed Management Programs PEIR
Scoping Meeting
September 9, 2014, 6pm

Oral Public Comments

Mr. Rex Frankel:

- How many EIRs will be involved?
- Is this a replacement for TMDL implementation plans?
- Are implementation plans on hold?
- There are no projects to comment on – this is why there is nobody here at the meeting
- Ballona Wetlands is a concern…is that an EWMP project?
- Has the City of LA made progress in implementing plans?
- Has had 8 years under consent decree, but there are no specific projects
- Public needs to know associated costs
- How can we comment without specifics?
- Ballona project is a primary concern
- You are proposing taxes without specifics…therefore there will be no public involvement
- What is it going to cost??
- Is Ballona going to be a water quality urban runoff dump?
- Specifics should be available in the NOP

EWMP PEIR Scoping Meeting Notes
Monrovia Community Center
September 15, 2014

Comments and questions from meeting attendees following the presentation.

- Do each of the 12 individual EWMP watershed areas have their own public process?
    - This environmental process is being conducted by the Flood Control District for their use to clear EWMP related projects. Each watershed can use the one being developed by the Flood Control District or create their own for a specific project.

- Are individual projects being identified in the EIR?
    - A list of projects with descriptions will be developed that that will be included in the final document. It will be a live document during the time of submittal. The analysis focuses on project types because the projects will vary.

- Is the MS4 permit in response to regulation?
    - It is in response to the Clean Water Act for municipalities.

- Will funding be identified through this process for some of the projects that may be implemented?
    - CEQA does not address cost unless it is related to change in the environment.

- If one wishes to advocate for particular projects within an EWMP what is the process to do this.
    - Write/include in your comment through EWMP process or through the permittee

- Will criteria vary from watershed to watershed, or will the same criteria be used for all?
- Is there interaction between this project and reclamation? How does this relate to recycled water? Do you talk to each other?
- Education should be part of the evaluation criteria. The value of education should be priority.

LA County Flood Control District
Enhanced Watershed Management Programs PEIR
Scoping Meeting
September 15, 2014, 6pm

Oral Public Comments

- Does each EWMP have its own public process?
- Will individual projects be identified in EIR?
- Is MS4 permit response (?) to legal action?
- Is funding attached to this process?
- How do I advocate for a project?
    - Through EWMP team?
    - Or EIR team?
- Are criteria the same for each watershed?
- How does this relate to recycled water programs?
- Is educational value of a project a high priority? It should be.

Attachment 7

State Clearinghouse Distribution of NOP

ESA

STATE OF CALIFORNIA

Governor's Office of Planning and Research

State Clearinghouse and Planning Unit

Edmund G. Brown Jr.
Governor

Ken Alex
Director

Notice of Preparation

RECEIVED
SEP 09 2014
DEPT. PUBLIC WORKS
PROJECT MANAGEMENT DIVISION II

August 29, 2014

To: Reviewing Agencies

Re: Enhanced Watershed Management Programs (EWMP) Program EIR
SCH# 2014081106

Attached for your review and comment is the Notice of Preparation (NOP) for the Enhanced Watershed Management Programs (EWMP) Program EIR draft Environmental Impact Report (EIR).

Responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

Gregg BeGell
Los Angeles County Flood Control District
900 South Fremont Avenue, 11th Floor
Alhambra, CA 91803

with a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

Scott Morgan
Director, State Clearinghouse

Attachments
cc: Lead Agency

Document Details Report
State Clearinghouse Data Base

SCH# 2014081106
Project Title Enhanced Watershed Management Programs (EWMP) Program EIR
Lead Agency Los Angeles County Flood Control District

Type NOP Notice of Preparation

Description The development of the EWMP will involve the evaluation and selection of multiple watershed control measures or best management practices (BMP) types including non-structural and distributed, centralized and regional structural BMPs. These BMPs will be implemented to meet compliance goals and strategies under the 2014 MS4 Permit. Structural BMPs involve the construction of a physical control measure to alter the hydrology and/or water quality of incoming stormwater or non-stormwater. The three major functions for structural BMPs are infiltration, water quality treatment, and storage. These are three categories of structural BMPs, defined by the runoff area treated by the BMP and the required retention volume in accordance with the Permit.

Lead Agency Contact

Name Gregg BeGell
Agency Los Angeles County Flood Control District
Phone 626 300 3298 **Fax**
email
Address 900 South Fremont Avenue, 11th Floor
City Alhambra **State** CA **Zip** 91803

Project Location

County Los Angeles
City Los Angeles, City of
Region
Cross Streets Throughout Los Angeles County
Lat / Long
Parcel No. Various
Township **Range** **Section** **Base**

Proximity to:

Highways Various
Airports LAX, Burbank
Railways Various
Waterways Various
Schools Various
Land Use Various land uses throughout the County

Project Issues Aesthetic/Visual; Agricultural Land; Air Quality; Archaeologic-Historic; Biological Resources; Drainage/Absorption; Flood Plain/Flooding; Geologic/Seismic; Minerals; Noise; Population/Housing Balance; Public Services; Recreation/Parks; Soil Erosion/Compaction/Grading; Toxic/Hazardous; Traffic/Circulation; Water Quality; Vegetation; Water Supply; Wetland/Riparian; Wildlife; Cumulative Effects; Other Issues

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Reviewing Agencies Resources Agency; Coachella Valley Mountains Conservancy; Department of Parks and Recreation; Department of Water Resources; Department of Fish and Wildlife, Headquarters; Department of Fish and Wildlife, Marine Region; Native American Heritage Commission; Santa Monica Bay Restoration; Caltrans, District 7; Air Resources Board; State Water Resources Control Board, Division of Water Quality; State Water Resources Control Board, Division of Water Rights; Regional Water Quality Control Board, Region 4; San Gabriel & Lower Los Angeles Rivers & Mountains Conservancy; Santa Monica Mountains Conservancy

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Date Received 08/29/2014 **Start of Review** 08/29/2014 **End of Review** 09/29/2014

NOP Distribution List

County: LOS ANGELES

SCH# 2014081106

Resources Agency

- [x] **Resources Agency**
  Nadell Gayou
  - [ ] **Dept. of Boating & Waterways**
    Nicole Wong
  - [x] **California Coastal Commission**
    Elizabeth A. Fuchs
  - [ ] **Colorado River Board**
    Lisa Johansen
  - [ ] **Dept. of Conservation**
    Elizabeth Carpenter
  - [ ] **California Energy Commission**
    Eric Knight
  - [ ] **Cal Fire**
    Dan Foster
  - [ ] **Central Valley Flood Protection Board**
    James Herota
  - [ ] **Office of Historic Preservation**
    Ron Parsons
- [x] **Dept of Parks & Recreation**
  Environmental Stewardship Section
  - [ ] **California Department of Resources, Recycling & Recovery**
    Sue O'Leary
  - [ ] **S.F. Bay Conservation & Dev't. Comm.**
    Steve McAdam
  - [x] **Dept. of Water Resources**
    Resources Agency
    Nadell Gayou

Fish and Game

- [x] **Depart. of Fish & Wildlife**
  Scott Flint
  Environmental Services Division
- [ ] **Fish & Wildlife Region 1**
  Donald Koch
- [ ] **Fish & Wildlife Region 1E**
  Laurie Harnsberger
- [ ] **Fish & Wildlife Region 2**
  Jeff Drongesen
- [ ] **Fish & Wildlife Region 3**
  Charles Armor
- **Fish & Wildlife Region 4**
  Julie Vance
- **Fish & Wildlife Region 5**
  Leslie Newton-Reed
  Habitat Conservation Program
- [ ] **Fish & Wildlife Region 6**
  Tiffany Ellis
  Habitat Conservation Program
- **Fish & Wildlife Region 6 I/M**
  Heidi Sickler
  Inyo/Mono, Habitat Conservation Program
- [x] **Dept. of Fish & Wildlife M**
  George Isaac
  Marine Region

Other Departments

- [ ] **Food & Agriculture**
  Sandra Schubert
  Dept. of Food and Agriculture
- [ ] **Depart. of General Services**
  Public School Construction
- [ ] **Dept. of General Services**
  Anna Garbeff
  Environmental Services Section
- [ ] **Delta Stewardship Council**
  Kevan Samsam

Independent Commissions,Boards

- [ ] **Delta Protection Commission**
  Michael Machado
- [ ] **OES (Office of Emergency Services)**
  Dennis Castrillo
- [x] **Native American Heritage Comm.**
  Debbie Treadway
- [ ] **Public Utilities Commission**
  Leo Wong
- [x] **Santa Monica Bay Restoration**
  Guangyu Wang
- [ ] **State Lands Commission**
  Jennifer Deleong
- [ ] **Tahoe Regional Planning Agency (TRPA)**
  Cherry Jacques

Business, Trans & Housing

- [ ] **Caltrans - Division of Aeronautics**
  Philip Crimmins
- [ ] **Caltrans - Planning**
  Terri Pencovic
- [ ] **California Highway Patrol**
  Suzann Ikeuchi
  Office of Special Projects
- [ ] **Housing & Community Development**
  CEQA Coordinator
  Housing Policy Division

Dept. of Transportation

- [ ] **Caltrans, District 1**
  Rex Jackman
- [ ] **Caltrans, District 2**
  Marcelino Gonzalez
- [ ] **Caltrans, District 3**
  Eric Federicks – South
  Susan Zanchi - North
- [ ] **Caltrans, District 4**
  Erik Alm
- [ ] **Caltrans, District 5**
  David Murray
- [ ] **Caltrans, District 6**
  Michael Navarro
- [x] **Caltrans, District 7**
  Dianna Watson
- [ ] **Caltrans, District 8**
  Dan Kopulsky
- [ ] **Caltrans, District 9**
  Gayle Rosander
- [ ] **Caltrans, District 10**
  Tom Dumas
- [ ] **Caltrans, District 11**
  Jacob Armstrong
- [ ] **Caltrans, District 12**
  Maureen El Harake

Cal EPA

Air Resources Board

- [x] All Other Projects
  Cathi Slaminski
  - [ ] Transportation Projects
    Nesamani Kalandiyur
  - [ ] Industrial Projects
    Mike Tollstrup
- [ ] **State Water Resources Control Board**
  Regional Programs Unit
  Division of Financial Assistance
- [ ] **State Water Resources Control Board**
  Jeffery Werth
  Division of Drinking Water
- [x] **State Water Resources Control Board**
  Student Intern, 401 Water Quality Certification Unit
  Division of Water Quality
- [x] **State Water Resouces Control Board**
  Phil Crader
  Division of Water Rights
- [ ] **Dept. of Toxic Substances Control**
  CEQA Tracking Center
- [ ] **Department of Pesticide Regulation**
  CEQA Coordinator

Regional Water Quality Control Board (RWQCB)

- [ ] **RWQCB 1**
  Cathleen Hudson
  North Coast Region (1)
- [ ] **RWQCB 2**
  Environmental Document Coordinator
  San Francisco Bay Region (2)
- [ ] **RWQCB 3**
  Central Coast Region (3)
- [x] **RWQCB 4**
  Teresa Rodgers
  Los Angeles Region (4)
- [ ] **RWQCB 5S**
  Central Valley Region (5)
  - [ ] **RWQCB 5F**
    Central Valley Region (5)
    Fresno Branch Office
  - [ ] **RWQCB 5R**
    Central Valley Region (5)
    Redding Branch Office
- [ ] **RWQCB 6**
  Lahontan Region (6)
  - [ ] **RWQCB 6V**
    Lahontan Region (6)
    Victorville Branch Office
- [ ] **RWQCB 7**
  Colorado River Basin Region (7)
- [ ] **RWQCB 8**
  Santa Ana Region (8)
- [ ] **RWQCB 9**
  San Diego Region (9)

- [ ] Other SAN GABRIEL AND LA RIVER ~~[illegible]~~ CONSERVANCY
- [x] ~~LAS~~ SANTA-MON MTN Conservancy

Last Updated 8/27/2014

RB-AR 8812

Attachment 8

Comment Period Extension Letter

Dear Stakeholder and Interested Party,

The Los Angeles County Flood Control District (LACFCD) has extended the public comment period for the Notice of Preparation (NOP) of a Program Environmental Impact Report (PEIR) for proposed Enhanced Watershed Management Programs (EWMP). The extended NOP comment period will end October 29, 2014. The LACFCD is soliciting feedback from interested persons and agencies as to the scope and content of the environmental information to be evaluated in the PEIR. Comments may be submitted by regular mail or email to the address provided below.

Gregg BeGell, P.E.
County of Los Angeles Department of Public Works
Project Management Division II
900 South Fremont Avenue, 5th Floor
Alhambra, CA 91803
(626) 300-3298
gbegell@dpw.lacounty.gov

As Lead Agency, LACFCD has developed the NOP to notify Responsible and Trustee Agencies and interested parties that the LACFCD is preparing the PEIR for the proposed project. The Notice of Preparation (NOP) for the PEIR as well as an audio presentation describing the process can be accessed at: www.LACoH2Osheds.com. The audio presentation has been added to the web-site for those that were not able to attend the three Scoping Meetings held in September.

The LACFCD, the County of Los Angeles, and 84 incorporated cities within Los Angeles County (collectively referred to as Permittees) are covered under federal clean water regulations ("permits") for the discharge of urban runoff to waters of the United States. Under the 2012 Municipal Separate Storm Sewer System (MS4) Permit for Los Angeles County, Permitees have the option of implementing an innovative approach to Permit compliance through development of EWMPs. The LACFCD, along with participating cities, has opted to exercise this option through the development of 12 EWMPs in their respective watershed groups. These EWMPs will identify structural and non-structural strategies to achieve permit compliance. The EWMPs will be submitted to the Los Angeles Regional Water Quality Control Board (LARWQCB) for approval. Implementation of the EMWPs would occur following approval by the LARWQCB.

We will continue to keep you informed of the process.

Attachment 9
Public Comment Letters Received

October 16, 2014

Enrique Huerta
At-Large Stakeholder
7345 Nada Street
Downey, CA 90242
ehuerta28@gmail.com
(323) 573-0129

Gregg BeGell, P.E.
County of Los Angeles Department of Public Works
Project Management Division II
900 South Fremont Avenue, 5th Floor
Alhambra, CA 91803
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gbegell@dpw.lacounty.gov

RE: Public Comments: Notice of Preparation of a Draft Program Environmental Impact Report for Enhanced Watershed Management Programs

Dear Mr. BeGell:

Thank you for your efforts on the Notice of Preparation (NOP) for the Draft Program Environmental Impact Report for the Enhanced Watershed Management Programs (EWMP). I am confident your work will result in an informative and precise first tier final Program Environmental Report (PEIR) that is adequate, complete, and a good faith effort at full disclosure. The purpose of my comments, per Section 15168(c)(5) of the 2014 California Environmental Quality Act (CEQA) Statute and Guidelines, is to assist in the creation of a PEIR "that deals with the effects of the program as specifically and comprehensively as possible." Additionally, I realize that by doing "a good and detailed analysis of the program, many subsequent activities could be found to be within the scope of the project described in the program EIR, and no further environmental documents would be required."

I recognize and appreciate the herculean task involved for the Flood Control District and it is my sincere attempt to keep my comments relevant to the NOP. As such, I have attempted to draft my comments in a reader-friendly manner that identify the issue and propose a feasible solution(s). My comments only address the content of the NOP.

COMMENTS ON THE CONTENT OF THE NOP

1. Introduction

(Page No. 2) Please elaborate on the approval process. It would be informative if the role between the Los Angeles County Flood Control District (LACFCD) and the Los Angeles Regional Water Quality Control Board (LARWQCB) is further explained. The introduction does a good job explaining the steps involved in the EWMP process, but lacks clarity on the connection between the PEIR and LARWQCB. In particular, the sentence in mind states, “The LARWQCB is responsible for approval of the EWMPs in compliance with the MS4 Permit. Implementation of the EMWPs would occur following approval by the LARWQCB.”

If the LARWQCB approves the EWMPs then who adopts the final PEIR? How does this PEIR fit into the responsibilities and mandates of the LARWQCB? All 12 of the EWMPs specify a date when the final EWMPs will be submitted (June 2015) to the LARWQCB, but no mention is made about the PEIR. Will the Lead Agency submit a EWMP packet on behalf of all 12 EWMPS and will the PEIR be a part of that packet? In addition, the NOI submitted to the LARWQCB by each Watershed Management Group (WMG) span two programs: the EWMPs ‘and’ Coordinated Integrated Monitoring Programs (CIMP). Does this PEIR also analyze the CIMP?

(Page 5) The opening paragraph states that “The primary approach to each of the EWMPs, as identified in the Draft Work Plans, includes identifying community-friendly, cost-effective methods of reducing urban runoff pollution and incorporating distributed and centralized structural and nonstructural watershed control measures for a multi-pollutant, multi-benefit approach.” However, a review of all 12 EWMPs indicates that there was no cost/benefit analysis completed to substantiate the “cost-effectiveness” of these methods. Please identify any additional documentation supporting this claim.

(Page No. 5) Please clarify the use of the term “project.” The final sentence in the first paragraph states, “The EWMPs will also evaluate multi-benefit regional projects that will retain (through infiltration or capture and reuse) the stormwater quality design volume (85th percentile storm for 24 hours) for the runoff from the contributing drainage area.” Evaluating, I’m assuming site-level projects with regional benefits, at the PEIR level increases the dissonance between the goal of an EIR, as Section 21002.1(d) of the CEQA Statute states, “to consider the effects, both individual and collective, of all activities involved in a project,” and the inherent collective geographic scope of the PEIR. I reviewed all 12 of the EWMPs and CIMPs. All 12 of the EWMPs do not identify projects currently in the works and no analysis is provided. The EWMPs seem to be evaluating plans and policies. Clarification of the term project would be beneficial in order to clearly understand the scope of this PEIR.

In addition, Section 21003 states that, “All persons and public agencies involved in the environmental review process be responsible for carrying out the process in the most efficient, expeditious manner in order to conserve the available financial, governmental, physical, and social resources with the objective that those resources may be better applied toward the mitigation of actual significant effects on the environment.” In an effort to avoid the possibility of imposing an unfunded mandate on local cities and/or non-profit groups to undertake the second tier of this PEIR, the prudent use of public funds, and to promote a second tier CEQA process that is streamlined, I feel it would be beneficial to incorporate an analysis of current projects in the “pipeline.”

This is critical because a review of the Greater Los Angeles County Integrated Regional Water Management (IRWM) database reveals over 190 water resources projects with regionally-significant benefits in the pipeline (Appendix A). The IRWM is a funding mechanism that encourages regional and local collaboration in the design of sustainable water resources infrastructure. To date, regional agencies, cities, non-profits and community representative groups, have collaborated and submitted project proposals of regional significance. Not all of these projects incorporate BMPs, per say (many do), and many have already been deemed categorically exempt. Additional vetting would need to take place in order to identify projects in-line with a low impact development ideal to collaborate and integrate compliance strategies that are based on a multi-pollutant approach with a focus on green infrastructure that maximize the retention and use of urban runoff as a resource for recharging aquifers and for irrigation and other uses.

If this nexus to analyze the impacts of regional projects is deemed reasonably feasible, further vetting of the projects would be required to understand their CEQA status. The question is who conducts this analysis, the LACFCD or the WMGs? This is important to figure out since Section 15152(b) of the CEQA Statute and Guidelines states that, "Tiering does not excuse the lead agency from adequately analyzing reasonably foreseeable significant environmental effects of the project and does not justify deferring such analysis to a later tier EIR or negative declaration."

(Page 5) The second paragraph states, "The PEIR will provide a program-level assessment of the overall permit compliance effort, focusing particularly on the structural watershed control measures proposed in each of the 12 EWMP areas." The project list on Appendix A identifies projects aiming to implement watershed control measures throughout Los Angeles County. Many of these projects are categorically exempt, have concluded their own environmental assessment or already constructed, however, the database (L.A. County Water Plan) where I retrieved these does not clearly indicate this information. Furthermore, none of the 12 EWMPs under consideration undertook this task to see how the proposed physical changes within their EWMP may or may not comply with the goals and objectives of their respective plans and policies. In an effort to, as Section 15152© describes, "avoid deferring the potential significant impacts to the second tier and possibly preventing the adequate identification of significant effects of the planning approval at hand," it may be worthwhile to include this list in the PEIR analysis or have the WMGs revise their draft plans to incorporate this analysis.

1.1 Project Location

The description of the location could be augmented by elaborating on the environmental context. That is, adding maps identifying the tributaries, rivers, channels, etc. within the 12 watersheds could increase understanding of the local watershed functional characteristics. This detailed information is contained in most of the individual EWMPs. A reference to the website location of each respective EWMP could suffice.

Additionally, there is no reference to the types of soils that underlie the 12 EWMPS. The EWMPs provide a summary of these soil characteristics. A reference to the website location of each respective EWMP would be helpful. It is important to know the soil types and their respective infiltration rates in order to understand the feasibility of implementing certain structural BMPs. I realize that this may be covered in more depth under the Geology, Soils and Seismicity category, but there is no clear reference in the accompanying summary.

2. BACKGROUND

2.1 Stormwater/Water Quality

(Page 7) The first paragraph states, "Discharges may adversely affect receiving surface water quality with pollutants such as bacteria, nutrients (nitrogen and phosphorus), aluminum, copper, lead, zinc, diazinon, and cyanide. Aquatic toxicity, particularly during wet weather, is also a concern. Stormwater and non-stormwater discharges of debris and trash are also a pervasive water quality problem in the Los Angeles region." It would be beneficial to add the types of pollution stemming from the natural environment (non-anthropogenic), too. What kind of pollutants exists in the soils being eroded from natural settings and vacant parcels of land?

2.2 Total Maximum Daily Loads

The final sentence in this paragraph states, "LARWQCB and United States Environmental Protection Agency (USEPA) have established 33 TMDLs that identify Los Angeles County MS4 discharges as one of the pollutant sources causing or contributing to these water quality impairments." Please elaborate on the NPDES permit process. Is there a need for discretionary approval of the EWMPs or PEIR by the USEPA? Is there a need for the USEPA to issue a TMDL or other permit? If so, is there a need to do a concurrent Environmental Impact Statement?

2.3 MS4 Permit

(Page 8) This section states. "The intent of the EWMP is to comprehensively evaluate opportunities, within the participating Permittees' collective jurisdictional boundaries, for collaboration among Permittees and other partners on multi-benefit regional projects that, wherever feasible, retain non-stormwater runoff and also address flood control and/or water supply." Has the United States Army Corp of Engineers (USACE) been a part of these collaborative efforts? Are any of their existing infrastructure being directly or indirectly impacted by the EWMPs? Is there a need for discretionary approval of the EWMPs or PEIR by the USACE? Is there a need for the USACE to issue a permit related to the EWMPs? If so, is there a need to do a concurrent Environmental Impact Statement?

3. Enhanced Watershed Management Plans

As mentioned in the first comment under the Introduction heading, please elaborate on the approval process. Specifically, how the PEIR fits into the LARWQCBs approval of the EWMPs.

4.1.1 Regional Structural BMPs

The second paragraph states, "Opportunities for Regional BMPs will be identified and evaluated within and across subwatersheds, with focus on the multi-benefit potential for capture and reuse of wet-weather flows within variable drainage areas." What method and level of detail will be used to identify and evaluate BMPs? This paragraph goes on to state that, "Potential project locations may include areas with open spaces, whether they are within parks, large parking lots, or vacant spaces," indicating that a geographically site-specific analysis is appropriate under this PEIR. Collectively, there is over 190 regional projects identified in Appendix A being proposed by the various members of the WMGs. Based on the site-specific potential project locations stated above, is it feasible to include an analysis of the project list (Appendix A)?

5 Potential Environmental Impacts

This section (nor the LACoH2Osheds website) does not reference the completion of an Initial Study per Section 15063©(1). How did the Lead Agency identify the effects determined not to be significant? Is there an explanation of the reasons for determining that potentially significant effects would not be significant?

Sincerely,

<u>Enrique Huerta, M.S.</u>

Appendix A

Comment Letter to the LACFCD: Draft PEIR

	Project Name	Project Proponent	Project Description
1	25 mgd Sea Water Desalinization Plant in West Basin	West Basin Municipal Water District	The project proposes to construct a 25mgd Seawater Desalination Plant in West Basin's service area for potable water use. First, a Demonstration Plant will be necessary to evaluate the water quality performance and treatment stability, assess efficient energy recovery devices, optimize operational performance utilizing full scale process equipment, and to acquire the necessary data to achieve regulatory compliance and approval. West Basin and its partners will perform the full battery of water quality analyses to ensure that the demonstration project meets all Federal and State Drinking Water Standards. With the knowledge gained by operating the Demonstration Plant, West Basin expects to move forward with the planning, design, and construction of a full scale 25,000 AFY seawater desalination and education facility. West Basin anticipates operating the Demonstration Plant for at least two years while plans are being completed and finalized for the full-scale plant. The Demonstration Facility is in design.
2	AMR Conversion Project	Los Angeles County Waterworks District No. 29	The project consists of replacing the older water meters in Waterworks District No. 29. The District maintains approximately 7,700 water meters in Malibu and Topanga. About 40 percent of the meters are older than 15 years and 30 percent are 20 years or older. Meters lose accuracy over time, representing unaccounted water consumption in the District. Older meters typically under-measure water use. Replacing old water meters with automated meter reading (AMR) meters will yield timely, reliable water consumption patterns for detecting leaks and producing accurate customer bills. Higher bills with higher water use volumes will alert District customers about their water consumption habits, which is expected to encourage conservation. The current practice is to replace meters as the meters stop functioning or become unreadable. About 20% of the water meters in Malibu and Topanga have been replaced with AMR meters.
3	Agoura Road Gap Recycled Water System Expansion	Las Virgenes Municipal Water District	The project would extend the existing recycled water line along Agoura Road to serve existing customers who use potable water for landscape irrigation. Pipeline for this project is estimated at 9250 feet of 8 inch pipe and would connect to existing recycled water pipelines on both east and west sides of the extension. This would connect the gap that exists between Reyes Adobe Road and Lewis Road and improve the system hydraulics and reliability of service to customers. The estimated maximum daily demand for the Agoura Road Extension is 73 gpm.

4	Agua Amarga Lunada Canyon Habitat Restoration	Palos Verdes Peninsula Land Conservancy & City of Rancho Palos Verdes	Restore 20 acres at Agua Amarga Reserve, to provide habitat for the Federally threatened Coastal California gnatcatcher, the Federally endangered Palos Verdes blue butterfly, and the rare cactus wren. A one-mile trail in the Reserve continues to the coast. A year-round flow of water is discharged to the head of Lunada Canyon via a County of Los Angeles storm drain; the water then flows below ground through the canyon, the course of an historic blue line stream, and re-emerges at its confluence with Agua Amarga Canyon, also a blue-line stream that flows into the Santa Monica Bay. Invasive plant species provide little water infiltration and threaten to spread to the pristine lower canyon. The project will remove invasive plants, restore 18 acres of riparian and coastal sage scrub; install 2 acres of cactus scrub in highly degraded fuel modification areas; improve trails and add trail signage. Interpretive signage will educate hikers about creating wildlife-friendly fuel modification zone.
5	Aliso Creek - Limekiln Creek Restoration Project	City of Los Angeles Bureau of Sanitation Watershed Protection Division	Stormwater runoff would be diverted from Aliso Creek and from Limekiln Creek and stormwater runoff generated on site will be treated. In addition to providing water quality benefits, the project will result in the creation of self-sustaining riparian woodland vegetation and other re-vegetated areas, as well as providing recreational opportunities to area residents.The site has an area of approx. 11.8 acres and is currently used as a flood control facility, provides open space, and serves as part of Vanalden Park.Wet weather runoff and dry weather runoff from an approx. 12,091 acres that drains to the confluence of Aliso Creek and Limekiln Creek is going to be captured and conveyed to the project site for treatment.On-site generated flows will also be captured and treated.Proposed BMPs to treat captured water:Low flow channel diversions and pumping:Pre-screening devices, Bioswales, Vegetated detention basins, Landscaping with native upland and riparian species and Installing decomposed granite pathways.
6	Alondra Regional Park	Successor Agency, City of Compton	Alondra Regional Park is a multi-benefit project that serves disadvantaged communities while meeting IRWMP water management objectives. The entire site is currently an empty 18-acre lot owned by the City of Compton. This proposal is for Phase I of the project and covers 12 acres on the southern half of the parcel. The park provides recreational opportunities while improving surface water discharges into the Dominguez Channel Watershed. The project site sits low on the drainage area and will capture 1.5AF of stormwater. The park features a swale and daylighted stream to remove nutrients and pollutants that otherwise flow to local waterways. The large biofiltration field will reduce peak flows, improve water quality and occasionally serve as a recreational field. Surface water quality improvements would help the region meet requirements under the Municipal Separate Storm Sewer System Permit. The project also includes native shrubs and trees that will increase habitat for birds, butterfly species and mammals.

7	Alternative Decker Canyon Recycled Water Extension	Las Virgenes Municipal Water District	As with the original Decker Canyon Recycled Water Extension pipeline route, this alternate would primarily serve the Malibu Golf Club, the largest potable water user in the LVMWD service area. The 2007 Master Plan advocated that serving the golf course with recycled water could be an important strategy for relieving eventual stress on the potable system. The longer alternative route used in this project would also serve other demands along the way. In addition to the golf club, significant recycled water demands are expected to come from a new development (Triangle Ranch) and conversion of the existing Medea Valley ranchettes to recycled water use. The project is projected to deliver 459 AF/Y of recycled water, offsetting the same amount of potable demand that would occur if the extension were not built.
8	Andrews Park Subsurface Storage, Use and Infiltration Project	City of Redondo Beach	The project will consist of a diversion, conveyance pipes, a gross solids removal device (GSRD), an irrigation storage tank, and an infiltration gallery. Dry- and wet-weather flows will be diverted from the existing storm drain up to the maximum diversion flow rate and will then enter the storage tank through the conveyance pipe and GSRD. Once the storage tank reaches a depth of 1.5 feet, flows will be pumped to be used for onsite subsurface irrigation. When the storage volume of the irrigation tank reaches capacity, runoff will flow via an overflow pipe into the infiltration gallery, where the water will infiltrate subsurface soils. When continual flows fill the infiltration gallery and irrigation storage vault to storage capacity, diverted flows will back-up through the diversion piping and prevent additional flow diversion until capacity is freed up due to irrigation use and/or infiltration losses.
9	Arroyo Seco Confluence Gateway	Arroyo Seco Foundation	The Confluence Gateway Greenway Program will restore a 1/3 mile stretch of urban land alongside the Arroyo Seco, in the Arroyo Seco Scenic Byway Corridor, into a riparian greenway and open space park with native landscaping and a bicycle/pedestrian path. Not only would the project embody a first step in enhancing river access and recreation opportunities, it would provide a key link between the planned Los Angeles River greenways at the confluence and the Metro Rail station in the historic Lincoln Heights neighborhood, thus enabling light rail and bicycle access to the Arroyo Seco and the Los Angeles River. Ultimately, the Arroyo Seco greenway is envisioned to extend to South Pasadena, and this initial segment at the confluence would be an important hub in the regional river parkway and bicycle trail network.

10	Arroyo Seco North Branch Creek Daylighting	Arroyo Seco Foundation	Naturalize north branch storm drain and restore stream through Sycamore Grove Park. Primary Objectives Addressed by the Project: By re-establishing an urban stream, this project addresses water quality, riparian habitat restoration, groundwater recharge, flood management, and public education. The Sycamore Grove Park site is approximately 800 feet long and 400 feet wide. This 8-acre site is located in northeast Los Angeles and situated west of the SR-110 (). This site encompasses Sycamore Grove Park and is bounded by South Avenue 49 to the northeast, the SR-110 to the east, medium density residential uses to the south, and North Figueroa Street to the west. Sycamore Grove Park is a landscaped area consisting of a large lawn, playground, and parking area. The North Branch tributary is contained within a storm drain beneath Sycamore Grove Park.
11	Baldwin Lake	Los Angeles Arboretum Foundation	For centuries the waters of Baldwin Lake have sustained human endeavor. A rich historic site, its role began in the Native America period when springs and marsh, precursors to today's lake, supported nearby habitation. In the late 19th Century, Elias Jackson Baldwin chose the Lake as the center for agriculture and land development that shaped the establishment of the east San Gabriel Valley. Today, as the centerpiece of the Los Angeles County Arboretum, the Lake is an educational and scenic resource serving hundreds of thousands of visitors. Looking to the future, Baldwin Lake is envisioned as a model for community-based environmental stewardship and regional approaches to water management and conservation. Ideally located at the edge of the Raymond Basin aquifer, the Lake offers great potential as the nexus for water management and ground water recharge for the Arboretum's 127 acres, as well as the surrounding urban watershed. Educational programming that interprets the history of the Lake, particul
12	Ballona Creek Water Quality and Beach Improvement & Beneficial Use Project	City of Los Angeles Bureau of Sanitation Watershed Protection Division	Project is to implement the valuable uses of stormwater and to improve the water quality in Ballona Creek Watershed. Ballona Creek Low Flow Treatment Facility (LFTF), also known as North Outfall Treatment Facility (NOTF), is one of several projects proposed in Ballona Creek TMDL Implementation Plans for Bacteria, Metals, and Toxic Pollutants. The LFTF includes a 1 million gallon storage facility and has the capacity to treat up to 150 cfs, including screening of coarse, fine sediments, and disinfection with sodium hypochlorite. NOTF was constructed in 1987 by City of Los Angeles. The project proposes to use the existing treatment facility and construct a low-flow diversion structure in Ballona Creek Channel to divert and treat full dry-weather flow and partial wet-weather flow. 65 percent of Ballona Creek Watershed (85 square miles) is located upstream of the Project, with average dry-weather flows ranging from 14 to 25 cfs. Treatment will include coarse screens, sedimentation, filtration, and disinfection.

13	Be A Water Saver Water Conservation Program	City of Burbank Water and Power	The City of Burbank proposes to expand and increase water conservation through the expansion of a comprehensive indoor/outdoor financial incentive program that will result in immediate and sustainable water savings. The proposed Rebate Program to install 1,300 HE toilets, replace 300,000 square feet of turf with native landscapes, capture and reuse rain water 3 million gallons of rain water with rain barrels, and increase water conservation education efforts will save an estimated 500 AF of water annually. Grant funding for the proposed project will facilitate greater water savings by providing funding for greater levels of participation sooner than would be realized under typical funding efforts. Furthermore, these benefits will be realized faster by utilizing a proven system for conservation, a truly ready to proceed project. This project has the potential to double participation levels.
14	Bette Davis Park Water Recycling Project	LADWP	This project will consist of planning, design, and construction of approximately 4,625 feet of new 8-inch PVC and Ductile Iron recycled water pipeline to extend Glendale's recycled water distribution system from the intersection of Flower St. and Grandview Ave. to Bette Davis Park. Approximately 4,300 feet of pipeline will be installed within Glendale's city right of way. Through an Agreement with the City of Glendale, this project will be designed and constructed by Glendale's contractors and LADWP will reinburse Glendale for the costs. This will reduce the City's potable demand for non-potable uses. This project will offset up to 75 AFY of potable water with recycled water.
15	Big Dalton Sluiceway Rehabilitation	Los Angeles County Flood Control District	This project will upgrade the sluiceway to function as a low level outlet for regulating flows under high reservoir pressure and repair various facility components for the dam. The existing sluice gate at the upstream end is to be replaced with a new heavy duty hydraulic actuated gate, the sluiceway is to be lined with new pipe for the entire length, and a throttling valve is to be installed at the outlet. Storm releases through the sluiceway will reduce the rate of sediment accumulation and prevent sediment deposits at the face of the dam. Incoming sediments during storm flows could be routed through the reservoir to restore a more natural sediment transport system and maintain reservoir capacity
16	Big Dalton Spreading Grounds Improvements	Los Angeles County Flood Control District	The proposed project will modify and motorize the diversion box at Big Dalton Spreading Grounds to better control flows taken into the facility. The spreading basins will be reconfigured to increase percolation rates and storage capacity. An intake will be constructed from Little Dalton Diversion Channel so that additional storm flows can be diverted to the facility. A proposed outlet from Metropolitan Water District's PM-26 imported water line to the Little Dalton Diversion channel will enable imported water to be recharged at the spreading grounds.

17	Big Rock Bypass	Los Angeles County Waterworks District No. 29	The project consists of constructing three 18-inch diameter bypass water pipelines approximately 1,500 feet in length within the areas of active landslides along Pacific Coast Highway. This bypass will serve as a permanent replacement of an existing 30-inch diameter water pipeline that has experienced significant breaks resulting in large water loss. The proposed pipeline will be raised to a shallow trench and protected by a reinforced concrete box covered with steel plates to provide quick access if any leakage occurs. In addition, 18-inch Flexible Expansion Joints will also be installed at several locations with the areas of the active landslides to prevent damage or rupture of pipelines from ground movement.
18	Big Tujunga Dam Spillway Dam	Los Angeles County Flood Control District	Construction of a dam within the spillway at Big Tujunga Dam to increase the maximum storage capacity of the reservoir by approximately 705 acre-feet.
19	Big Tujunga Reservoir Sediment Removal	Los Angeles County Flood Control District	The 2009 Station Fire was the largest fire in Angeles National Forest recorded history and burned over 160,000 acres before containment on October 16, 2009. Approximately 87% of the watershed tributary to Big Tujunga Reservoir was affected. On average, a watershed will take five years or more to recover from a forest fire burn. During this time, increased amounts of debris production are anticipated from the denuded ground surface. Based on the 2010-11 storm season surveys, the total amount of sediment in the Big Tujunga Reservoir is approximately 2 million cubic yards. The County of Los Angeles Department of Public Works on behalf of the Los Angeles County Flood Control District proposes a sediment removal project to permanently remove up to 4.4 mcy of sediment from Big Tujunga Reservoir. Sediment will be excavated and transported using low emission trucks or conveyor belt to Maple Canyon Sediment Placement Site adjacent to Big Tujunga Dam. The project will be completed over four years starting in the sum
20	Boulevard Pit Stormwater Capture Project	LADWP	Acquire and develop Boulevard Pit into a multi-use retention and recharge facility to enhance stormwater conservation.
21	Branford Spreading Basin Cleanout and Pump	Los Angeles County Flood Control District	Branford Spreading Ground has very low percolation rates compared to the Tujunga Spreading Ground directly across the Tujunga Wash Channel. This project will install a pump from Branford Spreading Ground to direct water into the Tujunga Spreading Ground leading to more groundwater recharge. In addition, the project will clean out the clogging layer at the bottom of basin, which will also improve percolation rates.

22	Broadway Neighborhood Stormwater Greenway Project	City of Los Angeles Bureau of Sanitation	In partnership with Water Replenishment District of Southern California and it's "Regional and Distributed Stormwater Capture Feasibiltiy Study," the proposed project will design and implement stormwater Best Management Practices (BMPs) in the City of Los Angeles with the primary goals of TMDL compliance and stormwater infiltration. Three levels of BMPs will be developed; local parcel based Low Impact Development (LID) for 8 acres (60 residential parcels), neighborhood scale LID for 12 acres (3 residential streets and 2 blocks of commercial streets), and a sub-regional scale facility for 30 acres of mixed land uses. The local and neighborhood BMPs will capture and infiltrate all dry-weather flow and up to the ¾ inch storm. The sub regional BMP will capture up to the 2 inch storm for 30 acres. The sub regional BMP will also receive dry-weather flows from 228 acres of mixed land uses. Designs will be standardized to remote widespread implementation.
23	Bull Creek Stormwater Capture	Los Angeles County Flood Control District	Historical records show that an annual average of 625 acre-feet of water passes though Bull Creek. All flows from Bull Creek are lost to the ocean via the Los Angeles River. This project proposes conserving the lost water by diverting flows from the new LADWP facility using a rubber dam and conveying flows through a pipeline to Pacoima Spreading Grounds where it would be captured and recharge the local aquifier.
24	Bull CreekLos Angeles Reservoir Water Quality Improvement Project	LADWP	Plan, design, and construct stormwater conveyance facilities for compliance with the Enhanced Surface Water Treatment Rule. Facilities will be designed according to standards adopted by Department of Water Resources, Division of Safety of Dams. Improvements include widening a portion of the Bull Creek Extension Channel, realigning a section downstream of the widening, construction of a new diversion structure and overflow structure, and improvements to inlet structures. The Los Angeles Reservoir spillway will be removed from service. Proposed design facilitates a future stormwater capture program.
25	Burbank Partnership Water Recycling Project	LADWP	The Burbank Partnership Water Recycling Project involves the planning, design, and construction of approximately 27,000 feet of recycled water pipelines in the North Hollywood area. The three individual segments that comprise the project are the Chandler Boulevard Bike Path segment, the Whitnall Dog Park segment, and the North Hollywood Park segment. These segments will connect to Burbank's recycled water distribution system at three separate connection points and will be served by recycled water treated at the Burbank Water Reclamation Plant. This project is expected to offset up to 285 AFY of potable water with recycled water.

26	Burbank Water and Power Recycled Water System Expansion, Phase 3	City of Burbank Water and Power	The third phase of the City of Burbank's recent recycled water system expansion. As a result of previous phases, over 20 miles of recycled water pipelines have been installed resulting in the distribution of over 2,300 AF of recycled water annually; amounting to 13% of the City's water demand by the end of 2014. The City will continue expanding its recycled water distribution to offset potable water use in this phase by constructing two new recycled water pipelines known as, the LA Equestrian Center (LAEC) and the Naomi pipelines. The LAEC is located on the borders of the cities of Burbank and Los Angeles consisting of landscape areas, stables, offices and corrals; the latter requiring dust control with water trucks. The Naomi pipeline would primarily provide recycled water to a very large commercial data center and smaller customers. Completion of these pipelines will increase recycled water distribution by an estimated 61 AFY, resulting in a direct and immediate potable water savings of 61 AF annually.
27	C Marvin Brewer Desalter Brackish Groundwater Facility Expansion	West Basin Municipal Water District	The Desalter currently has the capacity to extract up to 2,000 acre-feet annually of brackish water. In 2003 the old wells at the site were decommissioned and construction began in 2005 for the first replacement well. The facility became operational in 2006 at a reduced capacity using the new well and the original RO unit. The facility has not been operating to its full capacity since it came online again in 2007 because of water quality issues. Funding is also needed to correct the water quality problems in order to get the facility to its full operating capacity. The proposed 500 AFY capacity expansion will allow the facility to become operational at its full capacity of 2,000 acre-feet per year. The site is already owned by California Water Service Co. and leased by West Basin and is developed as a desalting facility. The expansion will include the installation of a new production well, and the addition of an acid pretreatment unit and a reverse osmosis treatment unit on the existing site.
28	CITYWIDE STORM DRAIN CATCH BASIN CURB SCREENS	CITY of CALABASAS	Installation of storm drain catch basin curb screens at all applicable locations citywide. These screens are the stainless variety approved curb by Los Angeles County. The purpose of the curb screens is to stop trash from entering the catch basins which eventually discharge into both the Los Angeles River and Malibu Creek watersheds. By implementing this project, City of Calabasas will be in compliance with the Trash TMDL both for LA River and Malibu Creek watersheds. Based on studies done, reduction in trash and debris loadings will also reduce Bacterial and sediment loading in the watershed. By implementing the project, disadvantaged communities downstream of Calabasas in Los Angeles River will benefit from cleaner water. The scope work consists of measuring all catch basin openings, drafting RFP with detailed specifications, soliciting proposals from the list of Los Angeles County's approved venders, negotiating contract, implementation/construction, monitoring and reporting.

29	Caballero Creek & Los Angeles River Confluence Park	Mountains Recreation and Conservation Authority	The project will convert a 1.55 acre vacant parcel at the confluence of the Los Angeles River and Caballero Creek into a publicly-accessible natural park with habitat restoration, paths, site furnishings, water quality improvements, waterfront-access, and educational amentities. The design utilizes an innovative mixes low-tech mechanical and biological methods to filter and infiltrate storm waters increases regional water quality. The project creates a multi-benefit park that provides ecosystem services as well as cultural services, like recreation and eco-tourism. The project concept was developed in partnership with the City and County of Los Angeles who have committed to retain ownership, maintenance and operation responsibilities while allowing the Mountains Recreation and Conservation Authority (MRCA) to oversee design and construction. Nearby Reseda High School will monitor the project and use it for hands-on learning and community service opportunities.
30	Camino San Rafael Recycled Water Project	Glendale Water & Power	This project will consist of design and construction of approximately 8300 feet & 6000 feet of new 4"and 8" PVC recycled water pipeline, respectively. The project also consists of installing a two booster stations. This project will extend Glendale's recycled water distribution system to provide recycled water for common area irrigation to the Camino San Rafael Homes. This project will offset up to 90 AFY of potable water with recycled water. This will reduce the City's demand on potable water.
31	Carson Regional Water Recycling Project	West Basin Municipal Water District	The Carson Regional Water Recycling Expansion Project includes the expansion of the existing recycled water treatment facility and the construction of several laterals. This is a new demand on the system and will require expansion of treatment process capacity and conveyance to include; lateral pipelines, pump stations, treatment units, storage tanks, and waste management facilities. The BP Refinery requires single-pass reverse osmosis treatment units. BP Refinery is estimating a need of 2,100 acre-feet per year (AFY). The project will be further expanded to serve customers within the City of Los Angeles' jurisdiction for the refineries in the port area. The City will need recycled water to satisfy a use of 9,300 AFY. The City is in the preliminary design stage.

32	Chase Street Stormwater Greenway	City of Los Angeles Bureau of Sanitation, Watershed Protection Division	The Project will provide a street-end interpretive area on Bull Creek at Chase Street, and install a Stormwater Greenway along Chase Street from the eastern street end on the north side right-of-way to Hayvenhurst, and on the north and south right-of-way to Gothic. Vegetated planters in the parkways will capture and infiltrate street runoff, and will provide storm water filtration, and tree shading. The Bull Creek street-end will feature a native landscape as habitat and a recreational rest stop along the channel, and will provide an interpretive site for wildlife selected and supported by the specific native planting used in the project. A channel diversion from Bull Creek, with a pre-filter and lift station, will transfer runoff through a pipeline to a local Sod Farm where it will be used to irrigate up to 30-commercial acres. The project will integrate water conservation goals (LADWP), Storm water objectives (BOS), Economic enhancements to city property (LAWA), & public health and recreation benefits.
33	Chemical Study - Rio Hondo	Los Angeles County Flood Control District	This project will install a chemical treatment system at the Rio Hondo Coastal Spreading Grounds to remove sediment fines from the water and improve the percolation rates. A Percolation Optimization Investigation (POI) report was done by Montgomery Watson Harza (MWH) in 2003 to evaluate the County's spreading grounds and the impact of suspended solids on percolation rates. The report made a number of recommendations and the recommendations will be implemented at the Rio Hondo flood control facility. The project will install a coagulant chemical feeder and mixer at the grounds intake. This will allow the silt in the stormwater to coagulate and settle prior the cleaner water to flowing into spreading grounds. When this occurs, the spreading grounds will be able to percolate more water, thus conserving and recharging more groundwater.
34	Chevy Oaks Recycled Water Project	Glendale Water & Power	This project will consist of design and construction of approximately 920 feet, 1900 feet & 2100 feet of new 4", 8" and 12" PVC recycled water pipeline, respectively. The project also consists of installing a small booster station. This project will extend Glendale's recycled water distribution system to provide recycled water for irrigation to the Chevy Oaks Homes. This project will offset up to 30 AFY of potable water with recycled water. This will reduce the City's demand on potable water.
35	City of Carson Rain Barrel Give Away Phase II	City of Carson, Development Services Department, Engineering Services Division	At completion of a prior grant, a modest amount of money remained unused. With the acquiesence of the granting agency, the City of Carson purchased 16 rain barrels and set up a website lottery system in order to award them to residents. The response was overwhelming and with no advertising over 100 contestents were disappointed to not receive a rain barrel. This proposal would lead to the purchase of an additional 1,000 rainbarrels (depending on cost and grant amount) to restock the lottery reserves. Advertising and management of the program would be provided as part of the City of Carson grant match. More information on Fiskar Rain Barrels is available at http://www2.fiskars.com/Products/Yard-and-Garden/Rain-Barrel-Systems

36	City of Monrovia Fire Department - Training Center Water Recycling Project	Upper San Gabriel Valley Municipal Water District	Upper District in cooperation with the City and Fire Department of Monrovia are submitting this project incorporating both dry and wet weather runoff capture, treatment and storage for the new Regional Training Center. Once collected, the fire training water and the 85th percentile of a 24 hour storm event (as required by the City's MS4 permit) will be treated before being discharged into storage holding tanks which will store the treated water for future reuse by the training facility. The objective is to offset the use of potable water at the facility, eliminate storm water discharge and capture wet-weather storm water runoff. Finally, if the wet-weather event is larger than the 85th percentile, then provisions are being considered to treat as much of the additional wet-weather storm water runoff via a natural infiltration gallery (bioswale) before being discharged into the City's storm water system.
37	Cogswell Dam Inlet/Outlet Works Rehabilitation Project	Los Angeles County Flood Control District	This project will consist of refurbishment and upgrades to the outlet works, tunnels, and repair of various facility components at Cogswell Dam. The project will increase operational effectiveness for flood control and water conservation. The project will involve: a complete overhaul of the dam's entire inlet/outlet works; upgrade on the electrical control equipment; repair of downstream facilities; structural repairs on the upstream facing slab; security upgrades; and other various repairs essential for maintaining and operating a flood control facility. The overall project intent is to improve Cogswell Dam for maintaining dam safety, increased efficiency and reliability of flood control operations, and enhancement of water conservation efforts.
38	Cold Creek Diamond Acquisition	Mountains Restoration Trust	The project will acquire 4.87 acres (APN 4455-021-040) of natural undisturbed open space within the existing 1348-acre Cold Creek Preserve in the Santa Monica Mountains National Recreation Area. The acquisition is part of the state-funded Cold Creek Restoration Plan designed to acquire 539.06 acres to protect the wild and scenic, perennial Cold Creek, the habitat linkage between Topanga State Park and Malibu Creek State Park, the values of Los Angeles County's Significant Ecological Area #9, and a future venue for environmental education, research, and recreation. The area includes significant oak, sycamore, and willow communities, supports a range of wildlife including mountain lion, gray fox and raptors. The pure waters once supported the federally-listed endangered southern steelhead trout.
39	Conservation Budget Based Tiered Rate Structure	West Basin Municipal Water District	This project helps our customer agencies to develop a water conservation, budget-based rate structure for their customers. The project is beneficial to West Basin's cities and retail water agencies because it provides a pricing structure that will incentivizes its customers to conserve water. This pricing method has been used in other parts of the State and has been successssful at reducing water usage and reqarding those who do so with lower rates on their water bill.

40	Conversion of 237th Street Sump Tributary to Machado Lakes for Nutrient and Toxics TMDL BMPs	City of Torrance	This project would convert the 237th St. Sump (4.5 acre-feet) into a retention/infiltration basin BMP for Toxics and Nutrient TMDL compliance and provide open spaces for wildlife habitat. This project would install diversion structures that would divert the first 4.5 acre-feet of stormwater from a 71 acre tributary area away from the system tributary to Machado Lake (Wilmington Drain) to be retained and infiltrated in this basin. Trash screens would be installed at the catch basin in the watershed by a seperate project. During the dry season the basin would remain an open space for wild life and retain urban run-off and nutrients form 71 acres. By diverting stormwater back into this basin, the City and County storm drain systems would have more capacity during rain events. This project would also increase groundwater recharge.
41	Creek Crossings Repairs	Los Angeles County Waterworks District No. 29	This project consists of repairing corroded and deteriorated sections of aboveground pipeline and developing a Corrosion Monitoring, Control, and Maintenance Program. The Waterworks District 29 transmission water pipeline runs along the Pacific Coast Highway in Malibu. The proposed pipeline repairs are located at eight creek crossings attached to bridge structures. The project will significantly prevent future leaks and breaks in the main transmission pipeline which is the primary source of water supply for Malibu and Topanga. The development of a maintenance program is essential to maintaining water supply reliability for the region.
42	Deauville Distributed Water Reuse Project	City of Santa Monica	The project would harvest stormwater and brackish groundwater for high level treatment and non-potable use around the City, replacing the use of imported potable water. The City would install a 1.3 million gallon storage tank next to the Santa Monica Pier, Deauville lot, to harvest stormwater from the Pier sub-watershed during rain events and brackish groundwater during dry periods. The project would have an optional overflow to an infiltration gallery. A saline extraction well would be installed in sand next to the storage tank. The project would install pre-treatment catch basin inserts in the drainage area or a centralized hydrodynamic separator-screening device to remove trash and debris from stormwater. Modular nanofiltration (NF) and a saltwater reverse osmosis (RO) treatment systems at the site would treat these stored local water resources to high quality for various uses around the City in the existing recycled water system. All concentrated brine by-product would be sent to the sanitary sewer.
43	Decker Canyon Recycled Water System Extension	Las Virgenes Municipal Water District	The Decker Canyon recycled water pump station, pipeline, and tank would furnish recycled water primarily to Malibu Country Club Golf Course and Tract 47962-Sycamore Canyon Estates near the pump station location and other nearby ranchettes. The project would comprise a high-lift pump station, ~23,000 linear feet of pipeline along Westlake Blvd and Decker Canyon Rd, and a 60-foot diameter concrete tank near the corner of Decker Canyon Rd and Mulholland Hwy. Approximately 229 AF of recycled water per year would be used by this project.

44	Del Rey Lagoon Water Quality Improvement Project	City of Los Angeles Bureau of Sanitation Watershed Protection Division	The Del Rey Lagoon Water Quality Improvement Project proposes to improve water quality by reducing the source and amount of fecal indicator bacteria in the Del Rey Lagoon and surrounding waterbodies such as the Santa Monica Bay and Dockweiler Beach. Project components include stormdrain systems, vegetated swales, irrigation system retrofit, and drainage modifications. Education and outreach to the public will also be included in the project scope. The vegetated swales are designed to capture, retain, and treat runoff from the adjacent residential, transportation, and landscaped area during dry weather and partially during wet weather. Existing irrigation system will be retrofitted with a smart irrigation system to reduce excessive irrigation runoff, thereby conserving water and reducing flow. Catch basins and storm drains will be installed to capture and divert excess wet-weather flow into the sewer system. Project also includes a nature viewing deck and educational displays that explain local flora-fauna.
45	Demonstration Gardens at Los Angeles County Fire Department Stations	West Basin Municipal Water District	This project involves the installation of drought-tolerant demonstration gardens at a minimum of five fire stations throughout the West Basin service area. These gardens will replace turf and/or concrete areas that are directly in front of the fire stations in order to provide a maximum visibility to the public. The gardens will be utilizing drought-tolerant and/or native plants that will be designed by professional landscape designers that specialize in climate-appropriate plans and trees. The main goal is to provide water conservation and runoff reduction measures and secondarily to educate the public about the measures so that they can create these spaces at their own homes. West Basin strives to reduce demands by implementing conservation and education programs throughout the communities it serves. This project aims to continue implementing outdoor water conservation/education programs to influence the public to create these spaces in their own homes.
46	Devil's Gate Dam and Reservoir Water Conservation	Los Angeles County Flood Control District	This project proposes to conserve stormwater by holding a reservoir pool behind Devil's Gate Dam and diverting the water to Eaton Wash Dam and Eaton Wash Spreading Grounds for poststorm groundwater recharge. A pump will be installed in the Devil's Gate Dam reservoir and water will be pumped out and conveyed through over 26,000 feet of pipeline to Eaton Wash Dam where it can be held for recharge at downstream spreading ground facilities.

47	Devil's Gate Reservoir Sediment Removal and Management Project	Los Angeles County Flood Control District	The 2009 Station Fire was the largest fire in Angeles National Forest recorded history and burned over 160,000 acres in the San Gabriel Mountains. Approximately 68% of the watershed tributary to Devil's Gate Reservoir was burned and as a result of the storms that occurred in the two wet seasons after the fire, sediment levels in the reservoir increased by more than one million cubic yards. The County of Los Angeles Department of Public Works on behalf of the Los Angeles County Flood Control District is planning a sediment removal project of up to 4 million cubic yards. A sediment removal project from behind Devil's Gate Dam is vital to the health of the Arroyo Seco flood control system. The goal of this project is to restore flood control capacity and establish a reservoir configuration more suitable for routine maintenance activities. The project will last approximately 5 years with construction starting in 2014.
48	Dominguez Channel Greenway Phase III	Los Angeles County Flood Control District	The project will consist of development of a native landscaped greenway and bikeway/pedestrian trail along the north side of the Dominguez Channel, between Vermont Av and Normandie Av. The project will include the following: access/maintenance road improvements for the new/improved bikeway; AC repair and replacement, slurry seal, American Disability Act (ADA) access ramps and bikeway/pedestrian signage and striping. Landscaping improvements include landscaping using native and drought-tolerant plants, irrigation, as-needed fencing repair/replacement. Educational/interpretive signage will also be included along the bikeway/pedestrian trail. A study is also recommended to consider additional pedestrian crosswalks with street lamp lighting for added safety. The project is currently on hold until the LACFCD completes a study to address deficiencies in its levees.
49	Dominguez Channel Trash Reduction Via ARS Installation in the City of Carson, CA	City of Carson, Development Services Department, Engineering Services Division	This project would install Automatic Retracting Screens (ARS) in the 1800 Storm Drain Catch Basins in the City of Carson. The proponents favor ARS to collect trash at street level where the trash can be quickly and cost effectively collected weekly by the existing City Street Sweeping Contractor and eliminates the need for other more costly and difficult to maintain downstream trash control systems. This project anticipates the continuing development of local and state waterway trash control efforts and alleviates the need to develop these expensive federal, state and local requlatory mandates. In comparison to other "downstream" trash control systems, the maintenance status of ARS is easily assessed and visible to the public, which is then able to report those locations where maintenance is warranted. Since ARS systems are located in the street sweeper path, maintenance (trash collection) occurs weekly, the trash stays dry and is less subject to the degradation that generates other pollutants (bacteria).

50	Dominguez Gap Spreading Grounds West Basin Percolation Enhancement	Los Angeles County Flood Control District	The proposed project will increase the percolation within the spreading grounds facility in order to increase groundwater recharge. The preliminary scope includes removing between 5 to 10-feet of clay sediment or installing vertical trenches/drains through the poorly draining strata in the facility's west basin. Preliminary studies have been conducted including boring samples which will be used to further develop conceptual plans and estimate project benefits.
51	Duck Farm River Parkway Phase 1 - Water Enhancement Project	Watershed Conservation Authority	The Duck Farm River Park, once a natural floodplain, has been disconnected from the natural processes of the river for decades as a result of urbanization & flood management. The Project reintroduces natural systems through a riparian/pocket wetland/seasonal streambed that improves both habitat and collect, filter & infiltrate stormwater flows onsite, as well as stormwater from the adjacent freeway in collaboration w/Caltrans. The project will transition irrigation source (annually forecasted to require 19M gallons) from imported, highly processed potable water to either local groundwater or recycled water as its source of supply. The public will benefit by being reconnected to nature, the river, & from educational & interpretive programming possible at the site. This change in supply will reduce greenhouse gases & the parks carbon footprint. Outdoor classroom & interactive educational experiences with children will inspire local youth to learn more about our watershed, water conservation & sustainability
52	Eaton Spreading Grounds Intake Improvements	Los Angeles County Flood Control District	The project will increase the intake and storage capacity of the Eaton Wash Spreading Grounds facility. This will improve the facility's ability to recharge storm water into the groundwater basin, thus greatly increasing the sustainable local groundwater supply that is vital for the region. Los Angeles County Flood Control District will replace the vehicle access slab with a metal grate over the spreading grounds drop intake channel and replace the current diversion flashboards with an inflatable gate within the intake channel. These improvements in Eaton Wash Channel will better direct flows into Eaton Wash Spreading Grounds, thereby increasing its intake capacity. Basin 1 will be enlarged to increase the facility's storage capacity. The project will include improvements to the property along Sierra Madre Boulevard that will significantly improve the sustainability, aesthetics, and safety of the public walkway and street view. Two driveway entrances will be improved by increasing the gate set-back fu
53	Eaton Wash Dam Inlet/Outlet Works Rehabilitation Project	Los Angeles County Flood Control District	The dam outlet works rehabilitation project involves the removal of the existing outlet tower and gate house. Once these major components are removed, construction of a gate valve, debris racks, hydraulic power system with a block house, control systems, modification of the outlet works structure, and rehabilitation of the gate valves will commence. It will provide necessary erosion protection measures and improve water quality during low-flow releases from the dam.

54	Elysian Reservoir Water Quality Improvement Project	LADWP	LADWP is planning to cover the existing Elysian Reservoir in order to meet US EPA water quality regulations. In April 2012, the Board of Water & Power Commissioners certified the Environmental Impact Report and approved the floating cover alternative. The project will install a flexible membrane floating cover over the existing water surface. Also included are supporting infrastructure (piping, valves, liner) and site improvements (roadway paving, fencing). The reservoir will operate in the same manner, providing potable storage for the distribution system. Construction is anticipated to being by 2015. In conjuntion with the project, a Community Parks Fund was established by the Board of Commissioners. The fund is to be used for unspecified public purposes related to community parks. Best efforts will be made to locate enhancements primarily in the Elysian Park area, working together with the community and other City of Los Angeles agencies.
55	Encinal Emergency Connection	Los Angeles County Waterworks District No. 29	The project consists of adding a new emergency water source to supply Waterworks District No. 29 through a new interconnection along Encinal Canyon Road at the District boundary with Las Virgenes Municipal Water District (LVMWD). This interconnection would bring water from Metropolitan Water District of Southern California through LVMWD to provide additional supply to the District during emergencies.
56	Foothill Municipal Water District Recycled Water Project	Foothill Municipal Water District	Three hydrologic areas were studied for the development of satellite recycled water facilities. Foothill Municipal Water District (FMWD) is pursuing the construction of one facility near Berkshire Place in La Canada at this time. This project will treat wastewater using a membrane bioreactor and recharge the product into the groundwater basin using infiltration galleries underneath athletic fields for multi-beneficial uses. Cal Poly Pomona has partnered with FMWD and is developing a model that will also capture stormwater for recharge using the same infiltration galleries. A conservation and education component has also been added. Landscaping will be done to showcase drought tolerant plants at both the MBR site and school site. Tours will be available so that students may learn about stormwater capture, groundwater, recycled water, conservation and the watershed since the Arroyo Seco and Hahamongna Park are across the street. This 0.250 MGD plant will save enough energy annually for 80 homes in So. Cal.
57	Freeway Runoff Infiltration Demonstration Project	City of Santa Monica	Divert runoff from a section of the Santa Monica Freeway within the City of Santa Monica, treat and infiltrate within an area near the freeway, either a landscaped area or parking lot. The infiltration zones will be augered, if necessary to by-pass poor permeable soils. There will be pre-treatment before infiltration to remove trash, oil/grease, sediments. It will be a passive system, i.e. gravity-fed and low into the system. The treatment-infiltration areas will be areas either already with a storm drain in the area, or the creation of new ones to harvest the runoff. The goal will be to keep runoff out of the existing storm drains and out of the storm drain system.

58	Glen Oaks Storm Water Capture Project	Los Angeles Beautification Team	The Prop O funded phase I, the installation of six bio-swales and 4 dry wells. This watershed in an average rainfall year brings 300 acre feet of water to Glen Oaks Blvd. Phase I was completed in January 2014 and is currently capturing an estimated 30 acre feet per year leaving approximately 270 acre feet available for storm water capture. Phase II will consist of an additional eight dry wells for an estimated $625,000, plus the cost of City Services (Design fees, permits and over site), that will capture an additional 40 to 45 acre feet annually.
59	Glendale Narrows Habitat Enhancement Project	Council for Watershed Health	The Glendale Narrows Riverwalk will provide approximately one mile of multi-use recreation along the Los Angeles River. There are several invasive plant species that are prevalent adjacent to the Riverwalk in the Glendale Narrows area of the Los Angeles River. These invasive plant infestations jeopardize the improvements to water quality and degrade habitat for native aquatic, avian, reptile, amphibian, and invertebrate species. In collaboration with the City of Glendale Community Services & Parks Department, the Council for Watershed Health (Council) proposes to develop and manage a 3-4 year restoration project to map, control, and monitor invasive arundo and invasive palm trees in the Riverwalk project area in the Glendale Narrows sections of the Los Angeles River. A native plant propagation and replanting effort is also proposed to reestablish riparian plants.
60	Goldsworthy Groundwater Desalter Expansion	City of Torrance	The Goldsworthy Desalter (Desalter) treats water from the saline plume in the West Coast Groundwater Basin for drinking water. The brackish water is treated to meet or exceed municipal drinking water standards through the use of a reverse osmosis system. The existing Desalter produces approximately 2,000 acre-feet of potable drinking water per year. When the Desalter was originally constructed in 2002, it was designed for expansion to over 5000 acre-feet per year of drinking water. In 2012 the Water Replenishment District of Southern California had a Feasibility Study for the Expansion of Desalter prepared for and approved by the U. S. Bureau of Reclamation. The expansion would involve the installation of additional reverse osmosis treatment units, construction of two additional source water wells, transmission mains and related appurtenance. The project also diverts waste water away from Santa Monica Bay where discharges cause TMDL violations for bacteria.

61	Groundwater Reliability Improvement Project (GRIP)	Water Replenishment District of Southern California	The overarching goal of the GRIP Recycled Water Project is to offset the current use of imported water by providing up to 21,000 acre-feet per year (AFY) of recycled water as a reliable supply source for groundwater basin replenishment via the Montebello Forebay within a reasonable timeframe. The source for the recycled water will be the Los Angeles County Sanitation Districts' San Jose Creek Water Reclamation Plant (SJCWRP). Tertiary treated recycled water, advanced treated recycled water (microfiltration, reverse osmosis and advanced oxidation), or a combination of the two will be conveyed from the SJCWRP via an existing pipeline or possibly a new pipeline for recharge in the Central Groundwater Basin through the Montebello Forebay Spreading Grounds or potentially a new injection well field.
62	Groundwater System Improvement Study	LADWP	The purpose of the Groundwater System Imrovement Study (GSIS) is to perform an independent study to identify, characterize, and evaluate emerging water quality constituents for the San Fernando Basin (SFB). This will include a comprehensive analysis that will provide recommendations in developing short and long-term projects, including the design and construction of groundwater treatment facilities, to maximize the use of the groundwater supply in the SFB. As a part of the GSIS, the LADWP will be drilling approxinmately 26 new groundwater monitoring wells, and perform short-term monitoring of existing and new wells, in order to obtain supplemental water quality data necessary for planning the groundwater treatment afcilities in the SFB.
63	Groundwater Treatment Facilities	LADWP	Design and construction of groundwater treatment facilities in North Hollywwod, Rinaldi-Toluca and Tujunga Wellfields in the San Fernando Basin (SFB), with a treatment capacity of 122,900 acre-feet per year.
64	Hansen Dam Golf Course Water Recycling Project	LADWP	Construct 4,500 feet of 20" pipeline, pumping station and pipe support bridge to deliver recycled water from the Tillman Plant to the Hansen Dam Golf Course and other potential future users. Water will be pumped from the Hansen Tank.
65	Hansen Dam Water Conservation Project	Los Angeles County Flood Control District	Hansen Dam, situated adjacent to the Tujunga Wash Channel in the San Fernando Valley, is a vital part of flood control efforts in the Los Angeles River drainage basin. The primary purpose of Hansen Dam is flood control; however the opportunity exists to increase water conservation and water supply through increased water recharge upstream of the dam. The current operation of the dam allows for an average annual water conservation of 17,100 acre feet per year. The Water Conservation Project, which involves utilizing the existing Debris and Flood Control Pools for water conservation purposes by raising their respective maximum elevations to allow for additional water supply storage, would increase the dam's water conservation ability. This extra supply storage would allow for dam releases to downstream spreading grounds and other facilities fo
66	Hansen Dam Water Conservation and Supply	The River Project	Change management regime of Hansen Dam to focus on water conservation by maintaining a water conservation pool within the reservoir during and subsequent to flood season.

67	Headworks East Reservoir	LADWP	onstruction of a 110 MG buried reservoir along with a 4 MW hydroplant at the former Headworks Spreading Grounds to replace the storage capacity lost when Ivanhoe Reservoir is removed from service. Needed to bring the Water System into comliance with state and federal drinking water regulations by the regulatory deadline of November 2014
68	Headworks Ecosystem Restoration	LADWP	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
69	Herondo Parking Lot and Beach Infiltration	City of Redondo Beach	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
70	Hoover, Toll, & Keppel School Recycled Water Project	Glendale Water & Power	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
71	Humboldt Stormwater Greenway	City of Los Angeles, Bureau of Sanitation/Watershed Protection Division	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
72	Improvements to Entradero Storm Drain Channel for Storm Water Infiltration and Habitat Restoration	City of Torrance, SMBBB TMDL Jurisdictional Groups 5 & 6	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
73	Improvements to San Gabriel River Diversion and San Gabriel River Water Committee Canal and Appurtenances	Azusa Light and Water	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
74	Indirect Reuse Replenishment Project	Upper San Gabriel Valley Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
75	Johnny Carson Park Stream Restoration and Park Revitalization	City of Burbank	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
76	Jordan Downs Daylighting Study	Multi-jurisdictional Agencies-LA City Housing and Public Works	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
77	LA River Sixth Street Bridge Greenway	City of Los Angeles, Bureau of Engineering	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
78	LVMWD Woodland Hills Golf Course Recycled Water Pipeline Extension	Las Virgenes Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
79	La Puente Valley County Water District Recycled Water Project	Upper San Gabriel Valley Municipal Water District & La Puente Valley County Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
80	Landscape Irrigation Efficiency Program (LIEP)	West Basin Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
81	Large Landscape Irrigation Survey and Retrofit Project	Upper San Gabriel Valley Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
82	Las Virgenes Creek Bank Stabilization, Stream Restoration, Fish Migration Enhancement and Trail Connection	City of Calabasas	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
83	Live Oak Dam Inlet/Outlet Rehabilitation	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description

84	Live Oak Spreading Grounds Improvement Project	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
85	Lopez Spreading Grounds Improvement	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
86	Los Angeles River Center and Gardens Green Conference Center	Mountains Recreation and Conservation Authority	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
87	Los Angeles River Natural Park	City of Los Angeles Bureau of Sanitation/Watershed Protection Division	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
88	Los Angeles River Revitalization Master Plan 32 Mile Channel and Easement Greening	City of Los Angeles, Bureau of Engineering	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
89	Los Angeles State Historic Park Water Recycling Project	LADWP	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
90	Los Angeles-Burbank Groundwater System Interconnection	LADWP / Burbank Water and Power	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
91	Los Angeles-Glendale Groundwater System Interconnection	LADWP / Glendale Water and Power	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
92	Lower Los Angeles River Area Linear Water Storage Feasibility Study	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
93	Malibu Civic Center Area Recyled Water Delivery Project	City of Malibu	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
94	Malibu Civic Center Linear Park Phase 3	City of Malibu	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
95	Malibu Drought Preparedness Project: Graywater Reuse and Rainwater Harvesting	City of Malibu	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
96	Malibu Equestrian Center Runoff BMPs	City of Malibu	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
97	Malibu Rainwater Harvesting	City of Malibu	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
98	Malibu Road/Malibu Colony Stormwater Management	City of Malibu	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
99	Manhattan Strand 28th Street Subsurface Infiltration Trench	City of Manhattan Beach	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
100	Manhattan Wells Improvement	LADWP / Water Replenishment District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
101	Marsh Park, Phase II	Mountains Recreation and Conservation Authority	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
102	Medea Creek Restoration at Chumash Park	City of Agoura Hills	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
103	Miller Pit Spreading Basins	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description

104	MillerCoors Recycled Water Project	Upper San Gabriel Valley Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
105	Milton Street Park and Green Street project - Ballona Creek	Mountains Recreation and Conservation Authority	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
106	Mission Hills Green Belt	The River Project	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
107	Mission Wells Improvement	LADWP	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
108	North Hollywood Groundwater and Surface Water Benefits Study	Council for Watershed Health	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
109	North Hollywood Street Enhancement	City of Los Angeles	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
110	North Hollywood Transmission Corridor Easement Stormwater Capture Study	Council for Watershed Health	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
111	North Santa Monica Bay Firecamp 13 LID Retrofit	Los Angeles County Deprtment of Public Works	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
112	North Santa Monica Bay Probation Camp Miller LID Retrofit	Los Angeles County Department of Public Works	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
113	Northeast Gardena Recycled Water Line	West Basin Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
114	Northeast Gardena Storm Water Quality Park, Recycled Water Line, and Landscape Makeover	Council for Watershed Health	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
115	Northeast Gardena Water and Landscape Makeover, Community Involvement Module	Council for Watershed Health	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
116	Oak Park Green Streets Urban Retrofit	County of Ventura	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
117	Oak Park Medea Creek Restoration	Mountains Restoration Trust	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
118	Ocean Friendly Garden (OFG) Program	West Basin Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
119	Olive Pit Water Conservation Park	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
120	Oxford Retention Basin Multi-Use Enhancement Project	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
121	Ozone Park Runoff Treatment and ReUse Project	City of Santa Monica	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
122	Pacoima Dam Inlet/Outlet Works Rehabilitation Project	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
123	Pacoima Neighborhood Retrofit	The River Project	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description

124	Pacoima Reservoir Sediment Removal	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
125	Pacoima Spreading Grounds Improvements	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
126	Palos Verdes Peninsula Satellite Facilities Study	West Basin Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
127	Palos Verdes Recycled Water Lateral	West Basin Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
128	Pasadena Recycled Water Project	Pasadena Water and Power	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
129	Peck Water Conservation Improvement Project	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
130	Puddingstone Diversion Dam Inlet/Outlet Works Rehabilitation	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
131	Raw Wastewater Diversion to the City of Los Angeles	Las Virgenes Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
132	Recycled Water On-Site Retrofit Projects	West Basin Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
133	Recycled Water Storage and Distribution System Expansion	Las Virgenes Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
134	Recycled Water Supply for Palos Verdes Golf Course	City of Palos Verdes Estates	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
135	Recycled Water Turnouts	Water Replenishment District of Southern California	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
136	Regional Water Supply Reliability Program Phase 1b	Puente Basin Water Agency	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
137	Residential Indoor Plumbing Retrofit Kits	West Basin Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
138	Residential SMART Timer Retrofit "Plus" Program	West Basin Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
139	Rio Hondo Coastal Basin Spreading Grounds - Sediment Removal from Basins	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
140	Rockhaven Well	Crescenta Valley Water District and Glendale Water and Power	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
141	SMURRF Distributed Water Reuse Project	City of Santa Monica	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
142	San Gabriel Coastal Basin Spreading Grounds Improvement Project	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
143	San Gabriel Dam Penstock Coatings and Valve Repair	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description

144	San Gabriel Valley Water Recycling Project (Phase I - Rose Hills Expansion)	Upper San Gabriel Valley Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
145	San Gabriel Valley Water Recycling Project - Membrane Bioreactor Treatment Plant	Upper San Gabriel Valley Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
146	San Jose Creek Water Reclamation Plant East Process Optimization Project	County Sanitation Districts of Los Angeles County	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
147	San Rafael Creek Restoration	Arroyo Seco Foundation	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
148	San Ramon Canyon Stormwater Flood Reduction Project	City of Rancho Palos Verdes	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
149	Santa Anita Dam Seismic Rehabilitation	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
150	Santa Fe Dam Water Conservation Pool	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
151	Santa Fe Spillway Basins	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
152	Sawpit Debris Dam Seismic Strengthening Project	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
153	Septic-To-Sewer Drinking Waterwell Protection Project	City of Los Angeles Bureau of Sanitation/Wastewater Engineering Services Division	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
154	Sepulveda Basin Sports Complex Multi-Purpose Open Space Project	City of Los Angeles, Bureau of Engineering	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
155	Sepulveda Basin Sports Complex Riparian Buffer	City of Los Angeles, Bureau of Engineering	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
156	Sheldon Pit	LADWP	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
157	Shoestring Park	Council for Watershed Health	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
158	Silver Lake Reservoir Bypass & Regulator Station	LADWP	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
159	Six Basins and Puente Basin Integrated Water Supply Project	Puente Basin Water Agency	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
160	South Coast Botanic Gardens	Los Angeles County Department of Public Works	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
161	South El Monte Recycled Water Expansion Project Package 1	Upper San Gabriel Valley Municipal Water District & San Gabriel Valley Water Company	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
162	South El Monte Recycled Water Expansion Project	Upper San Gabriel Valley Municipal Water District & San Gabriel Valley Water Company	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description

163	South Los Angeles County Groundwater Pipline Project	Water Replenishment District of Southern California	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
164	South Park Subsurface Infiltration Gallery	City of Hermosa Beach	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
165	Southeast Gardena Recycled Water Line	West Basin Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
166	Stormwater Diversion to Walnut Avenue Sump	City of Torrance	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
167	Sun Valley Watershed Rory M. Shaw Wetlands Park Project (a.k.a. Strathern Wetlands Park)	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
168	Taylor Yard River Park Parcel G2	City of Los Angeles, Bureau of Engineering	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
169	Terminal Island WRP Advanced Water Purification Facility and Distribution System Expansion Project	LADWP	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
170	Terminal Island WRP Advanced Water Purification Facility and Distribution System Expansion	LADWP	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
171	Thousand Oaks Boulevard and Westlake Elementary Recycled Water System Extension	Las Virgenes Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
172	Topanga Connection Acquisition	Mountains Restoration Trust	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
173	Transfer Station Cover Structure and Site Improvements	City of Inglewood	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
174	Triunfo Community Park and Evanstar Park Recycled Water Extension	Las Virgenes Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
175	Trunk Sewer Rehabilitation Projects	Las Virgenes Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
176	Turf's Up Water Use Efficiency Program	West Basin Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
177	Valley Generating Station Stormwater Recharge Project	LADWP	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
178	Van Ness and Slauson Infiltration Best Management Project	City of Los Angeles Bureau of Sanitation Watershed Protection Division	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
179	Verdugo Hills Stormwater Project	City of Los Angeles, Bureau of Sanitation/Watershed Protection Division	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
180	Vermont Avenue Storm Water Capture and Green Street Beautification Project	City of Los Angeles, Bureau of Sanitation/Watershed Protection Division	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description

181	Vermont Median Stormwater Park	Council for Watershed Health	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
182	Victoria Street CSUDH Water Reuse Concept Proposal	City of Carson	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
183	WRD Eco Gardener Program	Water Replenishment District of Southern California	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
184	Walnut Creek Spreading Basin Improvements	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
185	Water Budget Based Rate Implementation	Las Virgenes Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
186	Water Star Schools Pilot Program	West Basin Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
187	Well 15	San Gabriel County Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
188	Well 7	City of Inglewood	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
189	Well No. 2 Rehabilitation	City of Inglewood	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
190	West Coast Basin Barrier Project	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
191	Westlake Filtration Plant Enhancement & Backbone Improvements	Las Virgenes Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
192	Westward Beach Road Bioinfiltration Project	City of Malibu	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
193	Westwood Neighborhood Greenway Project	City of Los Angeles Bureau of Sanitation Watershed Protection Division	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
194	Whiting St. and El Segundo Blvd. Dry Weather Diversion Structure	City of El Segundo	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
195	Whitnall HWY Powerline Easement Stormwater Capture Project	LADWP	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description

2195 Sherwood Road
San Marino, CA 91108
October 28, 2014

RECEIVED
NOV 03 2014
DEPT. PUBLIC WORKS
PROJECT MANAGEMENT DIVISION II

Mr. Gregg BeGell, P.E.
County of Los Angeles Department of Public Works
Project Management Division II
900 South Fremont, 5th Floor
Alhambra, CA 91803

Dear Mr. BeGell,

The purpose of this letter is to register my support for the restoration of Baldwin Lake as part of the Enhanced Watershed Management Plan (EWMP) for the Rio Hondo Watershed. The lake has experienced significant deterioration in recent decades as a consequence of surface run-off and its very future is very much at risk. Establishing the restoration of Baldwin Lake as a priority project as part of the EWMP will ensure its status as an important ecological and historic asset for generations to come.

Many thanks for attention to this matter.

Very truly yours,

George L. Ball

Paige Anderson

To: Tom Barnes
Subject: RE: Enhanced Watershed Management Plan

From: Jane Williams [mailto:janeann64@yahoo.com]
Sent: Wednesday, October 29, 2014 2:16 PM
To: Begell, Gregg - Consultant; Osmena, Genevieve
Subject: Enhanced Watershed Management Plan

As a volunteer at the L.A. County Arboretum, I would like to voice my support for the Enhanced Watershed Management Plan (EWMP) for the Rio Hondo Watershed, in which the Arboretum resides.

Every time I set foot in the Arboretum and look around me I see what can only be described as a treasure that belongs to the people of Los Angeles County. The condition of Baldwin Lake, the centerpiece around which the Arboretum exists is deplorable. It is in desperate need of restoration. Please do all that you can to see that this plan is instituted and that, through it, funding may be found to preserve Baldwin Lake.

Kenneth D. Hill. Ph.D., P.E.
1994 Meadowbrook Rd.
Altadena, CA 91001-3404
(626) 797-2089

October 27, 2014

Mr. Gregg BeGell, P.E.
County of Los Angeles Department of Public Works
Project Management Division II
900 South Fremont, 5th Floor
Alhambra, CA 91803

RECEIVED
NOV 03 2014
DEPT. PUBLIC WORKS
PROJECT MANAGEMENT DIVISION II

Subject: Baldwin Lake Restoration
Los Angeles County Arboretum and Botanic Garden

Dear Mr. BeGell:

As president of the L.A. County Arboretum Foundation and as a concerned citizen, I encourage you to restore Baldwin Lake at the Arboretum. I am sure you are aware that the lake has environmental significance to Los Angeles County including impact on water conservation and reclamation, regional ecology, educational opportunity, and historical importance.

The restoration of Baldwin Lake, including improvements to its function as an urban runoff collection basin, should be considered as a high-priority project within the Rio Hondo Enhanced Watershed Management Plan.

Please note the following:

1. Baldwin Lake, with a current capacity of just under four million gallons, if returned to its original depth, would provide over twelve million gallons of storage capacity. With modification, it could also serve as a significant infiltration basin for aquifer recharge.

2. Tule Pond to the north, a canal roughly 600ft. in length, is the point of entry for the urban watershed, feeding directly into Baldwin Lake. Its size, shape and location offer great potential for water quality enhancement through modification as a bioswale.

3. The Lake is a key educational, scenic, wildlife, and historic resource serving over 330,000 visitors per year, including over 16,000 elementary school students on field trips. The project would provide an unrivaled opportunity to educate a broad public about regional water management, home and community water conservation, and the role of the Raymond Basin and other key water resources that sustain us.

4. The Los Angeles Arboretum Foundation, the County's non-profit partner in operating the Arboretum, stands ready to help leverage public dollars to realize the site's unique educational potential. **At our recent strategic planning meeting (October 25th) the restoration of Baldwin Lake was the top priority for the foundation over the next year.**

In sum, Baldwin Lake offers the ideal project to both enhance watershed function and serve the public with remarkable educational, ecological, and scenic benefits. It is an exceptionally strong candidate for inclusion in the Rio Hondo Enhanced Watershed Management Plan.

Sincerely,

Kenneth D. Hill, Ph.D., P.E.
President, L.A. County Arboretum Foundation

Gmail

Marsha Perez <marshaaperez@gmail.co

Baldwin Lake

2 messages

Marsha Perez <marshaaperez@gmail.com>
To: gbegell@dwp.lacounty.gov

Thu, Oct 23, 2014 at 4:45

Dear Mr. BeGell,

I am a frequent visitor to our LA County Arboretum. Here I can find beauty, contentment and sollice for my busy lifestyle.

Baldwin Lake is one of our families favorite visiting areas. Here we find the solitude and the different forms of wildfowl very enjoyable.

Lately we find that our lake is becoming a disaster! The water is murkey, the banks are crumbling and it has a swamp like look in certain areas.

On behalf of my family and many friends and visitors I implore you to take advantage of the opportunity now available to restore the health and beauty of our beloved lake.

Thank you for your consideration.
Sincerely.
Marsha Perez

Marsha Perez

Paige Anderson

To: Tom Barnes
Subject: RE: ADDITIONAL COMMENTS ON L.A. County Enhanced Watershed Management Program, Notice of Preparation

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From: Rex Frankel [mailto:rexfrankel@yahoo.com]
Sent: Monday, September 29, 2014 1:59 PM
To: Begell, Gregg - Consultant
Subject: L.A. County Enhanced Watershed Management Program, comments on Notice of Preparation

COMMENTS ON NOTICE OF PREPARATION FOR DRAFT PROGRAM EIR FOR ENHANCED WATERSHED MANAGEMENT PROGRAMS FOR L.A. COUNTY

September 29, 2014, 1:30 pm

From Rex Frankel, director, Ballona Ecosystem Education Project,
6038 west 75th street, L.A. CA 90045
310-738-0861, email: rexfrankel@yahoo.com

I understand why no one but myself attended the NOP hearing on September 9th in Marina Del Rey. You have no specific projects to analyze for environmental impacts. You are attempting to analyze the environmental impact of words, not specific actions. It is impossible to analyze the impacts of no stated physical projects, just as it is impossible to analyze those unstated projects' impacts on the environmental setting, ie., the proper baseline, because you have no specific locations for these unspecified projects. Thus all you can say is to analyze the entire county. The two most essential parts of an environmental analysis are missing here: specific projects and specific sites. You have the process all backwards here, and thus, commenting on this NOP in any specific manner is impossible.

Some background: In 2002, local governments settled lawsuits and agreed to consent decrees and promised to stop violations of bacterial health codes at our beaches by 2021. This agreement gave the public agencies an extension beyond the original deadline of 2013 but only if the projects created new parkland and river corridors that could catch and clean water before it fouled the beaches.

In 2006, L.A. City proposed its first big plan under this agreement, an Implementation Plan for the Santa Monica Bay Beaches watersheds. This plan was sent back for redrafting by the RWQCB as it only reached 2% of its target and thus, would not accomplish the goal in the consent decree.

Also in 2006, L.A. city proposed the Integrated Resource Plan which mainly focused on building 25 Hyperion-style urban runoff treatment plants which would have cost the average homeowner ratepayer $400 a month. This plan went nowhere.

In 2012, the County Supervisors tried to quietly approve a $300 million per year property tax hike to build a non-existent list of runoff cleansing and capturing projects. Howls of opposition arose and that plan went nowhere. The public wanted to know what they were paying for.

Now, you are finally starting to design the cleanup plan. But how can you ask the public to weigh in on the scope of the environmental analysis of that plan, when your description of that plan contains no specifics? Your stated plan to defer the environmental analysis of specific project impacts to when each one is up for approval thus ignores the cumulative impacts and therefore is "piecemealing", by starting major momentum of a project that is composed of many necessary parts, yet deferring analysis and the controversy to a multitude of separate EIRs and CEQA documents and public hearings, all the while public input is diffused. We never get to weigh in on whether we like the complete plan because the Program EIR has no specifics to arouse concern and the real project discussion is delayed until much later in a way that requires massive efforts by the public to keep track of the success of the big plan.

The people who will pay for this plan want to see the specifics before you raise our taxes to pay for it. We want expanded and unpaved river corridor parks. We do not want the plan to include converting existing wetlands and wildlife habitat into pollution dumps and sumps. We want what we were promised, not a lame compromise that puts the cleanup burden on existing public lands, parks and house front yards. We want a complete plan for us to judge whether it will accomplish its promises and goals before you produce an EIR, not the other way around.

Please put me on the notification list for all actions relating to this project. Thank you.

Paige Anderson

To: Tom Barnes
Subject: RE: ADDITIONAL COMMENTS ON L.A. County Enhanced Watershed Management Program, Notice of Preparation

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From: Rex Frankel [mailto:rexfrankel@yahoo.com]
Sent: Wednesday, October 29, 2014 5:28 PM
To: Begell, Gregg - Consultant
Cc: kathy.knight@verizon.net
Subject: ADDITIONAL COMMENTS ON L.A. County Enhanced Watershed Management Program, Notice of Preparation

ADDITIONAL COMMENTS ON EWMP NOP: October 29, 2014

The problem I have with a Program EIR for a "program" that is devoid of a list of all necessary specific projects is that it short-circuits the cumulative impacts review plus it facilitates illegal piecemealing of the many TMDL compliance projects. A program EIR can be allowed when the individual and currently unknown specific sub projects have "independent utility", thus building and analyzing them separately has no impact on the effectiveness of the other sub projects, nor does it make it mandatory that these other projects also be approved. That is not the case here. The goal of the EWMP and the sub projects is "to achieve permit compliance with RWLs" (NOP page 7 paragraph 3 and page 8, paragraph 1). Thus, all projects must be approved and successfully achieve their goals or the region will not be in compliance with the 2012 MS4 permit, the Federal Clean Water Act and the NPDES permits. If only some of the projects prove feasible and buildable, the construction of the others will not result in CWA compliance. That begs the question of is this project worthwhile if piecemealed at all? Will the beach only be clean in certain locations along the shore, while others will not be as a treatment strategy proved too expensive or technologically infeasible? If the taxpayers ultimately decide this project is too expensive, but certain parts are already built, does that mean that pulling-the-plug will result in non compliance and thus a waste of the taxpayers' dollars already spent? This s

How can the public know if the permits and Clean Water Act will be complied with if the approval of the individual pieces of the compliance strategy are broken up into numerous pieces each receiving their own separate CEQA review? All of this leads me to conclude that the specific projects must be reviewed and approved as part of a master plan project, with the public knowing the full cost of compliance, the full impacts of all projects and alternative policy choices. One specific alternative, distasteful as I find it, would be analysis of only building some projects and also enforcing no-swimming rules for three days after rainfall at beaches.

I will repeat the conclusion of my first NOP comments: The people who will pay for this plan want to all of the see the specifics before you raise our taxes to pay for it. We want expanded and unpaved river corridor parks. We do not want the plan to include converting existing wetlands and wildlife habitat into pollution dumps and sumps. We want what we were promised, not a lame compromise that puts the cleanup burden on existing public lands, parks and house front yards. We want a complete plan for us to judge whether it will accomplish its promises and goals before you analyze and mandate it with an EIR, not the other way around.

Rex Frankel

From: "Begell, Gregg - Consultant" <gbegell@dpw.lacounty.gov>
To: Rex Frankel <rexfrankel@yahoo.com>
Sent: Monday, September 29, 2014 2:26 PM
Subject: RE: L.A. County Enhanced Watershed Management Program, comments on Notice of Preparation

Rex

Thank you for your comments. It will be reviewed for use in the PEIR.

Yes, when people think of an EIR they are thinking of a project. This is a Program EIR, the main PEIR document contains some projects as examples but it’s a program.

We are presently working on the PEIR, check our website for information and details. www.LACoH2Osheds.com. We will be posting the PEIR plus public review meetings on the website.

Gregg BeGell P E
Project Manager
Project Management Division II

From: Rex Frankel [mailto:rexfrankel@yahoo.com]
Sent: Monday, September 29, 2014 1:59 PM
To: Begell, Gregg - Consultant
Subject: L.A. County Enhanced Watershed Management Program, comments on Notice of Preparation

COMMENTS ON NOTICE OF PREPARATION FOR DRAFT PROGRAM EIR FOR ENHANCED WATERSHED MANAGEMENT PROGRAMS FOR L.A. COUNTY

September 29, 2014, 1:30 pm

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6038 west 75th street, L.A. CA 90045
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Please put me on the notification list for all actions relating to this project. Thank you.

TRANSMITTAL

DATE: October 29, 2014

TO: Gregg BeGell, P.E.
County of Los Angeles, Department of Public Works/LACo Flood Control District
900 South Fremont Avenue, 5th Floor Alhambra, CA 91803
gbegell@dpw.lacounty.gov

CC: **Gloria Molina, LACo Supervisor**
Micheal Antonovich, LACo Supervisor
Sierra Club, Angeles Chapter, Water Committee
CCFAC Executive Director

FROM: **Dr. Tom Williams,**
Sierra Club, Angeles Chapter, Water Committee
Citizens Coalition For A Community
4117 Barrett Road, Los Angeles, CA 90032-1712
ctwilliams2012@yahoo.com, 323-528-9682

SUBJECT: **County of Los Angles, Enhanced Watershed Management Plan**
Scoping for Programmatic EIR

RE: **COMMENTS for Enhanced Watershed Management Plan PEIR CS-CH#2014081106**
Based on NOP and other project information downloaded from www.LACoH2Osheds.com.

Thank you for the opportunities to comment on the Notice of Preparation/Initial Study (NOP/IS) and other Scoping documents related to the proposed LA County Enhanced Watershed Management Plan (EWMP). Also thank you for the extension of the deadline for such comments, I believe it was very helpful for our commenters.

I could have continued for many more pages but I have been exhausted by the lack of real effort on the part of the preparers to make the Enhanced Watershed Program project meaningful, adequate, and complete and initially assess its secondary and tertiary impacts for knowledgeable public reviewers. Unfortunately the current NOP/IS and supporting documents appears to be an initial version of the vague program that has been developed by others, rather than a project or even program level DEIR preparation and is in need of major tecchnical additions, editing, technical, and other revisions. The Scoping documents are inadequate and incomplete for the purposes of Scoping, and Scoping documents must updated, revised, and reissued. If you need further clarifications and many more comments, I am available for discussions or correspondence with your staff.

Dr. TW: Background: 40+ years with Worldwide/California water resources, management plans, water supplies, water distribution and transmission systems, and remote water resources development, with preparation, review, and commenting for 300+ EIRs/EISs/EAs (1972 to Date) and with 30+ years in Parsons and URS Corporations, 12+ years with Dubai Govt./Dubai World, and 6+years with Sierra Club Angeles Chapter (Water, Transportation, and Oil and Gas Comtes) and Citizens Coalition for a Safe Community.

Thank you for the opportunity to review and comment. Our comments form two parts: general and specific comments, as shown below for the Section and the two segments.

I have tried to provide citations in comment format with Doc./page/paragraph. Where appropriate, text has been inserted from documents and emphasis added usually as **<u>bolded/underlines</u>**. ***Comments/Requests are added in bolded/italics.***

Dr. Tom Williams
323-528-9682

RB-AR 8858

1. GENERAL COMMENTS

1-1 Scoping and Project/Program Purposes and Needs

The Program description for any DEIR or PDEIR must include the basis of the project: Purposes, Needs Goals, Objectives,

Absence of clearly defined purposes and need, goals and objectives, and priorities renders both the Program and Projects virtually non-reviewable and thereby inadequate and incomplete for public review and comment.

Without purposes and needs/goals and objectives, the public and reviewers cannot be expected to provide reasonable alternatives.

NOP/IS

p.1/par.2 The **purpose** of the MS4 Permit is to ensure Permittees are not causing or contributing to exceedances of water quality **objectives** or impairments of beneficial uses in the receiving waters of the Los Angeles region.

7/3 2.2 States are required not only to identify these “water quality limited segments” but also to prioritize such waters for the **purpose of developing Total Maximum Daily Loads** (TMDLs).

9/5 4.1.1 Capture and Use BMPs collect and use stormwater where applicable for **purposes** such as irrigation.

1/3 The overarching **goal** of BMPs in the EWMP is to reduce the impact of stormwater and non-stormwater on receiving water 2/1 quality and address the water quality priorities as defined by the MS4 Permit.

2/1 The development of each EWMP will involve the evaluation and selection of multiple BMP types, including nonstructural (institutional) and distributed, centralized, and regional structural watershed control measures, that will be implemented to meet **compliance goals and strategies under the 2012 MS4 Permit**.

8/7 The overarching **goal** of BMPs in the EWMPs is to reduce the impact of stormwater and non-stormwater on receiving water quality and to address water conservation and the water quality **priorities**.

11/3 The MS4 permit allows Permittees to customize MCMs to address high-priority water quality **goals** within their watersheds.

13/2 The PEIR will examine the project’s effects on global climate change and evaluate consistency of the project with the State’s GHG emissions reduction **goals**.

Scoping Meeting - Pic 4

- **Project Purpose:** MS4 Permit Compliance (R4-2012-0175)
  - Each Permittee is responsible for its local MS4 compliance
  - Permit compliance through EWMPs
- 12 NOIs submitted to LARWQCB
- Collectively prepared by participating Permittees
  - Los Angeles Regional Water Quality Control Board (LARWQCB) approves EWMPs

1-2 PEIR Contents

1-2 Total lack of reference to assignment of significance and related mitigation.

NOP/IS lacks clear definition and presentation as to potential effects, scopes, and schedules of the program and related projects and their implementation, construction, and operations.

As a water resources project, the physical changes represent a small portion of the overall potential effect of the program and projects, and the NOP does not reflect the systemic nature of water resources effects on the environment.

The NOP and the PDEIR andd PjDEIRs must clearly provide a Scope for each basin, schedules, and related environmental sectors, a Schedule for "implementation", construction, and "operations" (?=forever).

The PEIR will -

"result from implementation of the projects and management actions identified in each EWMP
"result from the construction and operation of EWMP projects,
"focus on potential effects.
"assess the physical changes...including direct, indirect, and cumulative impacts.
"identify mitigation measures to minimize potentially significant impacts of each EWMP.
"anticipated to evaluate...following preliminary listing of environmental issues.

RB-AR 8859

1-3. Environmental Resources, Setting, and Effects - Employment, Costs, Revenues, and Socieconomics

Employment, Costs, Revenues, and Socioeconomics Although mentions are made regarding economic and employment effects related to the Program and its projects, no costs-benefits, financials/funding sources, or other revenues assessments are included in the NOP.

Similarly, socioeconomics for major infrastructure programs and projects are closely related to "Environmental Justice" of those receiving benefits and those experiencing adverse effects directly through water-related operations and indirectly through direct/indirect payments for such effects and prospective benefits for those with much largely parcels and incomes.

5/1 The primary approach to each of the EWMPs, as identified in the Draft Work Plans, includes identifying community-friendly, **cost-effective methods** of reducing urban runoff pollution and incorporating distributed and centralized structural and nonstructural watershed control measures for a multi-pollutant, multi-benefit approach.

8/3 The EWMPs include multi-benefit stormwater management projects that may also provide environmental, aesthetic, recreational, water supply, and/or other community enhancements **cost-effective manner**.

11/1 Most institutional BMPs are implemented to meet Minimum Control Measure (MCM) requirements in the MS4 permit; MCMs are considered a subset of institutional BMPs. MCMs do not involve construction of facilities that physically remove pollutants, but **may involve costs associated with the procurement and installation** of items such as signage or spill response kits.

12.3 Air Quality Construction and operation of EWMP projects could cause air emissions...vehicle trips associated with **any increases in employment**....

14/3 Population...The PEIR will, however, identify current population and **employment projections**...

1-4 Controversies Regarding Program/Projects --- Stormwater Fees

Since the LACo Board of Supervisors have experienced significant controversy regarding the imposition of parcel fees for stormwater revenue and funding and has further created controversies regarding reassignment of parcel-area fees to parcel only fees, a thorough review of the economic, employment, and environmental justice issues must be addressed and defined for the NOP/IS,

As currently understood but avoided in Water agency and County presentations, an increase (e.g., x2+) in LACo stormwater fees would be applied on a parcel basis (no matter the size of parcel) as being proposed under the 2014 Measure P initiative which has no relationship to stormwater runoff and effects, compared to the current Recreation and Parks 1990s initiative which are based on parcel area (sqft) fees. For stormwater generation, area is directly related stormwater generation (e.g., 5000sqft may generate less runoff than 50,000sqft lots).

Therefore the NOP has not discussed the socioeconomic effects and related Environmental Justice issues related to the proposed program and the related controversy. A thorough assessment of all related revenue/costs issues must be presented in the PDEIR, including sources of revenues, revenue streams for life-of-project costs (especially for operations, maintenance, and replacements), basis for revenues (by parcel or by parcel-area), and Environmental Justice (which is not mentioned any where in the NOP/IS or presentation).

1-5 Mitigation Measures

Inconsistency uses and lack of definitions for most if not all related terms.

activities of "develop", identify", "proposed", or "evaluate".

to reduce potential, reduce the level, reduce potential adverse effect, any significant effects, to avoid,

are reduced or avoided, recommend

Vague generalities are presented and are so inconsistently applied within the same or related paragraphs as to render the entire presentation as useless.

The PDEIR must clearly present in matrices with links to discussions and appendices the project and program effects (quantifiedd/ranked), levels of significance for each sector/parameter, criteria levels for significances, proposed mitigations/compensations for significant effects, and a quantitative ranking of the effects levels following mitigation/compensation.

Lack of Mitigation

1-6 No measures are mentioned for many sectors but no basis could be established for such omissions, and comparable effects could be expected within these sectors similar to those that had need for measures mentioned.

12/2 Aesthetics ***No mitigation mentioned.***
12/4 Biology... ***No mitigation mentioned.***
13/2 Greenhouse Gases ***No mitigation mentioned***.
13/6 Land Use... ***No mitigation mentioned.***
14/4 Public Services... ***No mitigation mentioned.***
15/1 The PEIR will **evaluate potential energy consumption** associated with implementation of structural and nonstructural BMPs. ***No mitigation mentioned for Energy***

1-7 Mitigation, protection, and other measures and strategies are mentioned along with textual review of environmental sector but without any clear and concise statement of what they are, when they would be used, and how they could affect impacts, effects, and conditions. Mitigation measures in the Scoping NOP/IS are inconsistently mentioned as shown below.
Mitigation or compensation is required by CEQA for significant impacts.
Although mitigation is mentioned in the NOP/IS, mitigation and compensation are not mentioned in the Scoping Presentation slides; in reverse of "Alternatives", not mentioned in NOP/IS but present once in the Presentation.
Various terms - without definitions and consistent uses.
Protection measures mitigation strategies
significant effects
significant impacts
potentially necessary significant impacts
mitigate secondary effects of growth
As lead agency for the program LACo must clearly state the sole responsibility for thorough and consistent implementation in all projects of CEQA compliance and consistency of impact mitigation and compensation (including Environmental Justice and Socioeconomics).
The recirculated NOP/IS and PDEIR must provide a thorough presentation of:
Definitions of all related terms,
Process and quantified analyses for establishing the level of effects, mitigation, and remaining adverse effects and potential subjects of compensation,
Consistency of mitigations amongst all watersheds,
All current mitigation and compensation measures planned or anticipated by the Program and Project proponents, and
Explanation of absence of mitigation or compensation.
Examples

12/3 Air Quality...The PEIR...will **develop** mitigation measures if necessary to **reduce potential impacts**.
12/5 Cultural Resources Mitigation measures will be **identified** if necessary to **reduce the level of impact where possible**.
13/1 Geology... The PEIR will identify mitigation measures if necessary to **reduce potential adverse effects** to proposed facilities.
13/3 Hazards... Mitigation measures will be **proposed** if necessary to **reduce any significant effects** of the project...enountered during construction would be handled in accordance with applicable regulations.
13/4 Hydrology... The PEIR will identify stormwater quality **protection measures** required during construction and operation of proposed facilities. The PEIR also will **evaluate** potential impacts to flood control capacity and **develop mitigation strategies** if necessary **to avoid significant impacts**.
13/5 The PEIR will **evaluate** potential effects of increased storm water recharge and will identify mitigation measures if necessary to ensure that **potentially necessary significant impacts are reduced or avoided**.
14/2 Noise... The PEIR will **recommend mitigation strategies** to ensure that proposed EWMP projects implemented by local agencies comply with local noise policies and ordinances.
14/3 Population... The PEIR will...identify local planning jurisdictions with the authority to approve growth and **mitigate secondary effects of growth**.

14/5 Traffic... The PEIR will **identify mitigation strategies to reduce any potential effects**.
14/6 Utilities... The PEIR will **evaluate the project's potential to affect utilities** and will **identify mitigation measures to minimize the effects**.

1-8 Alternatives Although the project proponent has chosen to prepare an Environmental Impact Report, no mention is made regarding alternatives in the Initial Study/NOP. Only one reference to alternatives in all available related documents occurs in Slide 28, "Issues to be Analyzed" in the PEIR Scoping Presentation.

As the preparer included one reference to Alternatives, complete exclusion of such from the IS/NOP represents an arbitrary and incomplete presentation of CEQA documents. Without a clear concise statement of purposes and needs (goals and objectives, etc.), reasonable alternatives cannot be developed through the public participation and have not been developed by the watershed stakeholders.

LACo must revise and recirculate the NOP.

LACo must include a thorough description of Purposes and Needs for the project, quantification of such P&Ns, detailed quantified analyses as to how the Program achieves such P&Ns, basis for development of other alternative programs and projects within each alternative, and an assessment as to the best available alternative.

Some prospective alternatives include:

- ***Single parcel fee assessment for 20-plus year full Administration, O&M and replacements;***
- ***Parcel-Area fee assessment for 20-plus year full Administration, O&M and replacements;***
- ***Hybrid Parcel-Area/Runoff fee assessment for 20-plus year full Administration, O&M and replacements;***
- ***Zero-Parcel Discharge Assessment and fee adjustment for 20-plus year full Administration, O&M and replacements;***
- ***Large-Parcel and Large Discharge Assessment and fee increments for 20-plus year full Administration, O&M and replacements;***
- ***Full capture and recharge of flows of >100cfs from all waterways;***

1-9 Mitigation Monitoring and Report Plan The Draft Programmatic Environmental Impact Reports must include draft plans for the implementation, monitoring, and enforcements of the Mitigation Monitoring, and Reporting Plan for the Program. Also the PDEIR and draft Programmatic MMR Plan must provide the descriptions and process for funding, staffing, means, monitoring, enforcement, and reporting for the public for the monitoring of all Project-Level activities and compliance which must be subject to noticing/subscriptions, public reviews, and comment as part of the project-DEIR processes and not wait until the "Final EIR" is circulated for projects.

1-10 Scoping Report Because of the poor development of the NOP/IS and lack of coordination between the LACo efforts and those projected for the individual Project DEIRs and dispersed responsibilities for compliance and responsibilities, following the October 29th deadline for these comments, we request that LACo recirculate the entire NOP/IS, and if not done issue a Scoping Report ass to the LACo responses to comments and the table of contents for the PDEIR in order to establish the level of incorporation provided for the Scoping comments herein.

1-11 As indicated elsewhere many terms have been used and will be used inconsistently in the NOP/IS and Scoping Presentation and has created confusion and such must be avoided in the PDEIR.

The PDEIR must contain a single glossary and set of definitions for all terms for the PDEIR, and preparers and editors must assure full and specific compliance and consistency for all usage. Such a glossary may be included as an appendix with proper references throughout the PDEIR.

1-12 Program Compliance and Monitoring The LACo, Department of Public Works, Flood Control District is assumed to be in charge of the EWMP Program and has 12 groups responsible for specific areas and is related to the Los Angeles Regional Water Quality Control Board through the MS4 permit and sub-permits for water quality and flows within the Program regional and

area watersheds. No formal agreement has been presented as part of the NOP/IS and discussion seems to differ between the NOP/IS and the Scoping Presentation. As the LACFCD is scoping the PDEIR, reviewers must assume that only the LACo shall answer to the LARWQCB for compliance and monitoring for the next 20 years and that LACo shall have the powers, staffing, expertise, and funding to assure compliance of 12 different agencies/sub-permittees.

The Program description of the PDEIR must clearly and concisely present the administrative and operational arrangement and oversight assurance mechanisms to achieve implementation of all aspects of the MS4 permit and sub-permits and any and all CEQA and MS4 permit terms, conditions, mitigations, and compensations which may be related the Program and its projects. All contractual, regulatory, and judicial records must be provided as appendices and referenced within the text.

1-13 During a 20+ year Program, Implementation and Enforcement of all elements for 12+ different plans represent a major quality control/assurance and management and must be provided with adequate enforcement capabilities and support. The LACo, Department of Public Works, Flood Control District is assumed to be in charge of the EWMP Program and has 12 groups responsible for implementation, completion, and enforcement activities related to but in addition to those of the Los Angeles Regional Water Quality Control Board through the MS4 permit and sub-permits for water quality and flows within the Program regional and area watersheds.

No formal management and enforcement agreement has been presented as part of the NOP/IS and the Scoping Presentation. As the LACFCD is scoping the PDEIR, reviewers must assume that only the LACo shall answer to the LARWQCB for implementation and enforcements for the next 20 years and that LACo shall have the powers, staffing, expertise, and funding to assure implementation and enforcement with 12 different agencies/sub-permittees.

Fundamentally, will LACFCD or LARWQCB assess penalties against the sub-permittees for lack of timely implementation, achievement, and penalties.

The Program description of the PDEIR must clearly and concisely present the administrative and operational arrangement and quality-controls/assurance processes to achieve initiation and completion of all aspects of the MS4 permit and sub-permits and assignment of penalties , both financial and organizational for any and all CEQA and MS4 permits which may be related the Program and its projects. The LACFCD must also have the specific powers to assume direct authority over any projects under its responsibilities to the LARWQCB, and such must be documented within the PDEIR and PFEIR as appendices and referenced within the text

Environmental Sectors

2-1 No mention is made of "wetlands" which are often not included under either riparian (trees and bushes with dry land beneath) or aquatic habitats (open and standing water). Although this is one of the few specific habitats with federal and special protections, it is not mentioned which indicates the lack of background on the preparers part or a specific avoidance of controversial issues. The current NOP/IS lack competence, adequacy, and completeness for the public and stakeholder to review and comment upon the scope and specificity requireed for the PDEIR and subsequent PjDEIRs.

Revise and recirculate the entire NOP/IS and related documents.

The recirculation NOP/IS and the PDEIR must contain a general map of the Program and area maps for each of the projects with the following:

- ***all existing delineated riparian, wetlands, and aquatic habitats;***
- ***related existing upstream and adjacent infiltration, recharge, and liquefaction areas;***
- ***potential groundwater movement patterns for 1500ft upstream and downstream of wetlands and riparian habitats; and***
- ***current surface water flows for 1500ft upstream and downstream of wetlands and riparian habitats.***

12/4 **Biological Resources** Implementation of the EWMP projects could occur within existing sensitive habitats...result in changes to wildlife habitat, disruption of natural movement corridors, fragmentation or isolation of wildlife habitats, and disturbance of sensitive species during construction or operation...could alter **riparian and aquatic habitats**. The PEIR will evaluate the potential for such facilities to impact biological resources and will also discuss local ordinances and state and federal regulations governing biological resources.

2-2 Geology and Groundwater Slight mention is made of groundwater, infiltration, recharge, and related liquefaction although much of the stormwater reduction must depend upon groundwater storage of captured runoff. The General Plan has not specific policies regarding changing the entire groundwater regime by massive expansion of septic tank/leach field system in another LACo project (i.e., Hauled Water Initiative) and this Programs LID and related recharge systems.

No information has been provided as to where recharge/infiltration areas are in relation to liquefaction zones and their drier extensions of alluvium and other permeable soils and bedrock.

The recirculation NOP/IS and the PDEIR must contain a general map of the Program and area maps for each of the projects with the following:

All geologically potential recharge/infiltration areas, existing recharging project, and proposed recharging areas and of all areas with more than 10 septic tanks per any 100 acres;

Currently delineated liquefaction areas and geologically similar surface materials which are not now considered as liquefiable due to lack of high groundwater tables;

Known groundwater levels and elevations of stream beds downslope of the groundwater tables; and

Anticipated local and project recharging rates.

12/6 5. Geology, Soils, and Seismicity Southern Los Angeles County is a seismically active region. The proposed EWMP BMPs would require **construction** of structural BMPs that could be subject to potential seismic and geologic hazards, including 13/1 ground shaking, **liquefaction**, soil stability conditions, soil erosion rates, expansive soils, and landslides. Policies provided in the County's General Plan and applicable standard County requirements will be evaluated as to their effect of **mitigating or avoiding any potentially significant effects.**...

13/4 Hydrology and Water Quality Implementation of the proposed EWMP BMPs may change **local drainage patterns at construction sites**,...which could affect the hydrology, hydraulics, and/or water quality of streams, rivers, and other receiving waters...The PEIR also will evaluate potential impacts to flood control capacity and develop mitigation strategies if necessary to avoid significant impacts.

13/5 Implementation of the proposed EWMP BMPs would likely result in **increased infiltration and recharge** in various locations throughout the EWMP watersheds. **Such activities could affect local groundwater levels and water quality**. The PEIR will evaluate potential effects of **increased storm water recharge** and will identify mitigation measures if necessary to ensure that potentially necessary significant impacts are reduced or avoided.

2-3 Hazards and Groundwater Recharge No mention is made regarding the influence of groundwater movements upon hazards and hazardous materials in the soil/alluvium/bedrock context. Groundwater plumes have cause major expansions of underground contamination from storage tanks and contaminated soil. Contaminated groundwater in the northeastern and western San Fernando Valley and elsewhere are known to be migrating based on the groundwater flows and basin pumping for water supplies.

Current LACo policies do not reflect the responsibilities and liabilities of LACo approved watershed plans causing the changes of hazardous materials migration induced by groundwater flows fed by LACo and agency approved recharge/infiltration projects.

No information has been provided as to where recharge/infiltration areas, groundwater flows, and known or expected contaminated groundwater and soils, and potential routes for plume migration through extensions of alluvium and other permeable soils and bedrock.

The recirculation NOP/IS and the PDEIR must contain a general map of the Program and projects' area maps with the following:

Known subsurface contaminated soils and groundwater and active remediation sites;

Known pump/treat/use or pump/treat/recharge projects;

Current and expected recharge/infiltration areas; and

Known/Expected groundwater migration pathways.

13/3 **Hazards and Hazardous Materials** Excavation during construction of proposed EWMP BMPs could uncover **contaminated soils or hazardous substances** that pose a substantial hazard to human health or the environment...The policies provided in the County's General Plan and any standard County requirements will be evaluated as to their effect of mitigating or avoiding any potentially significant effects.

2-4 Socioeconomics (including Total and Disposal Incomes, Employment, Existing Infrastructure Costs, and Property and Other Revenues)

No information has been provided as to any socioeconomic setting, effects, and mitigation for the program or the projects.

The recirculation NOP/IS and the PDEIR must contain an overall socioeconomic review of the Program area and separate project area for each of the projects with the following:

- ***Educational, employment, age/gender, and other socioeconomic parameters to characterize the areas for the Program and its projects;***
- ***Incomes, Current Taxes and Fees, and other Ability-To-Pay parameters to characterize the areas for the Program and its projects;***
- ***Existing Special Assessment Districts and Other Urban Costs for Local Residents and Property Owners for the Program's and its projects' areas; and***
- ***State and conditions of existing infrastructure and potential for major future projects in the same Program's and its projects' areas.***

2-5 "Environmental Justice" No information has been provided as to any information regarding the setting, effects, and mitigation for the program or the projects related to issues of Environmental Justice.

The recirculation NOP/IS and the PDEIR must contain an overall and specific projects' Environmental Justice review of the similar major infrastructure programs and projects as related to those receiving benefits and those experiencing adverse effects directly through water-related operations and indirectly through direct/indirect payments for such effects and prospective benefits for those with much largely parcels and incomes.

2-6 Mitigation Monitoring and Reporting Plan The Draft Programmatic and Draft Project Environmental Impact Reports must include tiered draft plans for the implementation, monitoring, and enforcements of the Mitigation Monitoring, and Reporting Plan which will be subject to public review and comment as part of the DEIR processes and not wait until the "Final EIR" is circulated.

ELIZABETH BYRNE DEBREU
777 Arden Road
Pasadena, California 91106

October 8, 2014

Mr. Gregg BeGell, P.E.
County of Los Angeles Department of Public Works
Project Management Division II
900 South Fremont, 5th Floor
Alhambra, CA 91803

Via Email: gbegell@dpw.lacounty.gov

Re: Restoration of Baldwin Lake

Dear Mr. BeGell:

I write to urge you to make the restoration of Baldwin Lake a high priority as you lead the effort to create the EWMP for the Rio Hondo Watershed.

The restoration of Baldwin Lake, including modifications to the depth of the lake and adaptation of Tule Pond as a bioswale, would enhance Baldwin Lake's water quality and give it a more significant water collection function while simultaneously enhancing its scenic, educational, and historic value at the center of the Los Angeles County Arboretum and Botanic Garden.

The restored lake would also provide an exceptional opportunity to educate the public about regional water management, home and community water conservation, and the role of the Raymond Basin and the other water resources in sustaining us. It is a key resource that serves over 330,000 visitors per year, including more than 16,000 elementary school students on field trips.

As a member of the board of the Los Angeles Arboretum Foundation, the County's non-profit partner in operating the Arboretum, I stand ready to help leverage public dollars to realize Baldwin Lake's unique potential to provide direct public benefit in a multitude of ways. It is the ideal project both to enhance the watershed function and serve the public with remarkable educational, ecological, and scenic benefits.

I respectfully submit that the County include the Baldwin Lake in the Rio Hondo Enhanced Watershed Management Plan.

Very truly yours,

Elizabeth Byrne Debreu
Board Member, Los Angeles Arboretum Foundation

DEPARTMENT OF TRANSPORTATION
DISTRICT 7-OFFICE OF TRANSPORTATION PLANNING
100 S. MAIN STREET, MS 16
LOS ANGELES, CA 90012
PHONE (213) 897-9140
FAX (213) 897-1337
www.dot.ca.gov

Serious drought.
Help save water!

September 29, 2014

Mr. Gregg BeGell
County of Los Angeles Dept. of Public Works
Project Management Division II
900 South Fremont Avenue, 5th Floor
Alhambra, CA 91803

Re: **Enhanced Watershed Management Programs**
Notice of Preparation
IGR#140912FL
Vic.: LA/Various watersheds locations

Dear Mr. BeGell:

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the above referenced project. The proposed project will prepare a Program Environmental Impact Report (PEIR) for the project identified, such as the 12 separate Enhanced Watershed Management Programs (EWMPs); it will be prepared as a collective effort among the Los Angeles County Flood Control District (LACFCD) and the applicable agencies in each respective EWMP.

We would like to remind you that storm water run-off is a sensitive issue for Los Angeles and Ventura counties. Please be mindful that projects need to be designed to discharge clean run-off water.

Any work to be performed within the State Right-of-way will need an Encroachment Permit and any transportation of heavy construction equipment and/or materials which requires the use of oversized-transport vehicles on State highways will require a Caltrans transportation permit. We recommend that large size truck trips be limited to off-peak commute periods. In addition, a truck/traffic construction management plan is needed for this project.

If you have any questions, please feel free to contact me at (213) 897-9140 or project coordinator Frances Lee at (213) 897-0673 or electronically at frances.lee@dot.ca.gov.

Sincerely,

Dianna Watson

DIANNA WATSON
Branch Chief, Community Planning & LD IGR Review

cc: Scott Morgan, State Clearinghouse

MWD
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Executive Office

September 24, 2014 **Via Mail**

Mr. Gregg BeGell
Project Management Division II
Los Angeles County Flood Control District
900 South Fremont Avenue, 5th Floor
Alhambra, CA 91803

Dear Mr. BeGell:

Notice of Preparation for the Draft Program
Environmental Impact Report for the Enhanced Watershed Management Programs

The Metropolitan Water District of Southern California (Metropolitan) has reviewed the Notice of Preparation of a Draft Program Environmental Impact Report for Enhanced Watershed Management Programs (EWMPs) in Los Angeles County, California. The Los Angeles County Flood Control District (LACFCD) is the Lead Agency. An EWMP is one regulatory compliance mechanism for stormwater management under the Los Angeles County Municipal Separate Storm Sewer System (MS4) Permit adopted in 2012 (hereafter referred to as 2012 LA County MS4 Permit). The LACFCD proposes the development of 12 separate EWMPs in their respective watershed groups. The potential benefits from the EWMPs include the following: (1) improved water quality; (2) reduction in the impairment of water bodies for Designated Beneficial Uses; (3) promotion of water conservation and supply; (4) enhanced recreational opportunities; (4) support for public education opportunities; (5) improved local aesthetics; and (6) management of flood risks. This letter contains Metropolitan's comments to the proposed project as a potentially affected agency.

Metropolitan is a public agency and regional water wholesaler. It is comprised of 26 member public agencies serving approximately 18.4 million people in portions of six counties in Southern California, including Los Angeles County. Metropolitan's mission is to provide its 5,200-square-mile service area with adequate and reliable supplies of high-quality water to meet present and future needs in an environmentally and economically responsible way. Metropolitan owns and operates numerous facilities within Los Angeles County including pipelines, a water treatment plant, power plants, dams, reservoirs, and other infrastructure associated with our water conveyance and distribution system.

The proposed project may impact Metropolitan's ability to dewater its pipelines. As part of a proactive maintenance and refurbishment program, Metropolitan periodically dewaters its treated and raw water pipelines prior to inspection, maintenance, or repair activities. Such periodic inspections and repairs are essential to prevent pipe failures and subsequent damage from high-pressure water releases. These water discharges are short-term in nature and are acknowledged by the LA County Regional Water Quality Control Board as having a *de minimus,* or low-threat, impact to the environment and aquatic life. As such, these discharges are categorized as "Conditionally Exempt Essential Non-Storm Water Discharges" under the 2012 LA County MS4 Permit.

Metropolitan requests that LACFCD and its co-permitees continue to allow for periodic discharges by potable water systems into the MS4 under the proposed EWMPs. These "Conditionally Exempt Essential Non-Storm Water Discharges" are specifically called out as permissible under the 2012 LA County MS4 Permit. Per the conditions set forth in the 2012 LA County MS4 Permit, Metropolitan will continue to follow industry-accepted best management practices (BMPs) for its potable water system discharges. BMPs include, but are not limited to, the following: (a) advanced notification of LACFCD 72 hours prior to all planned discharges greater than 100,000 gallons and as soon as possible after an unplanned discharge greater than 100,000 gallons; (b) dechlorination; (c) monitoring for pollutants of concern; and (d) recordkeeping (e.g., date, time, and location of discharge, discharge pathway, receiving water, total number of gallons discharged, BMPs used, etc.).

Based on a review of the proposed project boundaries, the proposed project has potential to impact Metropolitan facilities. Metropolitan must be allowed to maintain its rights-of-way and requires unobstructed access to its facilities in order to maintain and repair its system. Any future design plans associated with this project should be submitted to the attention of Metropolitan's Substructures Team. Approval of the project should be contingent on Metropolitan's approval of design plans for portions of the proposed project that could impact its facilities.

Detailed prints of drawings of Metropolitan's pipelines and rights-of-way may be obtained by calling Metropolitan's Substructures Information Line at (213) 217-6564. To assist the applicant in preparing plans that are compatible with Metropolitan's facilities and easements, we have enclosed a copy of the "Guidelines for Developments in the Area of Facilities, Fee Properties, and/or Easement of The Metropolitan Water District of Southern California." Please note that all submitted designs or plans must clearly identify Metropolitan's facilities and rights-of-way.
We appreciate the opportunity to provide input to your planning process and we look forward to receiving future documentation and plans for this project. For further assistance, please contact Ms. Michelle Morrison at (213) 217-7906.

Very truly yours,

Deborah Day

for Deirdre West
Manager, Environmental Planning Team

MM:rdl
J:\Environmental Planning&Compliance\COMPLETED JOBS\September2014\EPT Job No. 20140944MIS

Enclosures: Planning Guidelines and Map of Metropolitan Facilities in Project Vicinity

Guidelines for Developments in the Area of Facilities, Fee Properties, and/or Easements of The Metropolitan Water District of Southern California

1. Introduction

a. The following general guidelines should be followed for the design of proposed facilities and developments in the area of Metropolitan's facilities, fee properties, and/or easements.

b. We require that 3 copies of your tentative and final record maps, grading, paving, street improvement, landscape, storm drain, and utility plans be submitted for our review and written approval as they pertain to Metropolitan's facilities, fee properties and/or easements, prior to the commencement of any construction work.

2. Plans, Parcel and Tract Maps

The following are Metropolitan's requirements for the identification of its facilities, fee properties, and/or easements on your plans, parcel maps and tract maps:

a. Metropolitan's fee properties and/or easements and its pipelines and other facilities must be fully shown and identified as Metropolitan's on all applicable plans.

b. Metropolitan's fee properties and/or easements must be shown and identified as Metropolitan's with the official recording data on all applicable parcel and tract maps.

c. Metropolitan's fee properties and/or easements and existing survey monuments must be dimensionally tied to the parcel or tract boundaries.

d. Metropolitan's records of surveys must be referenced on the parcel and tract maps.

3. Maintenance of Access Along Metropolitan's Rights-of-Way

a. Proposed cut or fill slopes exceeding 10 percent are normally not allowed within Metropolitan's fee properties or easements. This is required to facilitate the use of construction and maintenance equipment, and provide access to its aboveground and belowground facilities.

b. We require that 16-foot-wide commercial-type driveway approaches be constructed on both sides of all streets crossing Metropolitan's rights-of-way. Openings are required in any median island. Access ramps, if necessary, must be at least 16-feet-wide. Grades of ramps are normally not allowed to exceed 10 percent. If the slope of an access ramp must exceed 10 percent due to the topography, the ramp must be paved. We require a 40-foot-long level area on the driveway approach to access ramps where the ramp meets the street. At Metropolitan's fee properties, we may require fences and gates.

c. The terms of Metropolitan's permanent easement deeds normally preclude the building or maintenance of structures of any nature or kind within its easements, to ensure safety and avoid interference with operation and maintenance of Metropolitan's pipelines or other facilities. Metropolitan must have vehicular access along the easements at all times for inspection, patrolling, and for maintenance of the pipelines and other facilities on a routine basis. We require a 20-foot-wide clear zone around all above-ground facilities for this routine access. This clear zone should slope away from our facility on a grade not to exceed 2 percent. We must also have access along the easements with construction equipment. An example of this is shown on Figure 1.

d. The footings of any proposed buildings adjacent to Metropolitan's fee properties and/or easements must not encroach into the fee property or easement or impose additional loading on Metropolitan's pipelines or other facilities therein. A typical situation is shown on Figure 2. Prints of the detail plans of the footings for any building or structure adjacent to the fee property or easement must be submitted for our review and written approval as they pertain to the pipeline or other facilities therein. Also, roof eaves of buildings adjacent to the easement or fee property must not overhang into the fee property or easement area.

e. Metropolitan's pipelines and other facilities, e.g. structures, manholes, equipment, survey monuments, etc. within its fee properties and/or easements must be protected from damage by the easement holder on Metropolitan's property or the property owner where Metropolitan has an easement, at no expense to Metropolitan. If the facility is a cathodic protection station it shall be located prior to any grading or excavation. The exact location, description and way of protection shall be shown on the related plans for the easement area.

4. Easements on Metropolitan's Property

a. We encourage the use of Metropolitan's fee rights-of-way by governmental agencies for public street and utility purposes, provided that such use does not interfere with Metropolitan's use of the property, the entire width of the property is accepted into the agency's public street system and fair market value is paid for such use of the right-of-way.

b. Please contact the Director of Metropolitan's Right of Way and Land Division, telephone (213) 250-6302, concerning easements for landscaping, street, storm drain, sewer, water or other public facilities proposed within Metropolitan's fee properties. A map and legal description of the requested easements must be submitted. Also, written evidence must be submitted that shows the city or county will accept the easement for the specific purposes into its public system. The grant of the easement will be subject to Metropolitan's rights to use its land for water pipelines and related purposes to the same extent as if such grant had not been made. There will be a charge for the easement. Please note that, if entry is required on the property prior to issuance of the easement, an entry permit must be obtained. There will also be a charge for the entry permit.

5. Landscaping

Metropolitan's landscape guidelines for its fee properties and/or easements are as follows:

a. A green belt may be allowed within Metropolitan's fee property or easement.

b. All landscape plans shall show the location and size of Metropolitan's fee property and/or easement and the location and size of Metropolitan's pipeline or other facilities therein.

c. Absolutely no trees will be allowed within 15 feet of the centerline of Metropolitan's existing or future pipelines and facilities.

d. Deep-rooted trees are prohibited within Metropolitan's fee properties and/or easements. Shallow-rooted trees are the only trees allowed. The shallow-rooted trees will not be permitted any closer than 15 feet from the centerline of the pipeline, and such trees shall not be taller than 25 feet with a root spread no greater than 20 feet in diameter at maturity. Shrubs, bushes, vines, and ground cover are permitted, but larger shrubs and bushes should not be planted directly over our pipeline. Turf is acceptable. We require submittal of landscape plans for Metropolitan's prior review and written approval. (See Figure 3).

e. The landscape plans must contain provisions for Metropolitan's vehicular access at all times along its rights-of-way to its pipelines or facilities therein. Gates capable of accepting Metropolitan's locks are required in any fences across its rights-of-way. Also, any walks or drainage facilities across its access route must be constructed to AASHTO H-20 loading standards.

f. Rights to landscape any of Metropolitan's fee properties must be acquired from its Right of Way and Land Division. Appropriate entry permits must be obtained prior to any entry on its property. There will be a charge for any entry permit or easements required.

6. Fencing

Metropolitan requires that perimeter fencing of its fee properties and facilities be constructed of universal chain link, 6 feet in height and topped with 3 strands of barbed wire angled upward and outward at a 45 degree angle or an approved equal for a total fence height of 7 feet. Suitable substitute fencing may be considered by Metropolitan. (Please see Figure 5 for details).

7. Utilities in Metropolitan's Fee Properties and/or Easements or Adjacent to Its Pipeline in Public Streets

Metropolitan's policy for the alinement of utilities permitted within its fee properties and/or easements and street rights-of-way is as follows:

a. Permanent structures, including catch basins, manholes, power poles, telephone riser boxes, etc., shall not be located within its fee properties and/or easements.

b. We request that permanent utility structures within public streets, in which Metropolitan's facilities are constructed under the Metropolitan Water District Act, be placed as far from our pipeline as possible, but not closer than 5 feet from the outside of our pipeline.

c. The installation of utilities over or under Metropolitan's pipeline(s) must be in accordance with the requirements shown on the enclosed prints of Drawings Nos. C-11632 and C-9547. Whenever possible we request a minimum of one foot clearance between Metropolitan's pipe and your facility. Temporary support of Metropolitan's pipe may also be required at undercrossings of its pipe in an open trench. The temporary support plans must be reviewed and approved by Metropolitan.

d. Lateral utility crossings of Metropolitan's pipelines must be as perpendicular to its pipeline alinement as practical. Prior to any excavation our pipeline shall be located manually and any excavation within two feet of our pipeline must be done by hand. This shall be noted on the appropriate drawings.

e. Utilities constructed longitudinally within Metropolitan's rights-of-way must be located outside the theoretical trench prism for uncovering its pipeline and must be located parallel to and as close to its rights-of-way lines as practical.

f. When piping is jacked or installed in jacked casing or tunnel under Metropolitan's pipe, there must be at least two feet of vertical clearance between the bottom of Metropolitan's pipe and the top of the jacked pipe, jacked casing or tunnel. We also require that detail drawings of the shoring for the jacking or tunneling pits be submitted for our review and approval. Provisions must be made to grout any voids around the exterior of the jacked pipe, jacked casing or tunnel. If the piping is installed in a jacked casing or tunnel the annular space between the piping and the jacked casing or tunnel must be filled with grout.

g. Overhead electrical and telephone line requirements:

1) Conductor clearances are to conform to the California State Public Utilities Commission, General Order 95, for Overhead Electrical Line Construction or at a greater clearance if required by Metropolitan. Under no circumstances shall clearance be less than 35 feet.

2) A marker must be attached to the power pole showing the ground clearance and line voltage, to help prevent damage to your facilities during maintenance or other work being done in the area.

3) Line clearance over Metropolitan's fee properties and/or easements shall be shown on the drawing to indicate the lowest point of the line under the most adverse conditions including consideration of sag, wind load, temperature change, and support type. We require that overhead lines be located at least 30 feet laterally away from all above-ground structures on the pipelines.

4) When underground electrical conduits, 120 volts or greater, are installed within Metropolitan's fee property and/or easement, the conduits must be incased in a minimum of three inches of red concrete. Where possible, above ground warning signs must also be placed at the right-of-way lines where the conduits enter and exit the right-of-way.

h. The construction of sewerlines in Metropolitan's fee properties and/or easements must conform to the California Department of Health Services Criteria for the Separation of Water Mains and Sanitary Services and the local City or County Health Code Ordinance as it relates to installation of sewers in the vicinity of pressure waterlines. The construction of sewerlines should also conform to these standards in street rights-of- way.

i. Cross sections shall be provided for all pipeline crossings showing Metropolitan's fee property and/or easement limits and the location of our pipeline(s). The exact locations of the crossing pipelines and their elevations shall be marked on as-built drawings for our information.

j. Potholing of Metropolitan's pipeline is required if the vertical clearance between a utility and Metropolitan's pipeline is indicated on the plan to be one foot or less. If the indicated clearance is between one and two feet, potholing is suggested. Metropolitan will provide a representative to assists others in locating and identifying its pipeline. Two-working days notice is requested.

k. Adequate shoring and bracing is required for the full depth of the trench when the excavation encroaches within the zone shown on Figure 4.

l. The location of utilities within Metropolitan's fee property and/or easement shall be plainly marked to help prevent damage during maintenance or other work done in the area. Detectable tape over buried utilities should be placed a minimum of 12 inches above the utility and shall conform to the following requirements:

1) Water pipeline: A two-inch blue warning tape shall be imprinted with:

"CAUTION BURIED WATER PIPELINE"

2) Gas, oil, or chemical pipeline: A two-inch yellow warning tape shall be imprinted with:

"CAUTION BURIED _______ PIPELINE"

3) Sewer or storm drain pipeline: A two-inch green warning tape shall be imprinted with:

"CAUTION BURIED ______ PIPELINE"

4) Electric, street lighting, or traffic signals conduit: A two-inch red warning tape shall be imprinted with:

"CAUTION BURIED _______ CONDUIT"

5) Telephone, or television conduit: A two-inch orange warning tape shall be imprinted with:

"CAUTION BURIED _______ CONDUIT"

m. Cathodic Protection requirements:

1) If there is a cathodic protection station for Metropolitan's pipeline in the area of the proposed work, it shall be located prior to any grading or excavation. The exact location, description and manner of protection shall be shown on all applicable plans. Please contact Metropolitan's Corrosion Engineering Section, located at Metropolitan's F. E. Weymouth Softening and Filtration Plant, 700 North Moreno Avenue, La Verne, California 91750, telephone (714) 593-7474, for the locations of Metropolitan's cathodic protection stations.

2) If an induced-current cathodic protection system is to be installed on any pipeline crossing Metropolitan's pipeline, please contact Mr. Wayne E. Risner at (714) 593-7474 or (213) 250-5085. He will review the proposed system and determine if any conflicts will arise with the existing cathodic protection systems installed by Metropolitan.

3) Within Metropolitan's rights-of-way, pipelines and carrier pipes (casings) shall be coated with an approved protective coating to conform to Metropolitan's requirements, and shall be maintained in a neat and orderly condition as directed by Metropolitan. The application and monitoring of cathodic protection on the pipeline and casing shall conform to Title 49 of the Code of Federal Regulations, Part 195.

4) If a steel carrier pipe (casing) is used:

(a) Cathodic protection shall be provided by use of a sacrificial magnesium anode (a sketch showing the cathodic protection details can be provided for the designers information).

(b) The steel carrier pipe shall be protected with a coal tar enamel coating inside and out in accordance with AWWA C203 specification.

n. All trenches shall be excavated to comply with the CAL/OSHA Construction Safety Orders, Article 6, beginning with Sections 1539 through 1547. Trench backfill shall be placed in 8-inch lifts and shall be compacted to 95 percent relative compaction (ASTM D698) across roadways and through protective dikes. Trench backfill elsewhere will be compacted to 90 percent relative compaction (ASTM D698).

o. Control cables connected with the operation of Metropolitan's system are buried within streets, its fee properties and/or easements. The locations and elevations of these cables shall be shown on the drawings. The drawings shall note that prior to any excavation in the area, the control cables shall be located and measures shall be taken by the contractor to protect the cables in place.

p. Metropolitan is a member of Underground Service Alert (USA). The contractor (excavator) shall contact USA at 1-800-422-4133 (Southern California) at least 48 hours prior to starting any excavation work. The contractor will be liable for any damage to Metropolitan's facilities as a result of the construction.

8. Paramount Right

Facilities constructed within Metropolitan's fee properties and/or easements shall be subject to the paramount right of Metropolitan to use its fee properties and/or easements for the purpose for which they were acquired. If at any time Metropolitan or its assigns should, in the exercise of their rights, find it necessary to remove any of the facilities from the fee properties and/or easements, such removal and replacement shall be at the expense of the owner of the facility.

9. Modification of Metropolitan's Facilities

When a manhole or other of Metropolitan's facilities must be modified to accommodate your construction or reconstruction, Metropolitan will modify the facilities with its forces. This should be noted on the construction plans. The estimated cost to perform this modification will be given to you and we will require a deposit for this amount before the work is performed. Once the deposit is received, we will schedule the work. Our forces will coordinate the work with your contractor. Our final billing will be based on actual cost incurred, and will include materials, construction, engineering plan review, inspection, and administrative overhead charges calculated in accordance with Metropolitan's standard accounting practices. If the cost is less than the deposit, a refund will be made; however, if the cost exceeds the deposit, an invoice will be forwarded for payment of the additional amount.

10. Drainage

a. Residential or commercial development typically increases and concentrates the peak storm water runoff as well as the total yearly storm runoff from an area, thereby increasing the requirements for storm drain facilities downstream of the development. Also, throughout the year water from landscape irrigation, car washing, and other outdoor domestic water uses flows into the storm drainage system resulting in weed abatement, insect infestation, obstructed access and other problems. Therefore, it is Metropolitan's usual practice not to approve plans that show discharge of drainage from developments onto its fee properties and/or easements.

b. If water must be carried across or discharged onto Metropolitan's fee properties and/or easements, Metropolitan will insist that plans for development provide that it be carried by closed conduit or lined open channel approved in writing by Metropolitan. Also the drainage facilities must be maintained by others, e.g., city, county, homeowners association, etc. If the development proposes changes to existing drainage features, then the developer shall make provisions to provide for replacement and these changes must be approved by Metropolitan in writing.

11. Construction Coordination

During construction, Metropolitan's field representative will make periodic inspections. We request that a stipulation be added to the plans or specifications for notification of Mr. __________ of Metropolitan's Operations Services Branch, telephone (213) 250-____, at least two working days prior to any work in the vicinity of our facilities.

12. Pipeline Loading Restrictions

a. Metropolitan's pipelines and conduits vary in structural strength, and some are not adequate for AASHTO H-20 loading. Therefore, specific loads over the specific sections of pipe or conduit must be reviewed and approved by Metropolitan. However, Metropolitan's pipelines are typically adequate for AASHTO H-20 loading provided that the cover over the pipeline is not less than four feet or the cover is not substantially increased. If the temporary cover over the pipeline during construction is between three and four feet, equipment must restricted to that which

imposes loads no greater than AASHTO H-10. If the cover is between two and three feet, equipment must be restricted to that of a Caterpillar D-4 tract-type tractor. If the cover is less than two feet, only hand equipment may be used. Also, if the contractor plans to use any equipment over Metropolitan's pipeline which will impose loads greater than AASHTO H-20, it will be necessary to submit the specifications of such equipment for our review and approval at least one week prior to its use. More restrictive requirements may apply to the loading guideline over the San Diego Pipelines 1 and 2, portions of the Orange County Feeder, and the Colorado River Aqueduct. Please contact us for loading restrictions on all of Metropolitan's pipelines and conduits.

b. The existing cover over the pipeline shall be maintained unless Metropolitan determines that proposed changes do not pose a hazard to the integrity of the pipeline or an impediment to its maintenance.

13. Blasting

a. At least 20 days prior to the start of any drilling for rock excavation blasting, or any blasting, in the vicinity of Metropolitan's facilities, a two-part preliminary conceptual plan shall be submitted to Metropolitan as follows:

b. Part 1 of the conceptual plan shall include a complete summary of proposed transportation, handling, storage, and use of explosions.

c. Part 2 shall include the proposed general concept for blasting, including controlled blasting techniques and controls of noise, fly rock, airblast, and ground vibration.

14. CEQA Requirements

a. When Environmental Documents Have Not Been Prepared

1) Regulations implementing the California Environmental Quality Act (CEQA) require that Metropolitan have an opportunity to consult with the agency or consultants preparing any environmental documentation. We are required to review and consider the environmental effects of the project as shown in the Negative Declaration or Environmental Impact Report (EIR) prepared for your project before committing Metropolitan to approve your request.

2) In order to ensure compliance with the regulations implementing CEQA where Metropolitan is not the Lead Agency, the following minimum procedures to ensure compliance with the Act have been established:

a) Metropolitan shall be timely advised of any determination that a Categorical Exemption applies to the project. The Lead Agency is to advise Metropolitan that it and other agencies participating in the project have complied with the requirements of CEQA prior to Metropolitan's participation.

b) Metropolitan is to be consulted during the preparation of the Negative Declaration or EIR.

c) Metropolitan is to review and submit any necessary comments on the Negative Declaration or draft EIR.

d) Metropolitan is to be indemnified for any costs or liability arising out of any violation of any laws or regulations including but not limited to the California Environmental Quality Act and its implementing regulations.

b. When Environmental Documents Have Been Prepared

If environmental documents have been prepared for your project, please furnish us a copy for our review and files in a timely manner so that we may have sufficient time to review and comment. The following steps must also be accomplished:

1) The Lead Agency is to advise Metropolitan that it and other agencies participating in the project have complied with the requirements of CEQA prior to Metropolitan's participation.

2) You must agree to indemnify Metropolitan, its officers, engineers, and agents for any costs or liability arising out of any violation of any laws or regulations including but not limited to the California Environmental Quality Act and its implementing regulations.

15. Metropolitan's Plan-Review Cost

a. An engineering review of your proposed facilities and developments and the preparation of a letter response

giving Metropolitan's comments, requirements and/or approval that will require 8 man-hours or less of effort is typically performed at no cost to the developer, unless a facility must be modified where Metropolitan has superior rights. If an engineering review and letter response requires more than 8 man-hours of effort by Metropolitan to determine if the proposed facility or development is compatible with its facilities, or if modifications to Metropolitan's manhole(s) or other facilities will be required, then all of Metropolitan's costs associated with the project must be paid by the developer, unless the developer has superior rights.

b. A deposit of funds will be required from the developer before Metropolitan can begin its detailed engineering plan review that will exceed 8 hours. The amount of the required deposit will be determined after a cursory review of the plans for the proposed development.

c. Metropolitan's final billing will be based on actual cost incurred, and will include engineering plan review, inspection, materials, construction, and administrative overhead charges calculated in accordance with Metropolitan's standard accounting practices. If the cost is less than the deposit, a refund will be made; however, if the cost exceeds the deposit, an invoice will be forwarded for payment of the additional amount. Additional deposits may be required if the cost of Metropolitan's review exceeds the amount of the initial deposit.

16. Caution

We advise you that Metropolitan's plan reviews and responses are based upon information available to Metropolitan which was prepared by or on behalf of Metropolitan for general record purposes only. Such information may not be sufficiently detailed or accurate for your purposes. No warranty of any kind, either express or implied, is attached to the information therein conveyed as to its accuracy, and no inference should be drawn from Metropolitan's failure to comment on any aspect of your project. You are therefore cautioned to make such surveys and other field investigations as you may deem prudent to assure yourself that any plans for your project are correct.

17. Additional Information

Should you require additional information, please contact:

Civil Engineering Substructures Section
Metropolitan Water District
of Southern California
P.O. Box 54153
Los Angeles, California 90054-0153
(213) 217-6000

JEH/MRW/lk

Rev. January 22, 1989

Encl.

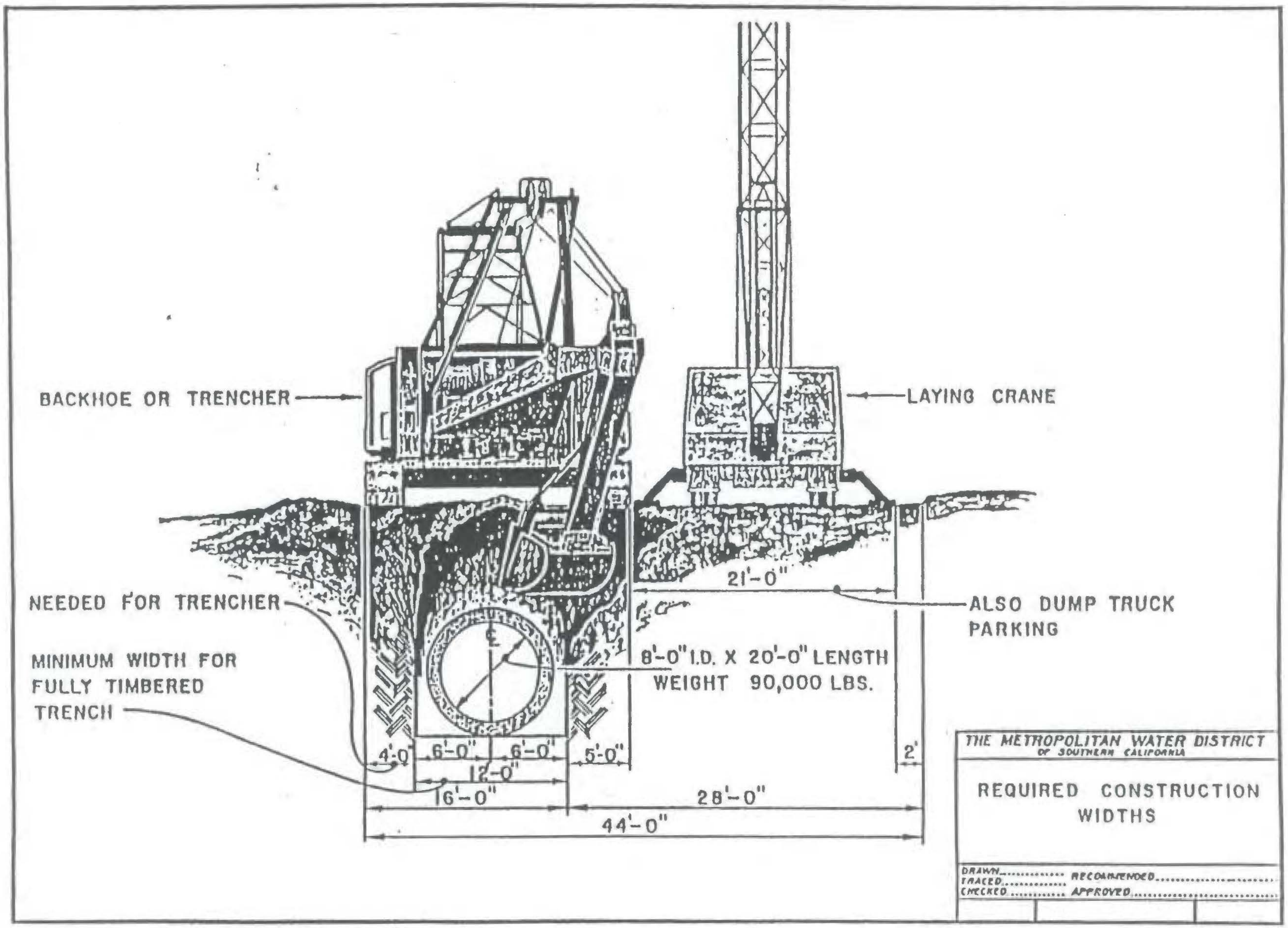
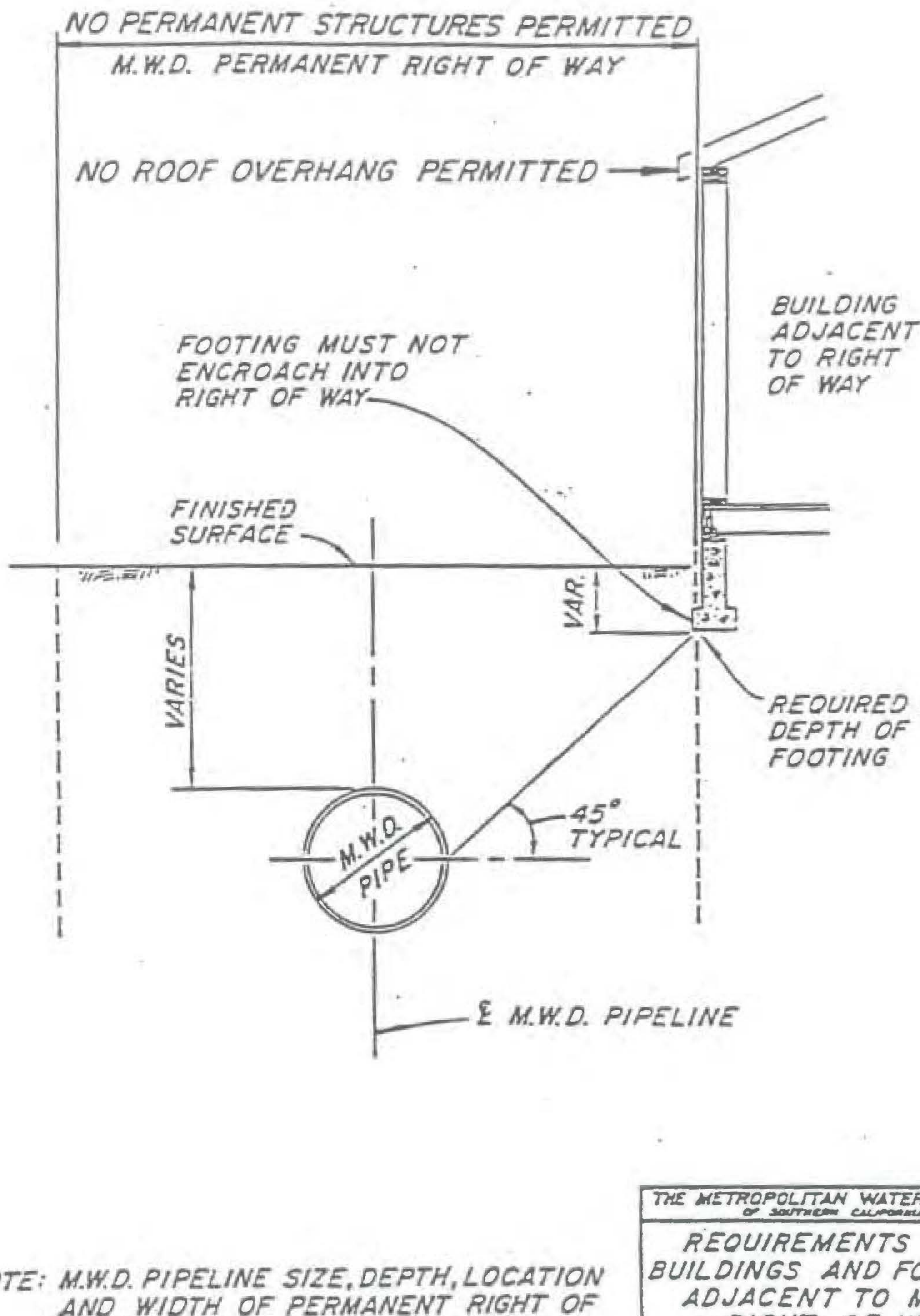


FIGURE 1

FORM NO 20 9 1000 11.08 P.O. NO. 60 9907



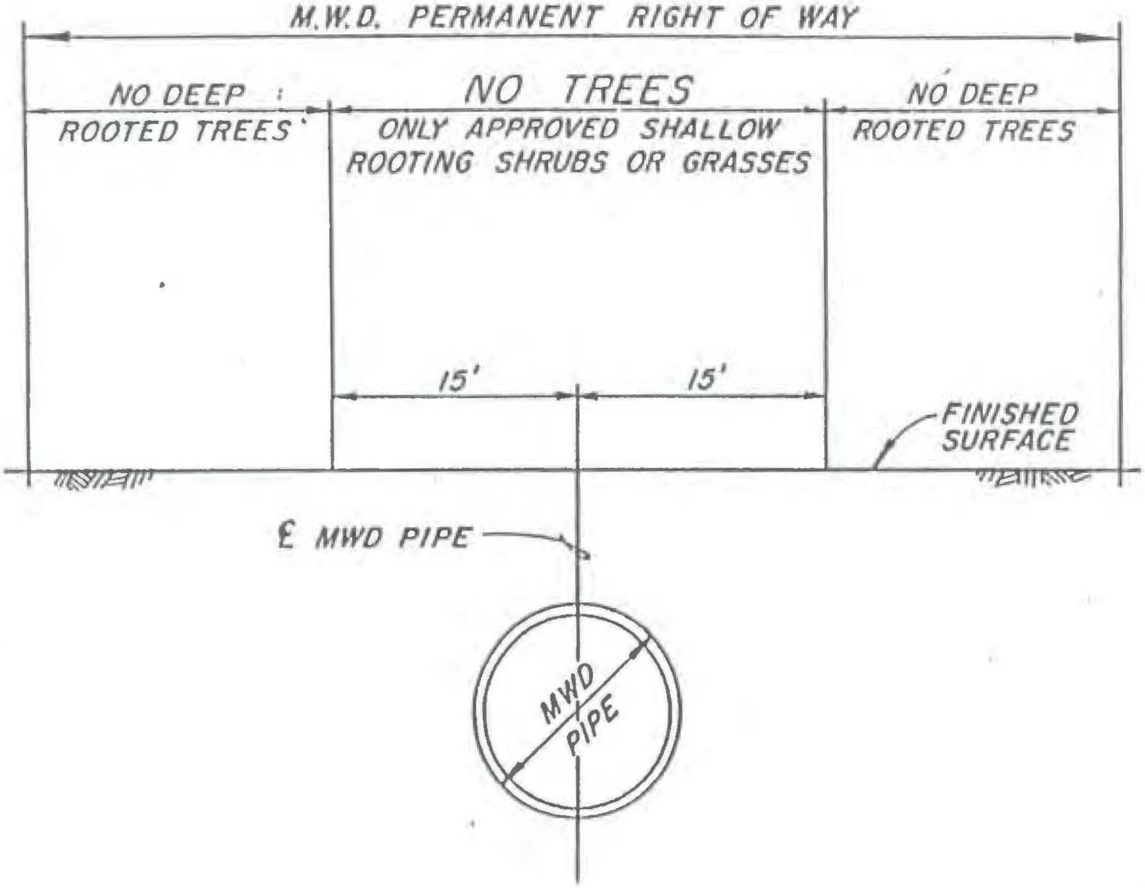
NOTE: M.W.D. PIPELINE SIZE, DEPTH, LOCATION AND WIDTH OF PERMANENT RIGHT OF WAY VARIES.

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

REQUIREMENTS FOR BUILDINGS AND FOOTINGS ADJACENT TO M.W.D. RIGHT OF WAY

DRAWN ______ RECOMMENDED ______
TRACED ______
CHECKED ______ APPROVED ______

FIGURE 2



THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

LANDSCAPE GUIDELINES FOR M.W.D. RIGHT OF WAY

DRAWN............ RECOMMENDED...................
TRACED............
CHECKED............ APPROVED...................

FIGURE 3

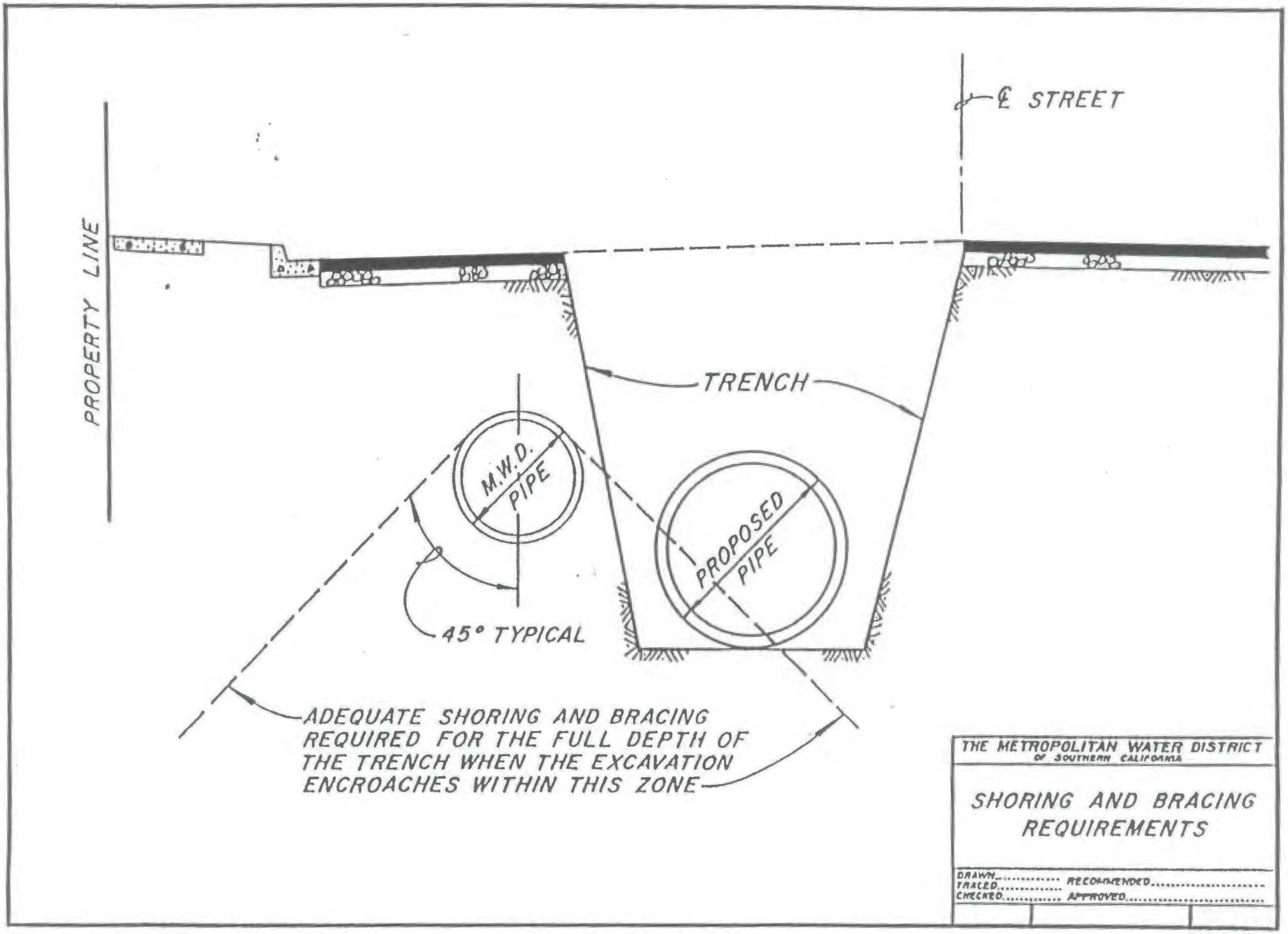
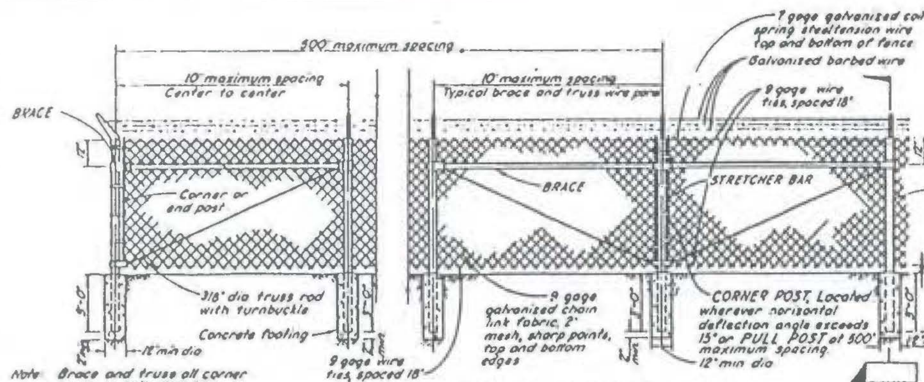


FIGURE 4

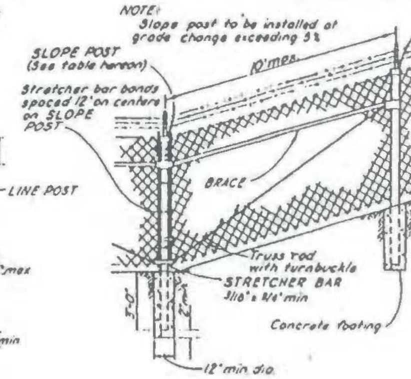
RB-AR 8888

SPECIFICATIONS NO. SHEET NO.



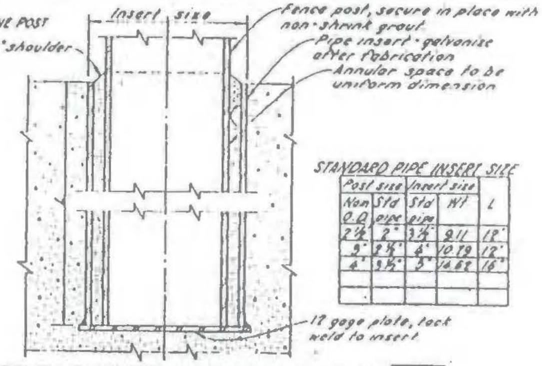
END, CORNER, AND PULL POST BRACING

(Not to scale)



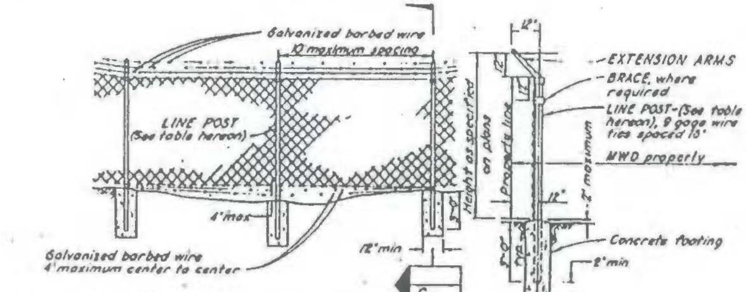
TYPICAL FENCE ON SLOPE

(Not to scale)



FENCE POST INSERT FOR CONCRETE WALL AND CONCRETE CURB

(Not to scale)

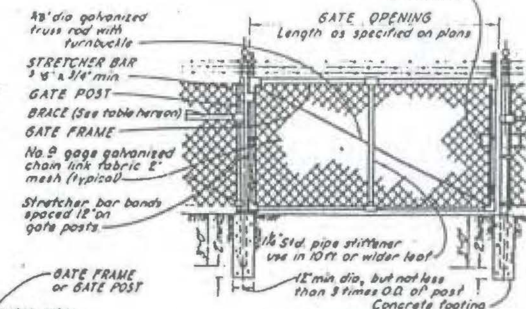


ELEVATION AT SHALLOW DRAIN CROSSINGS

(Not to scale)

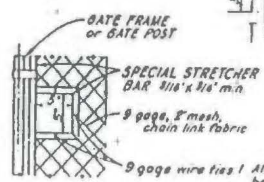
LINE POST SECTION

(Not to scale)



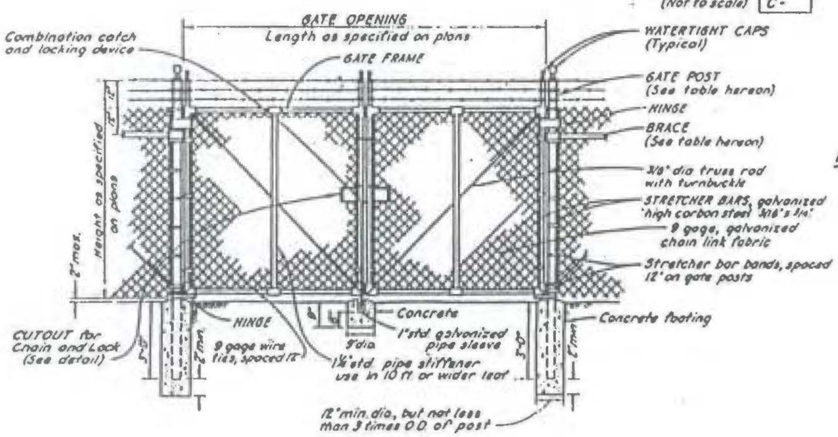
SINGLE SWING GATE DETAIL

(Not to scale)



DETAIL OF CUTOUT FOR CHAIN AND LOCK

(Not to scale)



DOUBLE SWING GATE DETAIL

(Not to scale)

GENERAL NOTES

1. All ferrous parts and materials shall be galvanized after fabrication
2. Adjustable tighteners shall be turnbuckle or equivalent, having minimum 6" take-up
3. Extension arms for barbed wire shall be steel, malleable iron or wrought iron and shall be attached to the top of the post with a ¼ inch round head rivet. The extension arms shall carry three wires each at approximately 5 inch centers in a plane approximately 45° from the vertical.
4. All gate hinges shall be heavy duty malleable iron or steel, industrial service type, 270 degree swing, of approved quality and design
5. Secure cap to post with ¼ inch round head rivet

Use	Type	Nominal Size (Inches)	Actual O.D. (Inches)	Weight per foot (Pounds)
End, corner, slope, pull and gate posts (for single gates 6 feet or less in width and double gates 12 feet or less in width) for chain link fabric 72 inches or higher	Pipe	2½	2.875	5.79
End, corner, slope, pull and gate posts (for single gates 6 feet or less in width and double gates 12 feet or less in width) for chain link fabric less than 72 inches height	Pipe	2	2.375	3.65
Gate posts for single swing gates over 6 feet but not over 13 feet in width and double swing gates over 12 feet but not over 26 feet in width.	Pipe	3½	4.000	9.11
Gate posts for single swing gates over 13 feet but not over 18 feet in width and double swing gates over 26 feet but not over 36 feet in width.	Pipe	6	6.625	18.97
Gate posts for single swing gates over 18 feet in width and double swing gates over 36 feet in width	Pipe	8	8.625	24.70
Line posts for chain link fabric 72 inches or higher	Pipe	2	2.375	3.65
	H-Section	2¼ x 1⅞		4.10
Line posts for chain link fabric less than 72 inches in height	Pipe	1½	1.900	2.72
	H-Section	1⅞ x 1⅝		2.80
Braces	Pipe	1¼	1.660	2.27
	H-Section	1⅞ x 1⅝		2.80
Frame for gates	Pipe	1½	1.900	2.72
Stiffeners for gates	Pipe	1¼	1.660	2.27

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

DISTRIBUTION SYSTEM

CHAIN LINK FENCE DETAILS

DESIGNED / DRAWN / CHECKED / RECOMMENDED / APPROVED / WORK ORDER NO. / LOS ANGELES

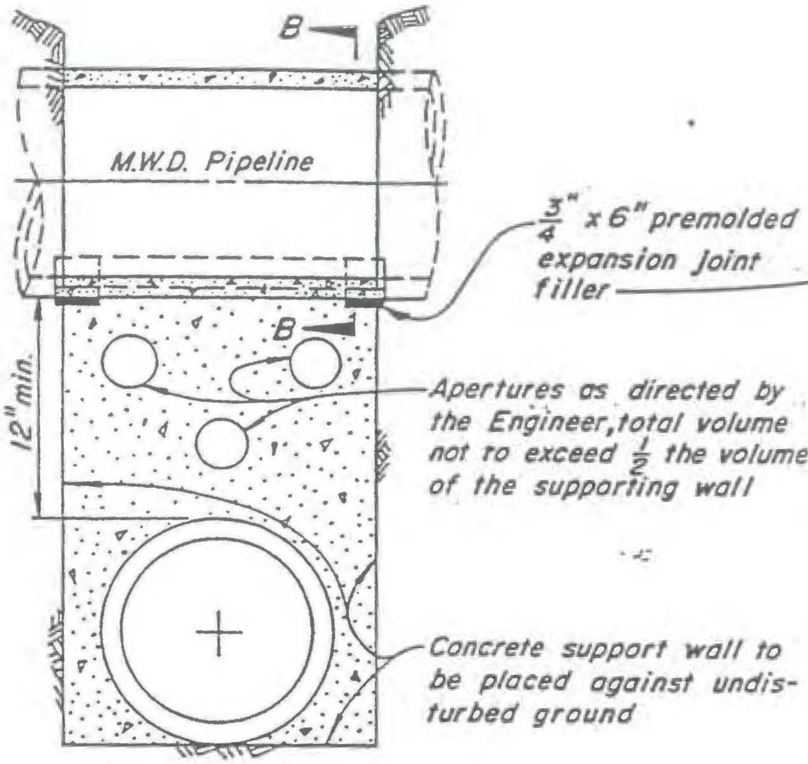
NO. | DATE | DWN. | CKD. | REVISION | REC. | APP.

REVISION COORDINATION CHECK

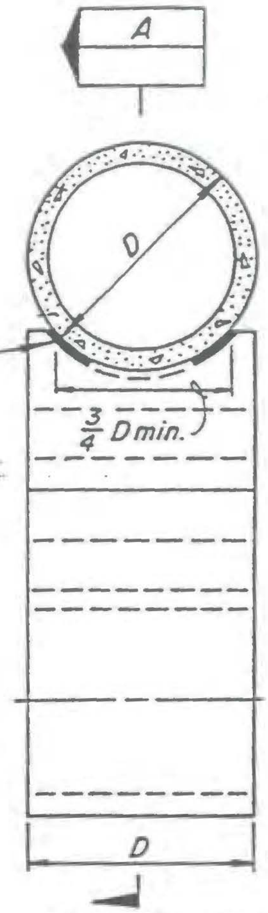
ORIGINAL RELEASE | MECH. | STRUCT. | ELEC. | CIVIL | SPECS. | DATE

INTERSECTIONAL COORDINATION CHECK

FIGURE 5

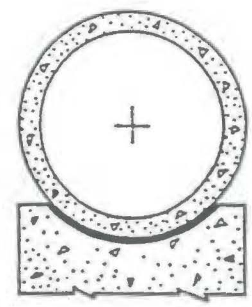


SECTION "A-A"



CROSS SECTION

1. Supporting wall shall have a firm bearing on the subgrade and against the side of the excavation.
2. Premolded expansion joint filler per ASTM D-1751-73 to be used in support for steel pipe only.
3. If trench width is 4 feet or greater, measured along centerline of M.W.D. pipe, concrete support must be constructed.
4. If trench width is less than 4 feet, clean sand backfill, compacted to 90% density in accordance with the provisions of ASTM Standard D-1557-70 may be used in lieu of the concrete support wall.



SECTION "B-B"

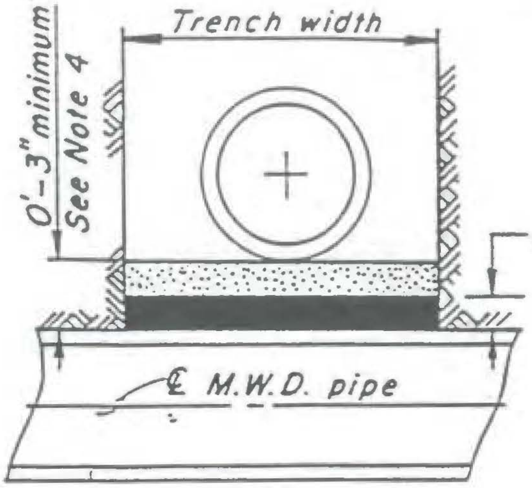
THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

TYPICAL SUPPORT FOR
M.W.D. PIPELINE

DRAWN ______ RECOMMENDED ______
TRACED ______
CHECKED ______ APPROVED ______

C-9547

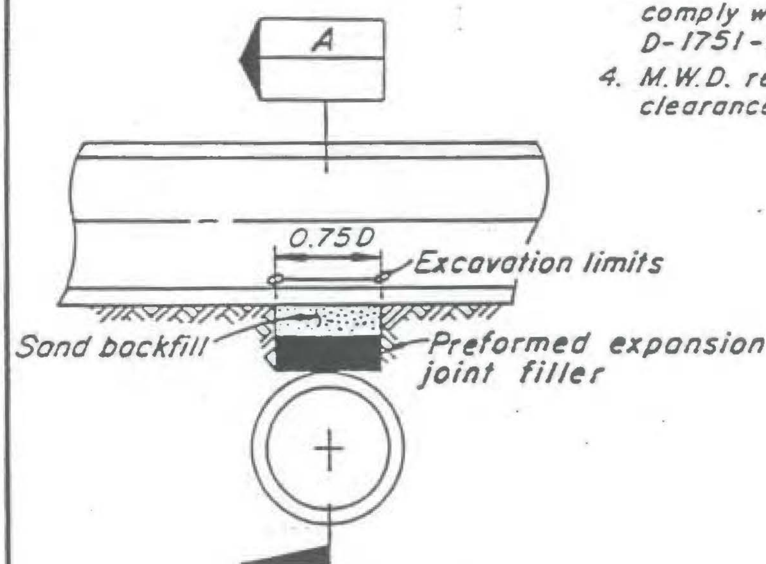
FORM NO. 88-8 1000 11-67 P.O. 67-8714



SECTION A

NOTES

1. This method to be used where the utility line is 24" or greater in diameter and the clearance between the utility line and M.W.D. pipe is 12" or less.
2. Special protection may be required if the utility line diameter is greater than M.W.D. pipe or if the cover over the utility line to the street surface is minimal and there is 12" or less clearance between M.W.D. pipe and the utility line.
3. Preformed expansion joint filler to comply with ASTM designation D-1751-73.
4. M.W.D. requests 12" minimum clearance whenever possible.



CROSS SECTION

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

TYPICAL EXPANSION JOINT FILLER PROTECTION FOR OVERCROSSING OF M.W.D. PIPELINE

DRAWN ______ RECOMMENDED ______
TRACED ______
CHECKED ______ APPROVED ______

C-11632

Gregg

STATE OF CALIFORNIA
Edmond G. Brown, Jr., *Governor*
NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd., ROOM 100
West SACRAMENTO, CA 95691
(916) 373-3710
Fax (916) 373-5471

RECEIVED
OCT ...
DEPT. PUBLIC WORKS
PROJECT MANAGEMENT DIVISION

September 25, 2014

Gregg BeGell
Los Angeles County Flood Control District
900 South Fremont Avenue, 11th Floor
Alhambra, CA 91803

RE: SCH# 2014081106 Enhanced Watershed Management Programs (EWMP) Program EIR, Los Angeles County.

Dear Mr. BeGell,

The Native American Heritage Commission (NAHC) has reviewed the Notice of Preparation (NOP) referenced above. The California Environmental Quality Act (CEQA) states that any project that causes a substantial adverse change in the significance of an historical resource, which includes archeological resources, is a significant effect requiring the preparation of an EIR (CEQA Guidelines 15064(b)). To comply with this provision the lead agency is required to assess whether the project will have an adverse impact on historical resources within the area of project effect (APE), and if so to mitigate that effect. To adequately assess and mitigate project-related impacts to archaeological resources, the NAHC recommends the following actions:

- ✓ Contact the appropriate regional archaeological Information Center for a record search. The record search will determine:
  - If a part or all of the area of project effect (APE) has been previously surveyed for cultural resources.
  - If any known cultural resources have already been recorded on or adjacent to the APE.
  - If the probability is low, moderate, or high that cultural resources are located in the APE.
  - If a survey is required to determine whether previously unrecorded cultural resources are present.
- ✓ If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
  - The final report containing site forms, site significance, and mitigation measurers should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for pubic disclosure.
  - The final written report should be submitted within 3 months after work has been completed to the appropriate regional archaeological Information Center.
- ✓ Contact the Native American Heritage Commission for:
  - A Sacred Lands File Check. **USGS 7.5-minute quadrangle name, township, range, and section required**
  - A list of appropriate Native American contacts for consultation concerning the project site and to assist in the mitigation measures. **Native American Contacts List attached**
- ✓ Lack of surface evidence of archeological resources does not preclude their subsurface existence.
  - Lead agencies should include in their mitigation plan provisions for the identification and evaluation of accidentally discovered archeological resources, per California Environmental Quality Act (CEQA) Guidelines §15064.5(f). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American, with knowledge in cultural resources, should monitor all ground-disturbing activities.
  - Lead agencies should include in their mitigation plan provisions for the disposition of recovered cultural items that are not burial associated, which are addressed in Public Resources Code (PRC) §5097.98, in consultation with culturally affiliated Native Americans.
  - Lead agencies should include provisions for discovery of Native American human remains in their mitigation plan. Health and Safety Code §7050.5, PRC §5097.98, and CEQA Guidelines §15064.5(e), address the process to be followed in the event of an accidental discovery of any human remains and associated grave goods in a location other than a dedicated cemetery.

Sincerely,

Katy Sanchez

Katy Sanchez
Associate Government Program Analyst

CC: State Clearinghouse

Native American Contacts
Los Angeles County
September 25, 2014

Tongva Ancestral Territorial Tribal Nation
John Tommy Rosas, Tribal Admin.
, Gabrielino Tongva
tattnlaw@gmail.com
(310) 570-6567

Gabrielino-Tongva Tribe
Bernie Acuna, Co-Chairperson
Contact information unavailable Gabrielino
,
Last attempted verification 9/5/14
(310) 428-5690 Cell

Gabrieleno/Tongva San Gabriel Band of Mission Indian
Anthony Morales, Chairperson
P.O. Box 693 Gabrielino Tongva
San Gabriel , CA 91778
GTTribalcouncil@aol.com
(626) 483-3564 Cell
(626) 286-1262 Fax

Gabrielino-Tongva Tribe
Linda Candelaria, Co-Chairperson
Contact information unavailable Gabrielino
,
Last attempted verification 9/5/14
(626) 676-1184 Cell

Gabrielino /Tongva Nation
Sandonne Goad, Chairperson
106 1/2 Judge John Aiso St. Gabrielino Tongva
Los Angeles , CA 90012
sgoad@gabrielino-tongva.com
(951) 807-0479

Gabrieleno Band of Mission Indians
Andrew Salas, Chairperson
P.O. Box 393 Gabrielino
Covina , CA 91723
gabrielenoindians@yahoo.
(626) 926-4131

Gabrielino Tongva Indians of California Tribal Council
Robert F. Dorame, Tribal Chair/Cultural Resources
P.O. Box 490 Gabrielino Tongva
Bellflower , CA 90707
gtongva@verizon.net
(562) 761-6417 Voice/Fax

Gabrielino-Tongva Tribe
Conrad Acuna
Contact information unavailable Gabrielino
,
Last attempted verification 9/5/14

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed SCH # 2014081106, Enhanced Watershed Management Programs (EWMP) Program EIR, Los Angeles County.

Native American Contacts
Los Angeles County
September 25, 2014

Gabrielino /Tongva Nation
Sam Dunlap, Cultural Resources Director
P.O. Box 86908 Gabrielino Tongva
Los Angeles , CA 90086
samdunlap@earthlink.net
(909) 262-9351

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed SCH # 2014081106, Enhanced Watershed Management Programs (EWMP) Program EIR, Los Angeles County.

Laura Rocha

From: Begell, Gregg - Consultant <gbegell@dpw.lacounty.gov>
Sent: Tuesday, September 30, 2014 7:08 AM
To: Crumpacker, Andrea; David Pohl; Bellizia, Thomas W.
Subject: FW: COMMENTS ON NOTICE OF PREPARATION FOR DRAFT PROGRAM EIR FOR EWMP'S FOR L.A. COUNTY

Another clone

Gregg BeGell P E
Project Manager
Project Management Division II

From: douglaspfay@aol.com [mailto:douglaspfay@aol.com]
Sent: Monday, September 29, 2014 9:19 PM
To: Begell, Gregg - Consultant
Cc: rexfrankel@yahoo.com
Subject: COMMENTS ON NOTICE OF PREPARATION FOR DRAFT PROGRAM EIR FOR EWMP'S FOR L.A. COUNTY

Dear DWP Representatives and Interested Parties,

I understand why no one but Rex Frankel attended the NOP hearing on September 9th in Marina Del Rey. You have no specific projects to analyze for environmental impacts. You are attempting to analyze the environmental impact of words, not specific actions. It is impossible to analyze the impacts of no stated physical projects, just as it is impossible to analyze those unstated projects' impacts on the environmental setting, ie., the proper baseline, because you have no specific locations for these unspecified projects. Thus all you can say is to analyze the entire county. The two most essential parts of an environmental analysis are missing here: specific projects and specific sites. You have the process all backwards here, and thus, commenting on this NOP in any specific manner is impossible.

Some background: In 2002, local governments settled lawsuits and agreed to consent decrees and promised to stop violations of bacterial health codes at our beaches by 2021. This agreement gave the public agencies an extension beyond the original deadline of 2013 but only if the projects created new parkland and river corridors that could catch and clean water before it fouled the beaches.

In 2006, L.A. City proposed its first big plan under this agreement, an Implementation Plan for the Santa Monica Bay Beaches watersheds. This plan was sent back for redrafting by the RWQCB as it only reached 2% of its target and thus, would not accomplish the goal in the consent decree.

Also in 2006, L.A. city proposed the Integrated Resource Plan which mainly focused on building 25 Hyperion-style urban runoff treatment plants which would have cost the average homeowner ratepayer $400 a month. This plan went nowhere.

You also were to include identifying a location(s) adjacent to the Oxford Lagoon Bird Conservation Area where a water treatment and recycling facility could be located. This was intended to be a mandatory component of the future, now current, Oxford Basin Multiuse Enhancement Project. The City of Los Angeles Thatcher Maintenance Yard is an ideal location for a facility that could serve Marina del Rey and the Oxford Triangle neighborhood. The Oxford Basin Project should not proceed, including Prop 84 funding, until a recycled water component is included as promised.

In 2012, the County Supervisors tried to quietly approve a $300 million per year property tax hike to build a non-existent list of runoff cleansing and capturing projects. Howls of opposition arose and that plan went nowhere. The public wanted to know what they were paying for.

Now, you are finally starting to design the cleanup plan. But how can you ask the public to weigh in on the scope of the environmental analysis of that plan, when your description of that plan contains no specifics? Your stated plan to defer the environmental analysis of specific project impacts to when each one is up for approval thus ignores the cumulative impacts and therefore is "piecemealing", by starting major momentum of a project that is composed of many necessary parts, yet deferring analysis and the controversy to a multitude of separate EIRs and CEQA documents and public hearings, all the while public input is diffused. We never get to weigh in on whether we like the complete plan because the Program EIR has no specifics to arouse concern and the real project discussion is delayed until much later in a way that requires massive efforts by the public to keep track of the success of the big plan.

The people who will pay for this plan want to see the specifics before you raise our taxes to pay for it. We want expanded and unpaved river corridor parks. We do not want the plan to include converting existing wetlands and wildlife habitat into pollution dumps and sumps. We want what we were promised, not a lame compromise that puts the cleanup burden on existing public lands, parks and house front yards. We want a complete plan for us to judge whether it will accomplish its promises and goals before you produce an EIR, not the other way around.

Please put me on the notification list for all actions relating to this project.

Respectfully submitted,

Douglas Fay
644 Ashland Ave Apt A
Santa Monica, CA 90405
email: douglaspfay@aol.com

Laura Rocha

From:	Begell, Gregg - Consultant <gbegell@dpw.lacounty.gov>
Sent:	Monday, September 29, 2014 4:32 PM
To:	Crumpacker, Andrea; David Pohl; Tom Barnes
Subject:	FW: COMMENTS ON NOTICE OF PREPARATION FOR DRAFT PROGRAM EIR FOR ENHANCED WATERSHED MANAGEMENT PROGRAMS FOR L.A. COUNTY

A clone of Rex's comment.

Gregg BeGell P E
Project Manager
Project Management Division II

From: Donna Murray [mailto:dlmurray47@gmail.com]
Sent: Monday, September 29, 2014 4:28 PM
To: Begell, Gregg - Consultant
Subject: COMMENTS ON NOTICE OF PREPARATION FOR DRAFT PROGRAM EIR FOR ENHANCED WATERSHED MANAGEMENT PROGRAMS FOR L.A. COUNTY

You have no specific projects to analyze for environmental impacts. You are attempting to analyze the environmental impact of words, not specific actions. It is impossible to analyze the impacts of no stated physical projects, just as it is impossible to analyze those unstated projects' impacts on the environmental setting, ie., the proper baseline, because you have no specific locations for these unspecified projects. Thus all you can say is to analyze the entire county. The two most essential parts of an environmental analysis are missing here: specific projects and specific sites. You have the process all backwards here, and thus, commenting on this NOP in any specific manner is impossible.

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Also in 2006, L.A. city proposed the Integrated Resource Plan which mainly focused on building 25 Hyperion-style urban runoff treatment plants which would have cost the average homeowner ratepayer $400 a month. This plan went nowhere.

In 2012, the County Supervisors tried to quietly approve a $300 million per year property tax hike to build a non-existent list of runoff cleansing and capturing projects. Howls of opposition arose and that plan went nowhere. The public wanted to know what they were paying for.

Now, you are finally starting to design the cleanup plan. But how can you ask the public to weigh in on the scope of the environmental analysis of that plan, when your description of that plan contains no specifics? Your stated plan to defer the environmental analysis of specific project impacts to when each one is up for approval thus ignores the cumulative impacts and therefore is "piecemealing", by starting major momentum of a project that is composed of many necessary parts, yet deferring analysis and the controversy to a multitude of separate EIRs and CEQA documents and public hearings, all the while public input is diffused. We never get to weigh in on whether we like the complete plan because the Program EIR has no specifics to arouse concern and the real project discussion is delayed until much later in a way that requires massive efforts by the public to keep track of the success of the big plan.

The people who will pay for this plan want to see the specifics before you raise our taxes to pay for it. We want expanded and unpaved river corridor parks. We do not want the plan to include converting existing wetlands and wildlife habitat into pollution dumps and sumps. We want what we were promised, not a lame compromise that puts the cleanup burden on existing public lands, parks and house front yards. We want a complete plan for us to judge whether it will accomplish its promises and goals before you produce an EIR, not the other way around.

Please put me on the notification list for all actions relating to this project. Thank you.

Donna Murray
8734 Wiley Post Av
Los Angeles, CA 90045

Laura Rocha

From: Begell, Gregg - Consultant <gbegell@dpw.lacounty.gov>
Sent: Monday, September 29, 2014 4:41 PM
To: Crumpacker, Andrea; Tom Barnes; David Pohl
Subject: FW: Comments LACFCD SCH 2014081106 NOP Enhanced Watershed Management Programs due 9.29.2014

Here are a few good comments.

Are you filing all the comments into a file or folder such that the County can view all the comments in one place?

Gregg BeGell P E
Project Manager
Project Management Division II

From: Joyce Dillard [mailto:dillardjoyce@yahoo.com]
Sent: Monday, September 29, 2014 4:30 PM
To: Begell, Gregg - Consultant
Subject: Comments LACFCD SCH 2014081106 NOP Enhanced Watershed Management Programs due 9.29.2014

The Project Description is listed on the State Clearinghouse site as:

The development of the EWMP will involve the evaluation and selection of multiple watershed control measures or best management practices (BMP) types including non-structural and distributed, centralized and regional structural BMPs. These BMPs will be implemented to meet compliance goals and strategies under the 2014 MS4 Permit. Structural BMPs involve the construction of a physical control measure to alter the hydrology and/or water quality of incoming stormwater or non-stormwater. The three major functions for structural BMPs are infiltration, water quality treatment, and storage. These are three categories of structural BMPs, defined by the runoff area treated by the BMP and the required retention volume in accordance with the Permit.

Comments:

Watershed control measures seems to be the emphasis, but that term is not defined. It seems to exclude Watershed Protection Management Measure in areas applicable to the Coastal Zone Act Reauthorization Amendments which recognizes the impact of land-use activities on estuaries, beaches, marine resources and the ocean. *Economically feasible measures* and *greatest degree of pollutant reduction achievable* are terms from that Act.

All receiving waters should be identified as to type and federal jurisdiction.

The project only allows a build environment in a watershed that should have natural lands, ecosystems and normal watershed characteristics including ambient water quality standards and the Southern California Bight.

Antidegradation procedures should be addressed.

Alternatives should be presented for non-structural or structural projects.

Surrounding land uses and settings should be addressed as should settings such as air space in relationship to bird migratory patterns. Ambient air quality should be included.

Other public agencies should be included. US Army Corps of Engineers plays a role in navigable waters as does Caltrans in its responsibility for NPDES compliance.

Private parties, such as Lauren Bon (Water Rights Draft Permit A032212) should be included.

Baselines should be presented.

There should be consistency including applications of the various General Plan and its Elements across jurisdictions. Infrastructure should be addressed including but not limited to age, condition and operations and maintenance.

Since federal regulations are enforced involving Clean Water Act Navigable Waters, we question why there is no NEPA document preparation.

Joyce Dillard
P.O. Box 31377
Los Angeles, CA 90031

Laura Rocha

From: Begell, Gregg - Consultant <gbegell@dpw.lacounty.gov>
Sent: Monday, October 06, 2014 6:59 AM
To: Crumpacker, Andrea; David Pohl
Subject: FW: COMMENTS ON NOTICE OF PREPARATION FOR DRAFT PROGRAM EIR FOR ENHANCED WATERSHED MANAGEMENT PROGRAMS FOR LA COUNTY

Comment Letter.

Gregg BeGell P E
Project Manager
Project Management Division II

From: patricia mc pherson [mailto:patriciamcpherson1@verizon.net]
Sent: Friday, October 03, 2014 1:27 PM
To: Begell, Gregg - Consultant
Subject: COMMENTS ON NOTICE OF PREPARATION FOR DRAFT PROGRAM EIR FOR ENHANCED WATERSHED MANAGEMENT PROGRAMS FOR LA COUNTY

Grassroots Coalition submits its support of the comments made below by Mr. Rex Frankel.
Due on the 29th, GC was in transit from out of state and belatedly requests that its support of the comments below be part of
the record.
Please also note attachment of imagery of California.
Currently, the State Coastal Conservancy and the Dept of Fish and Wildlife have created a preordained outcome for the Ballona Wetlands Restoration. This outcome that has been determined to destroy the freshwater aquifers of Ballona (classified as potential drinking water) without the legal requirements of public participation and transparency of process that the millions of dollars of public bond money set forth in 2004. Such destructive plans to the watershed of the Ballona Valley should not be allowed to proceed.
The failure of the state to fully engage the public and provide accountability and transparency of process has led to the
dire situation of groundwater removal that CAlifornia and Ballona Wetlands have.

http://www.latimes.com/science/sciencenow/la-sci-sn-california-drought-groundwater-satellite-20141002-story.html

Thank you,
Patricia McPherson, President -Grassroots Coalition

COMMENTS ON NOTICE OF PREPARATION FOR DRAFT PROGRAM EIR FOR ENHANCED WATERSHED MANAGEMENT PROGRAMS FOR L.A. COUNTY

September 29, 2014, 1:30 pm

From Rex Frankel, director, Ballona Ecosystem Education Project,
6038 west 75th street, L.A. CA 90045
310-738-0861, email: rexfrankel@yahoo.com

I understand why no one but myself attended the NOP hearing on September 9th in Marina Del Rey. You have no specific projects to analyze for environmental impacts. You are attempting to analyze the environmental impact of words, not specific actions. It is impossible to analyze the impacts of no stated physical projects, just as it is impossible to analyze those unstated projects' impacts on the environmental setting, ie., the proper baseline, because you have no specific locations for these unspecified projects. Thus all you can say is to analyze the entire county. The two most essential parts of an environmental analysis are missing here: specific projects and specific sites. You have the process all backwards here, and thus, commenting on this NOP in any specific manner is impossible.

Some background: In 2002, local governments settled lawsuits and agreed to consent decrees and promised to stop violations of bacterial health codes at our beaches by 2021. This agreement gave the public agencies an extension beyond the original deadline of 2013 but only if the projects created new parkland and river corridors that could catch and clean water before it fouled the beaches.

In 2006, L.A. City proposed its first big plan under this agreement, an Implementation Plan for the Santa Monica Bay Beaches watersheds. This plan was sent back for redrafting by the RWQCB as it only reached 2% of its target and thus, would not accomplish the goal in the consent decree.

Also in 2006, L.A. city proposed the Integrated Resource Plan which mainly focused on building 25 Hyperion-style urban runoff treatment plants which would have cost the average homeowner ratepayer $400 a month. This plan went nowhere.

In 2012, the County Supervisors tried to quietly approve a $300 million per year property tax hike to build a non-existent list of runoff cleansing and capturing projects. Howls of opposition arose and that plan went nowhere. The public wanted to know what they were paying for.

Now, you are finally starting to design the cleanup plan. But how can you ask the public to weigh in on the scope of the environmental analysis of that plan, when your description of that plan contains no specifics? Your stated plan to defer the environmental analysis of specific project impacts to when each one is up for approval thus ignores the cumulative impacts and therefore is "piecemealing", by starting major momentum of a project that is composed of many necessary parts, yet deferring analysis and the controversy to a multitude of separate EIRs and CEQA documents and public hearings, all the while public input is diffused. We never get to weigh in on whether we like the complete plan because the Program EIR has no specifics to arouse concern and the real project discussion is delayed until much later in a way that requires massive efforts by the public to keep track of the success of the big plan.

The people who will pay for this plan want to see the specifics before you raise our taxes to pay for it. We want expanded and unpaved river corridor parks. We do not want the plan to include converting existing wetlands and wildlife habitat into pollution dumps and sumps. We want what we were promised, not a lame compromise that puts the cleanup burden on existing public lands, parks and house front yards. We want a complete plan for us to judge whether it will accomplish its promises and goals before you produce an EIR, not the other way around.

Please put me on the notification list for all actions relating to this project. Thank you.

Laura Rocha

From:	Begell, Gregg - Consultant <gbegell@dpw.lacounty.gov>
Sent:	Tuesday, October 14, 2014 4:06 PM
To:	Crumpacker, Andrea; David Pohl
Subject:	FW: Restoration of Baldwin Lake

Comment for record

Gregg BeGell P E
Project Manager
Project Management Division II

From: Jane Florentinus [mailto:java5@att.net]
Sent: Tuesday, October 14, 2014 1:23 PM
To: Begell, Gregg - Consultant
Subject: Restoration of Baldwin Lake

Hello Mr. BeGell,

I am a volunteer and member of the Arboretum located in Arcadia and would like to express my concern for the poor condition of the lake. As a volunteer docent I provide guided walks through the gardens as well as the lake perimeter. Visitors are dismayed and saddened to see the decline of such a great and wonderful treasure in the midst of our urban lifestyle. To have open space in our crowded communities is truly a rarity and must be preserved for future generations to appreciate. Please take my request for restoring the lake to heart.

Thank you for reading my message.

Jane Florentinus
7140 Hidden Pine Drive
San Gabriel, CA 91775
Copy of email sent to G. Osmena

Laura Rocha

From:	Osmena, Genevieve <gosmena@dpw.lacounty.gov>
Sent:	Monday, November 10, 2014 10:03 AM
To:	Dale or Miriam Carter
Subject:	RE: Baldwin Lake/Enhanced Watershed Management Plan

Mr. Carter,

Thank you for your email regarding Baldwin Lake at the LA Arboretum. I have added your contact information to the stakeholder list for the Rio Hondo/San Gabriel River Water Quality Group to receive notifications of future stakeholder meetings regarding the group's Enhanced Watershed Management Program (EWMP). We anticipate the next stakeholder meeting to occur in early to mid-Spring of next year to discuss the progress of the EWMP process with interested stakeholders. I have also forwarded your email to the group members for their consideration as they continue to discuss and develop their EWMP plan.

Thanks again for your comments.

Genevieve Osmeña, P.E.
County of Los Angeles Department of Public Works
East Unincorporated County MS4 Permit Compliance
Watershed Management Division
(626) 458-3978
gosmena@dpw.lacounty.gov

From: Dale or Miriam Carter [mailto:dmcart@att.net]
Sent: Wednesday, October 29, 2014 5:01 PM
To: Begell, Gregg - Consultant; Osmena, Genevieve
Cc: Snider Sandy; Schulhof Richard
Subject: Baldwin Lake/Enhanced Watershed Management Plan

Dear Mr. Begell and Ms. Osmena

This message is to encourage you to include the restoration of the Los Angeles County Arboretum's Baldwin Lake as a part of the Enhanced Watershed Management Plan for the Rio Hondo Watershed. To me, the following points emphasize the importance of this lake:

- It is one of the very few lakes easily accessible to the public in the San Gabriel Valley area, or even the Los Angeles basin
- It is an important environmental asset to the wildlife that is in or passes through the San Gabriel Valley
- It has historical significance regarding E.J. Baldwin's life as the founder of the city of Arcadia
- It has historical significance pertaining to the entertainment industry as a movie and TV location, and consequently is a tourist attraction
- It is geologically important and interesting as the last (I think) remaining sag pond along the Raymond earthquake fault

I encourage you to support restoring and including the lake in whatever watershed management plans evolve.

Regards,

Dale Carter
Arboretum volunteer and docent

STATE OF CALIFORNIA

Governor's Office of Planning and Research

State Clearinghouse and Planning Unit

Edmund G. Brown Jr.
Governor

Ken Alex
Director

RECEIVED
SEP 09 2014
DEPT. PUBLIC WORKS
PROJECT MANAGEMENT DIVISION II

Notice of Preparation

August 29, 2014

To: Reviewing Agencies

Re: Enhanced Watershed Management Programs (EWMP) Program EIR
SCH# 2014081106

Attached for your review and comment is the Notice of Preparation (NOP) for the Enhanced Watershed Management Programs (EWMP) Program EIR draft Environmental Impact Report (EIR).

Responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

Gregg BeGell
Los Angeles County Flood Control District
900 South Fremont Avenue, 11th Floor
Alhambra, CA 91803

with a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

Scott Morgan
Director, State Clearinghouse

Attachments
cc: Lead Agency

Document Details Report
State Clearinghouse Data Base

SCH# **2014081106**
Project Title Enhanced Watershed Management Programs (EWMP) Program EIR
Lead Agency Los Angeles County Flood Control District

Type **NOP** Notice of Preparation

Description The development of the EWMP will involve the evaluation and selection of multiple watershed control measures or best management practices (BMP) types including non-structural and distributed, centralized and regional structural BMPs. These BMPs will be implemented to meet compliance goals and strategies under the 2014 MS4 Permit. Structural BMPs involve the construction of a physical control measure to alter the hydrology and/or water quality of incoming stormwater or non-stormwater. The three major functions for structural BMPs are infiltration, water quality treatment, and storage. These are three categories of structural BMPs, defined by the runoff area treated by the BMP and the required retention volume in accordance with the Permit.

Lead Agency Contact

Name Gregg BeGell
Agency Los Angeles County Flood Control District
Phone 626 300 3298 **Fax**
email
Address 900 South Fremont Avenue, 11th Floor
City Alhambra **State** CA **Zip** 91803

Project Location

County Los Angeles
City Los Angeles, City of
Region
Cross Streets Throughout Los Angeles County
Lat / Long
Parcel No. Various
Township **Range** **Section** **Base**

Proximity to:

Highways Various
Airports LAX, Burbank
Railways Various
Waterways Various
Schools Various
Land Use Various land uses throughout the County

Project Issues Aesthetic/Visual; Agricultural Land; Air Quality; Archaeologic-Historic; Biological Resources; Drainage/Absorption; Flood Plain/Flooding; Geologic/Seismic; Minerals; Noise; Population/Housing Balance; Public Services; Recreation/Parks; Soil Erosion/Compaction/Grading; Toxic/Hazardous; Traffic/Circulation; Water Quality; Vegetation; Water Supply; Wetland/Riparian; Wildlife; Cumulative Effects; Other Issues

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Reviewing Agencies Resources Agency; Coachella Valley Mountains Conservancy; Department of Parks and Recreation; Department of Water Resources; Department of Fish and Wildlife, Headquarters; Department of Fish and Wildlife, Marine Region; Native American Heritage Commission; Santa Monica Bay Restoration; Caltrans, District 7; Air Resources Board; State Water Resources Control Board, Division of Water Quality; State Water Resources Control Board, Division of Water Rights; Regional Water Quality Control Board, Region 4; San Gabriel & Lower Los Angeles Rivers & Mountains Conservancy; Santa Monica Mountains Conservancy

---

Date Received 08/29/2014 **Start of Review** 08/29/2014 **End of Review** 09/29/2014

NOP Distribution List

County: LOS ANGELES

SCH# 2014081106

Resources Agency

- [x] **Resources Agency**
  Nadell Gayou
  - [ ] **Dept. of Boating & Waterways**
    Nicole Wong
  - [x] **California Coastal Commission**
    Elizabeth A. Fuchs
  - [ ] **Colorado River Board**
    Lisa Johansen
  - [ ] **Dept. of Conservation**
    Elizabeth Carpenter
  - [ ] **California Energy Commission**
    Eric Knight
  - [ ] **Cal Fire**
    Dan Foster
  - [ ] **Central Valley Flood Protection Board**
    James Herota
  - [ ] **Office of Historic Preservation**
    Ron Parsons
- [x] **Dept of Parks & Recreation**
  Environmental Stewardship Section
  - [ ] **California Department of Resources, Recycling & Recovery**
    Sue O'Leary
  - [ ] **S.F. Bay Conservation & Dev't. Comm.**
    Steve McAdam
  - [x] **Dept. of Water Resources**
    Resources Agency
    Nadell Gayou

Fish and Game

- [x] **Depart. of Fish & Wildlife**
  Scott Flint
  Environmental Services Division
- [ ] **Fish & Wildlife Region 1**
  Donald Koch
- [ ] **Fish & Wildlife Region 1E**
  Laurie Harnsberger
- [ ] **Fish & Wildlife Region 2**
  Jeff Drongesen
- [ ] **Fish & Wildlife Region 3**
  Charles Armor
- **Fish & Wildlife Region 4**
  Julie Vance
- **Fish & Wildlife Region 5**
  Leslie Newton-Reed
  Habitat Conservation Program
- [ ] **Fish & Wildlife Region 6**
  Tiffany Ellis
  Habitat Conservation Program
- **Fish & Wildlife Region 6 I/M**
  Heidi Sickler
  Inyo/Mono, Habitat Conservation Program
- [x] **Dept. of Fish & Wildlife M**
  George Isaac
  Marine Region

Other Departments

- [ ] **Food & Agriculture**
  Sandra Schubert
  Dept. of Food and Agriculture
- [ ] **Depart. of General Services**
  Public School Construction
- [ ] **Dept. of General Services**
  Anna Garbeff
  Environmental Services Section
- [ ] **Delta Stewardship Council**
  Kevan Samsam

Independent Commissions,Boards

- [ ] **Delta Protection Commission**
  Michael Machado
- [ ] **OES (Office of Emergency Services)**
  Dennis Castrillo
- [x] **Native American Heritage Comm.**
  Debbie Treadway
  - [ ] **Public Utilities Commission**
    Leo Wong
  - [x] **Santa Monica Bay Restoration**
    Guangyu Wang
  - [ ] **State Lands Commission**
    Jennifer Deleong
  - [ ] **Tahoe Regional Planning Agency (TRPA)**
    Cherry Jacques

Business, Trans & Housing

- [ ] **Caltrans - Division of Aeronautics**
  Philip Crimmins
- [ ] **Caltrans - Planning**
  Terri Pencovic
- [ ] **California Highway Patrol**
  Suzann Ikeuchi
  Office of Special Projects
- [ ] **Housing & Community Development**
  CEQA Coordinator
  Housing Policy Division

Dept. of Transportation

- [ ] **Caltrans, District 1**
  Rex Jackman
- [ ] **Caltrans, District 2**
  Marcelino Gonzalez
- [ ] **Caltrans, District 3**
  Eric Federicks – South
  Susan Zanchi - North
- [ ] **Caltrans, District 4**
  Erik Alm
- [ ] **Caltrans, District 5**
  David Murray
- [ ] **Caltrans, District 6**
  Michael Navarro
- [x] **Caltrans, District 7**
  Dianna Watson
- [ ] **Caltrans, District 8**
  Dan Kopulsky
- [ ] **Caltrans, District 9**
  Gayle Rosander
- [ ] **Caltrans, District 10**
  Tom Dumas
- [ ] **Caltrans, District 11**
  Jacob Armstrong
- [ ] **Caltrans, District 12**
  Maureen El Harake

Cal EPA

Air Resources Board

- [x] All Other Projects
  Cathi Slaminski
  - [ ] Transportation Projects
    Nesamani Kalandiyur
  - [ ] Industrial Projects
    Mike Tollstrup
- [ ] **State Water Resources Control Board**
  Regional Programs Unit
  Division of Financial Assistance
- [ ] **State Water Resources Control Board**
  Jeffery Werth
  Division of Drinking Water
- [x] **State Water Resources Control Board**
  Student Intern, 401 Water Quality Certification Unit
  Division of Water Quality
- [x] **State Water Resouces Control Board**
  Phil Crader
  Division of Water Rights
- [ ] **Dept. of Toxic Substances Control**
  CEQA Tracking Center
- [ ] **Department of Pesticide Regulation**
  CEQA Coordinator

Regional Water Quality Control Board (RWQCB)

- [ ] **RWQCB 1**
  Cathleen Hudson
  North Coast Region (1)
- [ ] **RWQCB 2**
  Environmental Document Coordinator
  San Francisco Bay Region (2)
- [ ] **RWQCB 3**
  Central Coast Region (3)
- [x] **RWQCB 4**
  Teresa Rodgers
  Los Angeles Region (4)
- [ ] **RWQCB 5S**
  Central Valley Region (5)
  - [ ] **RWQCB 5F**
    Central Valley Region (5)
    Fresno Branch Office
  - [ ] **RWQCB 5R**
    Central Valley Region (5)
    Redding Branch Office
- [ ] **RWQCB 6**
  Lahontan Region (6)
  - [ ] **RWQCB 6V**
    Lahontan Region (6)
    Victorville Branch Office
- [ ] **RWQCB 7**
  Colorado River Basin Region (7)
- [ ] **RWQCB 8**
  Santa Ana Region (8)
- [ ] **RWQCB 9**
  San Diego Region (9)

- [ ] Other SAN GABRIEL AND LA RIVER CONSERVANCY
- [x] SANTA-MON MTN
  Conservancy

Last Updated 8/27/2014

RB-AR 8908

ELIZABETH BYRNE DEBREU
777 Arden Road
Pasadena, California 91106

October 8, 2014

Mr. Gregg BeGell, P.E.
County of Los Angeles Department of Public Works
Project Management Division II
900 South Fremont, 5th Floor
Alhambra, CA 91803

Via Email: gbegell@dpw.lacounty.gov

Re: Restoration of Baldwin Lake

Dear Mr. BeGell:

I write to urge you to make the restoration of Baldwin Lake a high priority as you lead the effort to create the EWMP for the Rio Hondo Watershed.

The restoration of Baldwin Lake, including modifications to the depth of the lake and adaptation of Tule Pond as a bioswale, would enhance Baldwin Lake's water quality and give it a more significant water collection function while simultaneously enhancing its scenic, educational, and historic value at the center of the Los Angeles County Arboretum and Botanic Garden.

The restored lake would also provide an exceptional opportunity to educate the public about regional water management, home and community water conservation, and the role of the Raymond Basin and the other water resources in sustaining us. It is a key resource that serves over 330,000 visitors per year, including more than 16,000 elementary school students on field trips.

As a member of the board of the Los Angeles Arboretum Foundation, the County's non-profit partner in operating the Arboretum, I stand ready to help leverage public dollars to realize Baldwin Lake's unique potential to provide direct public benefit in a multitude of ways. It is the ideal project both to enhance the watershed function and serve the public with remarkable educational, ecological, and scenic benefits.

I respectfully submit that the County include the Baldwin Lake in the Rio Hondo Enhanced Watershed Management Plan.

Very truly yours,

Elizabeth Byrne Debreu
Board Member, Los Angeles Arboretum Foundation

Laura Rocha

From: Osmena, Genevieve <gosmena@dpw.lacounty.gov>
Sent: Monday, November 10, 2014 10:03 AM
To: Dale or Miriam Carter
Subject: RE: Baldwin Lake/Enhanced Watershed Management Plan

Mr. Carter,

Thank you for your email regarding Baldwin Lake at the LA Arboretum. I have added your contact information to the stakeholder list for the Rio Hondo/San Gabriel River Water Quality Group to receive notifications of future stakeholder meetings regarding the group's Enhanced Watershed Management Program (EWMP). We anticipate the next stakeholder meeting to occur in early to mid-Spring of next year to discuss the progress of the EWMP process with interested stakeholders. I have also forwarded your email to the group members for their consideration as they continue to discuss and develop their EWMP plan.

Thanks again for your comments.

Genevieve Osmeña, P.E.
County of Los Angeles Department of Public Works
East Unincorporated County MS4 Permit Compliance
Watershed Management Division
(626) 458-3978
gosmena@dpw.lacounty.gov

From: Dale or Miriam Carter [mailto:dmcart@att.net]
Sent: Wednesday, October 29, 2014 5:01 PM
To: Begell, Gregg - Consultant; Osmena, Genevieve
Cc: Snider Sandy; Schulhof Richard
Subject: Baldwin Lake/Enhanced Watershed Management Plan

Dear Mr. Begell and Ms. Osmena

This message is to encourage you to include the restoration of the Los Angeles County Arboretum's Baldwin Lake as a part of the Enhanced Watershed Management Plan for the Rio Hondo Watershed. To me, the following points emphasize the importance of this lake:

- It is one of the very few lakes easily accessible to the public in the San Gabriel Valley area, or even the Los Angeles basin
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I encourage you to support restoring and including the lake in whatever watershed management plans evolve.

Regards,

Dale Carter
Arboretum volunteer and docent

Laura Rocha

From: Begell, Gregg - Consultant <gbegell@dpw.lacounty.gov>
Sent: Monday, September 29, 2014 4:32 PM
To: Crumpacker, Andrea; David Pohl; Tom Barnes
Subject: FW: COMMENTS ON NOTICE OF PREPARATION FOR DRAFT PROGRAM EIR FOR ENHANCED WATERSHED MANAGEMENT PROGRAMS FOR L.A. COUNTY

A clone of Rex's comment.

Gregg BeGell P E
Project Manager
Project Management Division II

From: Donna Murray [mailto:dlmurray47@gmail.com]
Sent: Monday, September 29, 2014 4:28 PM
To: Begell, Gregg - Consultant
Subject: COMMENTS ON NOTICE OF PREPARATION FOR DRAFT PROGRAM EIR FOR ENHANCED WATERSHED MANAGEMENT PROGRAMS FOR L.A. COUNTY

You have no specific projects to analyze for environmental impacts. You are attempting to analyze the environmental impact of words, not specific actions. It is impossible to analyze the impacts of no stated physical projects, just as it is impossible to analyze those unstated projects' impacts on the environmental setting, ie., the proper baseline, because you have no specific locations for these unspecified projects. Thus all you can say is to analyze the entire county. The two most essential parts of an environmental analysis are missing here: specific projects and specific sites. You have the process all backwards here, and thus, commenting on this NOP in any specific manner is impossible.

Some background: In 2002, local governments settled lawsuits and agreed to consent decrees and promised to stop violations of bacterial health codes at our beaches by 2021. This agreement gave the public agencies an extension beyond the original deadline of 2013 but only if the projects created new parkland and river corridors that could catch and clean water before it fouled the beaches.

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Please put me on the notification list for all actions relating to this project. Thank you.

Donna Murray
8734 Wiley Post Av
Los Angeles, CA 90045

DEPARTMENT OF TRANSPORTATION
DISTRICT 7-OFFICE OF TRANSPORTATION PLANNING
100 S. MAIN STREET, MS 16
LOS ANGELES, CA 90012
PHONE (213) 897-9140
FAX (213) 897-1337
www.dot.ca.gov

Serious drought.
Help save water!

September 29, 2014

Mr. Gregg BeGell
County of Los Angeles Dept. of Public Works
Project Management Division II
900 South Fremont Avenue, 5th Floor
Alhambra, CA 91803

Re: **Enhanced Watershed Management Programs**
Notice of Preparation
IGR#140912FL
Vic.: LA/Various watersheds locations

Dear Mr. BeGell:

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the above referenced project. The proposed project will prepare a Program Environmental Impact Report (PEIR) for the project identified, such as the 12 separate Enhanced Watershed Management Programs (EWMPs); it will be prepared as a collective effort among the Los Angeles County Flood Control District (LACFCD) and the applicable agencies in each respective EWMP.

We would like to remind you that storm water run-off is a sensitive issue for Los Angeles and Ventura counties. Please be mindful that projects need to be designed to discharge clean run-off water.

Any work to be performed within the State Right-of-way will need an Encroachment Permit and any transportation of heavy construction equipment and/or materials which requires the use of oversized-transport vehicles on State highways will require a Caltrans transportation permit. We recommend that large size truck trips be limited to off-peak commute periods. In addition, a truck/traffic construction management plan is needed for this project.

If you have any questions, please feel free to contact me at (213) 897-9140 or project coordinator Frances Lee at (213) 897-0673 or electronically at frances.lee@dot.ca.gov.

Sincerely,

Dianna Watson

DIANNA WATSON
Branch Chief, Community Planning & LD IGR Review

cc: Scott Morgan, State Clearinghouse

Laura Rocha

From:	Begell, Gregg - Consultant <gbegell@dpw.lacounty.gov>
Sent:	Tuesday, September 30, 2014 7:08 AM
To:	Crumpacker, Andrea; David Pohl; Bellizia, Thomas W.
Subject:	FW: COMMENTS ON NOTICE OF PREPARATION FOR DRAFT PROGRAM EIR FOR EWMP'S FOR L.A. COUNTY

Another clone

Gregg BeGell P E
Project Manager
Project Management Division II

From: douglaspfay@aol.com [mailto:douglaspfay@aol.com]
Sent: Monday, September 29, 2014 9:19 PM
To: Begell, Gregg - Consultant
Cc: rexfrankel@yahoo.com
Subject: COMMENTS ON NOTICE OF PREPARATION FOR DRAFT PROGRAM EIR FOR EWMP'S FOR L.A. COUNTY

Dear DWP Representatives and Interested Parties,

I understand why no one but Rex Frankel attended the NOP hearing on September 9th in Marina Del Rey. You have no specific projects to analyze for environmental impacts. You are attempting to analyze the environmental impact of words, not specific actions. It is impossible to analyze the impacts of no stated physical projects, just as it is impossible to analyze those unstated projects' impacts on the environmental setting, ie., the proper baseline, because you have no specific locations for these unspecified projects. Thus all you can say is to analyze the entire county. The two most essential parts of an environmental analysis are missing here: specific projects and specific sites. You have the process all backwards here, and thus, commenting on this NOP in any specific manner is impossible.

Some background: In 2002, local governments settled lawsuits and agreed to consent decrees and promised to stop violations of bacterial health codes at our beaches by 2021. This agreement gave the public agencies an extension beyond the original deadline of 2013 but only if the projects created new parkland and river corridors that could catch and clean water before it fouled the beaches.

In 2006, L.A. City proposed its first big plan under this agreement, an Implementation Plan for the Santa Monica Bay Beaches watersheds. This plan was sent back for redrafting by the RWQCB as it only reached 2% of its target and thus, would not accomplish the goal in the consent decree.

Also in 2006, L.A. city proposed the Integrated Resource Plan which mainly focused on building 25 Hyperion-style urban runoff treatment plants which would have cost the average homeowner ratepayer $400 a month. This plan went nowhere.

You also were to include identifying a location(s) adjacent to the Oxford Lagoon Bird Conservation Area where a water treatment and recycling facility could be located. This was intended to be a mandatory component of the future, now current, Oxford Basin Multiuse Enhancement Project. The City of Los Angeles Thatcher Maintenance Yard is an ideal location for a facility that could serve Marina del Rey and the Oxford Triangle neighborhood. The Oxford Basin Project should not proceed, including Prop 84 funding, until a recycled water component is included as promised.

In 2012, the County Supervisors tried to quietly approve a $300 million per year property tax hike to build a non-existent list of runoff cleansing and capturing projects. Howls of opposition arose and that plan went nowhere. The public wanted to know what they were paying for.

Now, you are finally starting to design the cleanup plan. But how can you ask the public to weigh in on the scope of the environmental analysis of that plan, when your description of that plan contains no specifics? Your stated plan to defer the environmental analysis of specific project impacts to when each one is up for approval thus ignores the cumulative impacts and therefore is "piecemealing", by starting major momentum of a project that is composed of many necessary parts, yet deferring analysis and the controversy to a multitude of separate EIRs and CEQA documents and public hearings, all the while public input is diffused. We never get to weigh in on whether we like the complete plan because the Program EIR has no specifics to arouse concern and the real project discussion is delayed until much later in a way that requires massive efforts by the public to keep track of the success of the big plan.

The people who will pay for this plan want to see the specifics before you raise our taxes to pay for it. We want expanded and unpaved river corridor parks. We do not want the plan to include converting existing wetlands and wildlife habitat into pollution dumps and sumps. We want what we were promised, not a lame compromise that puts the cleanup burden on existing public lands, parks and house front yards. We want a complete plan for us to judge whether it will accomplish its promises and goals before you produce an EIR, not the other way around.

Please put me on the notification list for all actions relating to this project.

Respectfully submitted,

Douglas Fay
644 Ashland Ave Apt A
Santa Monica, CA 90405
email: douglaspfay@aol.com

October 16, 2014

Enrique Huerta
At-Large Stakeholder
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Downey, CA 90242
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Gregg BeGell, P.E.
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RE: Public Comments: Notice of Preparation of a Draft Program Environmental Impact Report for Enhanced Watershed Management Programs

Dear Mr. BeGell:

Thank you for your efforts on the Notice of Preparation (NOP) for the Draft Program Environmental Impact Report for the Enhanced Watershed Management Programs (EWMP). I am confident your work will result in an informative and precise first tier final Program Environmental Report (PEIR) that is adequate, complete, and a good faith effort at full disclosure. The purpose of my comments, per Section 15168(c)(5) of the 2014 California Environmental Quality Act (CEQA) Statute and Guidelines, is to assist in the creation of a PEIR "that deals with the effects of the program as specifically and comprehensively as possible." Additionally, I realize that by doing "a good and detailed analysis of the program, many subsequent activities could be found to be within the scope of the project described in the program EIR, and no further environmental documents would be required."

I recognize and appreciate the herculean task involved for the Flood Control District and it is my sincere attempt to keep my comments relevant to the NOP. As such, I have attempted to draft my comments in a reader-friendly manner that identify the issue and propose a feasible solution(s). My comments only address the content of the NOP.

COMMENTS ON THE CONTENT OF THE NOP

1. Introduction

(Page No. 2) Please elaborate on the approval process. It would be informative if the role between the Los Angeles County Flood Control District (LACFCD) and the Los Angeles Regional Water Quality Control Board (LARWQCB) is further explained. The introduction does a good job explaining the steps involved in the EWMP process, but lacks clarity on the connection between the PEIR and LARWQCB. In particular, the sentence in mind states, "The LARWQCB is responsible for approval of the EWMPs in compliance with the MS4 Permit. Implementation of the EMWPs would occur following approval by the LARWQCB."

If the LARWQCB approves the EWMPs then who adopts the final PEIR? How does this PEIR fit into the responsibilities and mandates of the LARWQCB? All 12 of the EWMPs specify a date when the final EWMPs will be submitted (June 2015) to the LARWQCB, but no mention is made about the PEIR. Will the Lead Agency submit a EWMP packet on behalf of all 12 EWMPS and will the PEIR be a part of that packet? In addition, the NOI submitted to the LARWQCB by each Watershed Management Group (WMG) span two programs: the EWMPs 'and' Coordinated Integrated Monitoring Programs (CIMP). Does this PEIR also analyze the CIMP?

(Page 5) The opening paragraph states that "The primary approach to each of the EWMPs, as identified in the Draft Work Plans, includes identifying community-friendly, cost-effective methods of reducing urban runoff pollution and incorporating distributed and centralized structural and nonstructural watershed control measures for a multi-pollutant, multi-benefit approach." However, a review of all 12 EWMPs indicates that there was no cost/benefit analysis completed to substantiate the "cost-effectiveness" of these methods. Please identify any additional documentation supporting this claim.

(Page No. 5) Please clarify the use of the term "project." The final sentence in the first paragraph states, "The EWMPs will also evaluate multi-benefit regional projects that will retain (through infiltration or capture and reuse) the stormwater quality design volume (85th percentile storm for 24 hours) for the runoff from the contributing drainage area." Evaluating, I'm assuming site-level projects with regional benefits, at the PEIR level increases the dissonance between the goal of an EIR, as Section 21002.1(d) of the CEQA Statute states, "to consider the effects, both individual and collective, of all activities involved in a project," and the inherent collective geographic scope of the PEIR. I reviewed all 12 of the EWMPs and CIMPs. All 12 of the EWMPs do not identify projects currently in the works and no analysis is provided. The EWMPs seem to be evaluating plans and policies. Clarification of the term project would be beneficial in order to clearly understand the scope of this PEIR.

In addition, Section 21003 states that, "All persons and public agencies involved in the environmental review process be responsible for carrying out the process in the most efficient, expeditious manner in order to conserve the available financial, governmental, physical, and social resources with the objective that those resources may be better applied toward the mitigation of actual significant effects on the environment." In an effort to avoid the possibility of imposing an unfunded mandate on local cities and/or non-profit groups to undertake the second tier of this PEIR, the prudent use of public funds, and to promote a second tier CEQA process that is streamlined, I feel it would be beneficial to incorporate an analysis of current projects in the "pipeline."

This is critical because a review of the Greater Los Angeles County Integrated Regional Water Management (IRWM) database reveals over 190 water resources projects with regionally-significant benefits in the pipeline (Appendix A). The IRWM is a funding mechanism that encourages regional and local collaboration in the design of sustainable water resources infrastructure. To date, regional agencies, cities, non-profits and community representative groups, have collaborated and submitted project proposals of regional significance. Not all of these projects incorporate BMPs, per say (many do), and many have already been deemed categorically exempt. Additional vetting would need to take place in order to identify projects in-line with a low impact development ideal to collaborate and integrate compliance strategies that are based on a multi-pollutant approach with a focus on green infrastructure that maximize the retention and use of urban runoff as a resource for recharging aquifers and for irrigation and other uses.

If this nexus to analyze the impacts of regional projects is deemed reasonably feasible, further vetting of the projects would be required to understand their CEQA status. The question is who conducts this analysis, the LACFCD or the WMGs? This is important to figure out since Section 15152(b) of the CEQA Statute and Guidelines states that, "Tiering does not excuse the lead agency from adequately analyzing reasonably foreseeable significant environmental effects of the project and does not justify deferring such analysis to a later tier EIR or negative declaration."

(Page 5) The second paragraph states, "The PEIR will provide a program-level assessment of the overall permit compliance effort, focusing particularly on the structural watershed control measures proposed in each of the 12 EWMP areas." The project list on Appendix A identifies projects aiming to implement watershed control measures throughout Los Angeles County. Many of these projects are categorically exempt, have concluded their own environmental assessment or already constructed, however, the database (L.A. County Water Plan) where I retrieved these does not clearly indicate this information. Furthermore, none of the 12 EWMPs under consideration undertook this task to see how the proposed physical changes within their EWMP may or may not comply with the goals and objectives of their respective plans and policies. In an effort to, as Section 15152© describes, “avoid deferring the potential significant impacts to the second tier and possibly preventing the adequate identification of significant effects of the planning approval at hand,” it may be worthwhile to include this list in the PEIR analysis or have the WMGs revise their draft plans to incorporate this analysis.

1.1 Project Location

The description of the location could be augmented by elaborating on the environmental context. That is, adding maps identifying the tributaries, rivers, channels, etc. within the 12 watersheds could increase understanding of the local watershed functional characteristics. This detailed information is contained in most of the individual EWMPs. A reference to the website location of each respective EWMP could suffice.

Additionally, there is no reference to the types of soils that underlie the 12 EWMPS. The EWMPs provide a summary of these soil characteristics. A reference to the website location of each respective EWMP would be helpful. It is important to know the soil types and their respective infiltration rates in order to understand the feasibility of implementing certain structural BMPs. I realize that this may be covered in more depth under the Geology, Soils and Seismicity category, but there is no clear reference in the accompanying summary.

2. BACKGROUND

2.1 Stormwater/Water Quality

(Page 7) The first paragraph states, “Discharges may adversely affect receiving surface water quality with pollutants such as bacteria, nutrients (nitrogen and phosphorus), aluminum, copper, lead, zinc, diazinon, and cyanide. Aquatic toxicity, particularly during wet weather, is also a concern. Stormwater and non-stormwater discharges of debris and trash are also a pervasive water quality problem in the Los Angeles region." It would be beneficial to add the types of pollution stemming from the natural environment (non-anthropogenic), too. What kind of pollutants exists in the soils being eroded from natural settings and vacant parcels of land?

2.2 Total Maximum Daily Loads

The final sentence in this paragraph states, "LARWQCB and United States Environmental Protection Agency (USEPA) have established 33 TMDLs that identify Los Angeles County MS4 discharges as one of the pollutant sources causing or contributing to these water quality impairments." Please elaborate on the NPDES permit process. Is there a need for discretionary approval of the EWMPs or PEIR by the USEPA? Is there a need for the USEPA to issue a TMDL or other permit? If so, is there a need to do a concurrent Environmental Impact Statement?

2.3 MS4 Permit

(Page 8) This section states. "The intent of the EWMP is to comprehensively evaluate opportunities, within the participating Permittees' collective jurisdictional boundaries, for collaboration among Permittees and other partners on multi-benefit regional projects that, wherever feasible, retain non-stormwater runoff and also address flood control and/or water supply." Has the United States Army Corp of Engineers (USACE) been a part of these collaborative efforts? Are any of their existing infrastructure being directly or indirectly impacted by the EWMPs? Is there a need for discretionary approval of the EWMPs or PEIR by the USACE? Is there a need for the USACE to issue a permit related to the EWMPs? If so, is there a need to do a concurrent Environmental Impact Statement?

3. Enhanced Watershed Management Plans

As mentioned in the first comment under the Introduction heading, please elaborate on the approval process. Specifically, how the PEIR fits into the LARWQCBs approval of the EWMPs.

4.1.1 Regional Structural BMPs

The second paragraph states, "Opportunities for Regional BMPs will be identified and evaluated within and across subwatersheds, with focus on the multi-benefit potential for capture and reuse of wet-weather flows within variable drainage areas." What method and level of detail will be used to identify and evaluate BMPs? This paragraph goes on to state that, "Potential project locations may include areas with open spaces, whether they are within parks, large parking lots, or vacant spaces," indicating that a geographically site-specific analysis is appropriate under this PEIR. Collectively, there is over 190 regional projects identified in Appendix A being proposed by the various members of the WMGs. Based on the site-specific potential project locations stated above, is it feasible to include an analysis of the project list (Appendix A)?

5 Potential Environmental Impacts

This section (nor the LACoH2Osheds website) does not reference the completion of an Initial Study per Section 15063©(1). How did the Lead Agency identify the effects determined not to be significant? Is there an explanation of the reasons for determining that potentially significant effects would not be significant?

Sincerely,

Enrique Huerta, M.S.

Appendix A

Comment Letter to the LACFCD: Draft PEIR

	Project Name	Project Proponent	Project Description
1	25 mgd Sea Water Desalinization Plant in West Basin	West Basin Municipal Water District	The project proposes to construct a 25mgd Seawater Desalination Plant in West Basin's service area for potable water use. First, a Demonstration Plant will be necessary to evaluate the water quality performance and treatment stability, assess efficient energy recovery devices, optimize operational performance utilizing full scale process equipment, and to acquire the necessary data to achieve regulatory compliance and approval. West Basin and its partners will perform the full battery of water quality analyses to ensure that the demonstration project meets all Federal and State Drinking Water Standards. With the knowledge gained by operating the Demonstration Plant, West Basin expects to move forward with the planning, design, and construction of a full scale 25,000 AFY seawater desalination and education facility. West Basin anticipates operating the Demonstration Plant for at least two years while plans are being completed and finalized for the full-scale plant. The Demonstration Facility is in design.
2	AMR Conversion Project	Los Angeles County Waterworks District No. 29	The project consists of replacing the older water meters in Waterworks District No. 29. The District maintains approximately 7,700 water meters in Malibu and Topanga. About 40 percent of the meters are older than 15 years and 30 percent are 20 years or older. Meters lose accuracy over time, representing unaccounted water consumption in the District. Older meters typically under-measure water use. Replacing old water meters with automated meter reading (AMR) meters will yield timely, reliable water consumption patterns for detecting leaks and producing accurate customer bills. Higher bills with higher water use volumes will alert District customers about their water consumption habits, which is expected to encourage conservation. The current practice is to replace meters as the meters stop functioning or become unreadable. About 20% of the water meters in Malibu and Topanga have been replaced with AMR meters.
3	Agoura Road Gap Recycled Water System Expansion	Las Virgenes Municipal Water District	The project would extend the existing recycled water line along Agoura Road to serve existing customers who use potable water for landscape irrigation. Pipeline for this project is estimated at 9250 feet of 8 inch pipe and would connect to existing recycled water pipelines on both east and west sides of the extension. This would connect the gap that exists between Reyes Adobe Road and Lewis Road and improve the system hydraulics and reliability of service to customers. The estimated maximum daily demand for the Agoura Road Extension is 73 gpm.

4	Agua Amarga Lunada Canyon Habitat Restoration	Palos Verdes Peninsula Land Conservancy & City of Rancho Palos Verdes	Restore 20 acres at Agua Amarga Reserve, to provide habitat for the Federally threatened Coastal California gnatcatcher, the Federally endangered Palos Verdes blue butterfly, and the rare cactus wren. A one-mile trail in the Reserve continues to the coast. A year-round flow of water is discharged to the head of Lunada Canyon via a County of Los Angeles storm drain; the water then flows below ground through the canyon, the course of an historic blue line stream, and re-emerges at its confluence with Agua Amarga Canyon, also a blue-line stream that flows into the Santa Monica Bay. Invasive plant species provide little water infiltration and threaten to spread to the pristine lower canyon. The project will remove invasive plants, restore 18 acres of riparian and coastal sage scrub; install 2 acres of cactus scrub in highly degraded fuel modification areas; improve trails and add trail signage. Interpretive signage will educate hikers about creating wildlife-friendly fuel modification zone.
5	Aliso Creek - Limekiln Creek Restoration Project	City of Los Angeles Bureau of Sanitation Watershed Protection Division	Stormwater runoff would be diverted from Aliso Creek and from Limekiln Creek and stormwater runoff generated on site will be treated. In addition to providing water quality benefits, the project will result in the creation of self-sustaining riparian woodland vegetation and other re-vegetated areas, as well as providing recreational opportunities to area residents.The site has an area of approx. 11.8 acres and is currently used as a flood control facility, provides open space, and serves as part of Vanalden Park.Wet weather runoff and dry weather runoff from an approx. 12,091 acres that drains to the confluence of Aliso Creek and Limekiln Creek is going to be captured and conveyed to the project site for treatment.On-site generated flows will also be captured and treated.Proposed BMPs to treat captured water:Low flow channel diversions and pumping:Pre-screening devices, Bioswales, Vegetated detention basins, Landscaping with native upland and riparian species and Installing decomposed granite pathways.
6	Alondra Regional Park	Successor Agency, City of Compton	Alondra Regional Park is a multi-benefit project that serves disadvantaged communities while meeting IRWMP water management objectives. The entire site is currently an empty 18-acre lot owned by the City of Compton. This proposal is for Phase I of the project and covers 12 acres on the southern half of the parcel. The park provides recreational opportunities while improving surface water discharges into the Dominguez Channel Watershed. The project site sits low on the drainage area and will capture 1.5AF of stormwater. The park features a swale and daylighted stream to remove nutrients and pollutants that otherwise flow to local waterways. The large biofiltration field will reduce peak flows, improve water quality and occasionally serve as a recreational field. Surface water quality improvements would help the region meet requirements under the Municipal Separate Storm Sewer System Permit. The project also includes native shrubs and trees that will increase habitat for birds, butterfly species and mammals.

7	Alternative Decker Canyon Recycled Water Extension	Las Virgenes Municipal Water District	As with the original Decker Canyon Recycled Water Extension pipeline route, this alternate would primarily serve the Malibu Golf Club, the largest potable water user in the LVMWD service area. The 2007 Master Plan advocated that serving the golf course with recycled water could be an important strategy for relieving eventual stress on the potable system. The longer alternative route used in this project would also serve other demands along the way. In addition to the golf club, significant recycled water demands are expected to come from a new development (Triangle Ranch) and conversion of the existing Medea Valley ranchettes to recycled water use. The project is projected to deliver 459 AF/Y of recycled water, offsetting the same amount of potable demand that would occur if the extension were not built.
8	Andrews Park Subsurface Storage, Use and Infiltration Project	City of Redondo Beach	The project will consist of a diversion, conveyance pipes, a gross solids removal device (GSRD), an irrigation storage tank, and an infiltration gallery. Dry- and wet-weather flows will be diverted from the existing storm drain up to the maximum diversion flow rate and will then enter the storage tank through the conveyance pipe and GSRD. Once the storage tank reaches a depth of 1.5 feet, flows will be pumped to be used for onsite subsurface irrigation. When the storage volume of the irrigation tank reaches capacity, runoff will flow via an overflow pipe into the infiltration gallery, where the water will infiltrate subsurface soils. When continual flows fill the infiltration gallery and irrigation storage vault to storage capacity, diverted flows will back-up through the diversion piping and prevent additional flow diversion until capacity is freed up due to irrigation use and/or infiltration losses.
9	Arroyo Seco Confluence Gateway	Arroyo Seco Foundation	The Confluence Gateway Greenway Program will restore a 1/3 mile stretch of urban land alongside the Arroyo Seco, in the Arroyo Seco Scenic Byway Corridor, into a riparian greenway and open space park with native landscaping and a bicycle/pedestrian path. Not only would the project embody a first step in enhancing river access and recreation opportunities, it would provide a key link between the planned Los Angeles River greenways at the confluence and the Metro Rail station in the historic Lincoln Heights neighborhood, thus enabling light rail and bicycle access to the Arroyo Seco and the Los Angeles River. Ultimately, the Arroyo Seco greenway is envisioned to extend to South Pasadena, and this initial segment at the confluence would be an important hub in the regional river parkway and bicycle trail network.

10	Arroyo Seco North Branch Creek Daylighting	Arroyo Seco Foundation	Naturalize north branch storm drain and restore stream through Sycamore Grove Park. Primary Objectives Addressed by the Project: By re-establishing an urban stream, this project addresses water quality, riparian habitat restoration, groundwater recharge, flood management, and public education. The Sycamore Grove Park site is approximately 800 feet long and 400 feet wide. This 8-acre site is located in northeast Los Angeles and situated west of the SR-110 (). This site encompasses Sycamore Grove Park and is bounded by South Avenue 49 to the northeast, the SR-110 to the east, medium density residential uses to the south, and North Figueroa Street to the west. Sycamore Grove Park is a landscaped area consisting of a large lawn, playground, and parking area. The North Branch tributary is contained within a storm drain beneath Sycamore Grove Park.
11	Baldwin Lake	Los Angeles Arboretum Foundation	For centuries the waters of Baldwin Lake have sustained human endeavor. A rich historic site, its role began in the Native America period when springs and marsh, precursors to today's lake, supported nearby habitation. In the late 19th Century, Elias Jackson Baldwin chose the Lake as the center for agriculture and land development that shaped the establishment of the east San Gabriel Valley. Today, as the centerpiece of the Los Angeles County Arboretum, the Lake is an educational and scenic resource serving hundreds of thousands of visitors. Looking to the future, Baldwin Lake is envisioned as a model for community-based environmental stewardship and regional approaches to water management and conservation. Ideally located at the edge of the Raymond Basin aquifer, the Lake offers great potential as the nexus for water management and ground water recharge for the Arboretum's 127 acres, as well as the surrounding urban watershed. Educational programming that interprets the history of the Lake, particul
12	Ballona Creek Water Quality and Beach Improvement & Beneficial Use Project	City of Los Angeles Bureau of Sanitation Watershed Protection Division	Project is to implement the valuable uses of stormwater and to improve the water quality in Ballona Creek Watershed. Ballona Creek Low Flow Treatment Facility (LFTF), also known as North Outfall Treatment Facility (NOTF), is one of several projects proposed in Ballona Creek TMDL Implementation Plans for Bacteria, Metals, and Toxic Pollutants. The LFTF includes a 1 million gallon storage facility and has the capacity to treat up to 150 cfs, including screening of coarse, fine sediments, and disinfection with sodium hypochlorite. NOTF was constructed in 1987 by City of Los Angeles. The project proposes to use the existing treatment facility and construct a low-flow diversion structure in Ballona Creek Channel to divert and treat full dry-weather flow and partial wet-weather flow. 65 percent of Ballona Creek Watershed (85 square miles) is located upstream of the Project, with average dry-weather flows ranging from 14 to 25 cfs. Treatment will include coarse screens, sedimentation, filtration, and disinfection.

13	Be A Water Saver Water Conservation Program	City of Burbank Water and Power	The City of Burbank proposes to expand and increase water conservation through the expansion of a comprehensive indoor/outdoor financial incentive program that will result in immediate and sustainable water savings. The proposed Rebate Program to install 1,300 HE toilets, replace 300,000 square feet of turf with native landscapes, capture and reuse rain water 3 million gallons of rain water with rain barrels, and increase water conservation education efforts will save an estimated 500 AF of water annually. Grant funding for the proposed project will facilitate greater water savings by providing funding for greater levels of participation sooner than would be realized under typical funding efforts. Furthermore, these benefits will be realized faster by utilizing a proven system for conservation, a truly ready to proceed project. This project has the potential to double participation levels.
14	Bette Davis Park Water Recycling Project	LADWP	This project will consist of planning, design, and construction of approximately 4,625 feet of new 8-inch PVC and Ductile Iron recycled water pipeline to extend Glendale's recycled water distribution system from the intersection of Flower St. and Grandview Ave. to Bette Davis Park. Approximately 4,300 feet of pipeline will be installed within Glendale's city right of way. Through an Agreement with the City of Glendale, this project will be designed and constructed by Glendale's contractors and LADWP will reinburse Glendale for the costs. This will reduce the City's potable demand for non-potable uses. This project will offset up to 75 AFY of potable water with recycled water.
15	Big Dalton Sluiceway Rehabilitation	Los Angeles County Flood Control District	This project will upgrade the sluiceway to function as a low level outlet for regulating flows under high reservoir pressure and repair various facility components for the dam. The existing sluice gate at the upstream end is to be replaced with a new heavy duty hydraulic actuated gate, the sluiceway is to be lined with new pipe for the entire length, and a throttling valve is to be installed at the outlet. Storm releases through the sluiceway will reduce the rate of sediment accumulation and prevent sediment deposits at the face of the dam. Incoming sediments during storm flows could be routed through the reservoir to restore a more natural sediment transport system and maintain reservoir capacity
16	Big Dalton Spreading Grounds Improvements	Los Angeles County Flood Control District	The proposed project will modify and motorize the diversion box at Big Dalton Spreading Grounds to better control flows taken into the facility. The spreading basins will be reconfigured to increase percolation rates and storage capacity. An intake will be constructed from Little Dalton Diversion Channel so that additional storm flows can be diverted to the facility. A proposed outlet from Metropolitan Water District's PM-26 imported water line to the Little Dalton Diversion channel will enable imported water to be recharged at the spreading grounds.

17	Big Rock Bypass	Los Angeles County Waterworks District No. 29	The project consists of constructing three 18-inch diameter bypass water pipelines approximately 1,500 feet in length within the areas of active landslides along Pacific Coast Highway. This bypass will serve as a permanent replacement of an existing 30-inch diameter water pipeline that has experienced significant breaks resulting in large water loss. The proposed pipeline will be raised to a shallow trench and protected by a reinforced concrete box covered with steel plates to provide quick access if any leakage occurs. In addition, 18-inch Flexible Expansion Joints will also be installed at several locations with the areas of the active landslides to prevent damage or rupture of pipelines from ground movement.
18	Big Tujunga Dam Spillway Dam	Los Angeles County Flood Control District	Construction of a dam within the spillway at Big Tujunga Dam to increase the maximum storage capacity of the reservoir by approximately 705 acre-feet.
19	Big Tujunga Reservoir Sediment Removal	Los Angeles County Flood Control District	The 2009 Station Fire was the largest fire in Angeles National Forest recorded history and burned over 160,000 acres before containment on October 16, 2009. Approximately 87% of the watershed tributary to Big Tujunga Reservoir was affected. On average, a watershed will take five years or more to recover from a forest fire burn. During this time, increased amounts of debris production are anticipated from the denuded ground surface. Based on the 2010-11 storm season surveys, the total amount of sediment in the Big Tujunga Reservoir is approximately 2 million cubic yards. The County of Los Angeles Department of Public Works on behalf of the Los Angeles County Flood Control District proposes a sediment removal project to permanently remove up to 4.4 mcy of sediment from Big Tujunga Reservoir. Sediment will be excavated and transported using low emission trucks or conveyor belt to Maple Canyon Sediment Placement Site adjacent to Big Tujunga Dam. The project will be completed over four years starting in the sum
20	Boulevard Pit Stormwater Capture Project	LADWP	Acquire and develop Boulevard Pit into a multi-use retention and recharge facility to enhance stormwater conservation.
21	Branford Spreading Basin Cleanout and Pump	Los Angeles County Flood Control District	Branford Spreading Ground has very low percolation rates compared to the Tujunga Spreading Ground directly across the Tujunga Wash Channel. This project will install a pump from Branford Spreading Ground to direct water into the Tujunga Spreading Ground leading to more groundwater recharge. In addition, the project will clean out the clogging layer at the bottom of basin, which will also improve percolation rates.

22	Broadway Neighborhood Stormwater Greenway Project	City of Los Angeles Bureau of Sanitation	In partnership with Water Replenishment District of Southern California and it's "Regional and Distributed Stormwater Capture Feasibiltiy Study," the proposed project will design and implement stormwater Best Management Practices (BMPs) in the City of Los Angeles with the primary goals of TMDL compliance and stormwater infiltration. Three levels of BMPs will be developed; local parcel based Low Impact Development (LID) for 8 acres (60 residential parcels), neighborhood scale LID for 12 acres (3 residential streets and 2 blocks of commercial streets), and a sub-regional scale facility for 30 acres of mixed land uses. The local and neighborhood BMPs will capture and infiltrate all dry-weather flow and up to the ¾ inch storm. The sub regional BMP will capture up to the 2 inch storm for 30 acres. The sub regional BMP will also receive dry-weather flows from 228 acres of mixed land uses. Designs will be standardized to remote widespread implementation.
23	Bull Creek Stormwater Capture	Los Angeles County Flood Control District	Historical records show that an annual average of 625 acre-feet of water passes though Bull Creek. All flows from Bull Creek are lost to the ocean via the Los Angeles River. This project proposes conserving the lost water by diverting flows from the new LADWP facility using a rubber dam and conveying flows through a pipeline to Pacoima Spreading Grounds where it would be captured and recharge the local aquifier.
24	Bull CreekLos Angeles Reservoir Water Quality Improvement Project	LADWP	Plan, design, and construct stormwater conveyance facilities for compliance with the Enhanced Surface Water Treatment Rule. Facilities will be designed according to standards adopted by Department of Water Resources, Division of Safety of Dams. Improvements include widening a portion of the Bull Creek Extension Channel, realigning a section downstream of the widening, construction of a new diversion structure and overflow structure, and improvements to inlet structures. The Los Angeles Reservoir spillway will be removed from service. Proposed design facilitates a future stormwater capture program.
25	Burbank Partnership Water Recycling Project	LADWP	The Burbank Partnership Water Recycling Project involves the planning, design, and construction of approximately 27,000 feet of recycled water pipelines in the North Hollywood area. The three individual segments that comprise the project are the Chandler Boulevard Bike Path segment, the Whitnall Dog Park segment, and the North Hollywood Park segment. These segments will connect to Burbank's recycled water distribution system at three separate connection points and will be served by recycled water treated at the Burbank Water Reclamation Plant. This project is expected to offset up to 285 AFY of potable water with recycled water.

26	Burbank Water and Power Recycled Water System Expansion, Phase 3	City of Burbank Water and Power	The third phase of the City of Burbank's recent recycled water system expansion. As a result of previous phases, over 20 miles of recycled water pipelines have been installed resulting in the distribution of over 2,300 AF of recycled water annually; amounting to 13% of the City's water demand by the end of 2014. The City will continue expanding its recycled water distribution to offset potable water use in this phase by constructing two new recycled water pipelines known as, the LA Equestrian Center (LAEC) and the Naomi pipelines. The LAEC is located on the borders of the cities of Burbank and Los Angeles consisting of landscape areas, stables, offices and corrals; the latter requiring dust control with water trucks. The Naomi pipeline would primarily provide recycled water to a very large commercial data center and smaller customers. Completion of these pipelines will increase recycled water distribution by an estimated 61 AFY, resulting in a direct and immediate potable water savings of 61 AF annually.
27	C Marvin Brewer Desalter Brackish Groundwater Facility Expansion	West Basin Municipal Water District	The Desalter currently has the capacity to extract up to 2,000 acre-feet annually of brackish water. In 2003 the old wells at the site were decommissioned and construction began in 2005 for the first replacement well. The facility became operational in 2006 at a reduced capacity using the new well and the original RO unit. The facility has not been operating to its full capacity since it came online again in 2007 because of water quality issues. Funding is also needed to correct the water quality problems in order to get the facility to its full operating capacity. The proposed 500 AFY capacity expansion will allow the facility to become operational at its full capacity of 2,000 acre-feet per year. The site is already owned by California Water Service Co. and leased by West Basin and is developed as a desalting facility. The expansion will include the installation of a new production well, and the addition of an acid pretreatment unit and a reverse osmosis treatment unit on the existing site.
28	CITYWIDE STORM DRAIN CATCH BASIN CURB SCREENS	CITY of CALABASAS	Installation of storm drain catch basin curb screens at all applicable locations citywide. These screens are the stainless variety approved curb by Los Angeles County. The purpose of the curb screens is to stop trash from entering the catch basins which eventually discharge into both the Los Angeles River and Malibu Creek watersheds. By implementing this project, City of Calabasas will be in compliance with the Trash TMDL both for LA River and Malibu Creek watersheds. Based on studies done, reduction in trash and debris loadings will also reduce Bacterial and sediment loading in the watershed. By implementing the project, disadvantaged communities downstream of Calabasas in Los Angeles River will benefit from cleaner water. The scope work consists of measuring all catch basin openings, drafting RFP with detailed specifications, soliciting proposals from the list of Los Angeles County's approved venders, negotiating contract, implementation/construction, monitoring and reporting.

29	Caballero Creek & Los Angeles River Confluence Park	Mountains Recreation and Conservation Authority	The project will convert a 1.55 acre vacant parcel at the confluence of the Los Angeles River and Caballero Creek into a publicly-accessible natural park with habitat restoration, paths, site furnishings, water quality improvements, waterfront-access, and educational amentities. The design utilizes an innovative mixes low-tech mechanical and biological methods to filter and infiltrate storm waters increases regional water quality. The project creates a multi-benefit park that provides ecosystem services as well as cultural services, like recreation and eco-tourism. The project concept was developed in partnership with the City and County of Los Angeles who have committed to retain ownership, maintenance and operation responsibilities while allowing the Mountains Recreation and Conservation Authority (MRCA) to oversee design and construction. Nearby Reseda High School will monitor the project and use it for hands-on learning and community service opportunities.
30	Camino San Rafael Recycled Water Project	Glendale Water & Power	This project will consist of design and construction of approximately 8300 feet & 6000 feet of new 4"and 8" PVC recycled water pipeline, respectively. The project also consists of installing a two booster stations. This project will extend Glendale's recycled water distribution system to provide recycled water for common area irrigation to the Camino San Rafael Homes. This project will offset up to 90 AFY of potable water with recycled water. This will reduce the City's demand on potable water.
31	Carson Regional Water Recycling Project	West Basin Municipal Water District	The Carson Regional Water Recycling Expansion Project includes the expansion of the existing recycled water treatment facility and the construction of several laterals. This is a new demand on the system and will require expansion of treatment process capacity and conveyance to include; lateral pipelines, pump stations, treatment units, storage tanks, and waste management facilities. The BP Refinery requires single-pass reverse osmosis treatment units. BP Refinery is estimating a need of 2,100 acre-feet per year (AFY). The project will be further expanded to serve customers within the City of Los Angeles' jurisdiction for the refineries in the port area. The City will need recycled water to satisfy a use of 9,300 AFY. The City is in the preliminary design stage.

32	Chase Street Stormwater Greenway	City of Los Angeles Bureau of Sanitation, Watershed Protection Division	The Project will provide a street-end interpretive area on Bull Creek at Chase Street, and install a Stormwater Greenway along Chase Street from the eastern street end on the north side right-of-way to Hayvenhurst, and on the north and south right-of-way to Gothic. Vegetated planters in the parkways will capture and infiltrate street runoff, and will provide storm water filtration, and tree shading. The Bull Creek street-end will feature a native landscape as habitat and a recreational rest stop along the channel, and will provide an interpretive site for wildlife selected and supported by the specific native planting used in the project. A channel diversion from Bull Creek, with a pre-filter and lift station, will transfer runoff through a pipeline to a local Sod Farm where it will be used to irrigate up to 30-commercial acres. The project will integrate water conservation goals (LADWP), Storm water objectives (BOS), Economic enhancements to city property (LAWA), & public health and recreation benefits.
33	Chemical Study - Rio Hondo	Los Angeles County Flood Control District	This project will install a chemical treatment system at the Rio Hondo Coastal Spreading Grounds to remove sediment fines from the water and improve the percolation rates. A Percolation Optimization Investigation (POI) report was done by Montgomery Watson Harza (MWH) in 2003 to evaluate the County's spreading grounds and the impact of suspended solids on percolation rates. The report made a number of recommendations and the recommendations will be implemented at the Rio Hondo flood control facility. The project will install a coagulant chemical feeder and mixer at the grounds intake. This will allow the silt in the stormwater to coagulate and settle prior the cleaner water to flowing into spreading grounds. When this occurs, the spreading grounds will be able to percolate more water, thus conserving and recharging more groundwater.
34	Chevy Oaks Recycled Water Project	Glendale Water & Power	This project will consist of design and construction of approximately 920 feet, 1900 feet & 2100 feet of new 4", 8" and 12" PVC recycled water pipeline, respectively. The project also consists of installing a small booster station. This project will extend Glendale's recycled water distribution system to provide recycled water for irrigation to the Chevy Oaks Homes. This project will offset up to 30 AFY of potable water with recycled water. This will reduce the City's demand on potable water.
35	City of Carson Rain Barrel Give Away Phase II	City of Carson, Development Services Department, Engineering Services Division	At completion of a prior grant, a modest amount of money remained unused. With the acquiesence of the granting agency, the City of Carson purchased 16 rain barrels and set up a website lottery system in order to award them to residents. The response was overwhelming and with no advertising over 100 contestents were disappointed to not receive a rain barrel. This proposal would lead to the purchase of an additional 1,000 rainbarrels (depending on cost and grant amount) to restock the lottery reserves. Advertising and management of the program would be provided as part of the City of Carson grant match. More information on Fiskar Rain Barrels is available at http://www2.fiskars.com/Products/Yard-and-Garden/Rain-Barrel-Systems

36	City of Monrovia Fire Department - Training Center Water Recycling Project	Upper San Gabriel Valley Municipal Water District	Upper District in cooperation with the City and Fire Department of Monrovia are submitting this project incorporating both dry and wet weather runoff capture, treatment and storage for the new Regional Training Center. Once collected, the fire training water and the 85th percentile of a 24 hour storm event (as required by the City's MS4 permit) will be treated before being discharged into storage holding tanks which will store the treated water for future reuse by the training facility. The objective is to offset the use of potable water at the facility, eliminate storm water discharge and capture wet-weather storm water runoff. Finally, if the wet-weather event is larger than the 85th percentile, then provisions are being considered to treat as much of the additional wet-weather storm water runoff via a natural infiltration gallery (bioswale) before being discharged into the City's storm water system.
37	Cogswell Dam Inlet/Outlet Works Rehabilitation Project	Los Angeles County Flood Control District	This project will consist of refurbishment and upgrades to the outlet works, tunnels, and repair of various facility components at Cogswell Dam. The project will increase operational effectiveness for flood control and water conservation. The project will involve: a complete overhaul of the dam's entire inlet/outlet works; upgrade on the electrical control equipment; repair of downstream facilities; structural repairs on the upstream facing slab; security upgrades; and other various repairs essential for maintaining and operating a flood control facility. The overall project intent is to improve Cogswell Dam for maintaining dam safety, increased efficiency and reliability of flood control operations, and enhancement of water conservation efforts.
38	Cold Creek Diamond Acquisition	Mountains Restoration Trust	The project will acquire 4.87 acres (APN 4455-021-040) of natural undisturbed open space within the existing 1348-acre Cold Creek Preserve in the Santa Monica Mountains National Recreation Area. The acquisition is part of the state-funded Cold Creek Restoration Plan designed to acquire 539.06 acres to protect the wild and scenic, perennial Cold Creek, the habitat linkage between Topanga State Park and Malibu Creek State Park, the values of Los Angeles County's Significant Ecological Area #9, and a future venue for environmental education, research, and recreation. The area includes significant oak, sycamore, and willow communities, supports a range of wildlife including mountain lion, gray fox and raptors. The pure waters once supported the federally-listed endangered southern steelhead trout.
39	Conservation Budget Based Tiered Rate Structure	West Basin Municipal Water District	This project helps our customer agencies to develop a water conservation, budget-based rate structure for their customers. The project is beneficial to West Basin's cities and retail water agencies because it provides a pricing structure that will incentivizes its customers to conserve water. This pricing method has been used in other parts of the State and has been successsful at reducing water usage and reqarding those who do so with lower rates on their water bill.

40	Conversion of 237th Street Sump Tributary to Machado Lakes for Nutrient and Toxics TMDL BMPs	City of Torrance	This project would convert the 237th St. Sump (4.5 acre-feet) into a retention/infiltration basin BMP for Toxics and Nutrient TMDL compliance and provide open spaces for wildlife habitat. This project would install diversion structures that would divert the first 4.5 acre-feet of stormwater from a 71 acre tributary area away from the system tributary to Machado Lake (Wilmington Drain) to be retained and infiltrated in this basin. Trash screens would be installed at the catch basin in the watershed by a seperate project. During the dry season the basin would remain an open space for wild life and retain urban run-off and nutrients form 71 acres. By diverting stormwater back into this basin, the City and County storm drain systems would have more capacity during rain events. This project would also increase groundwater recharge.
41	Creek Crossings Repairs	Los Angeles County Waterworks District No. 29	This project consists of repairing corroded and deteriorated sections of aboveground pipeline and developing a Corrosion Monitoring, Control, and Maintenance Program. The Waterworks District 29 transmission water pipeline runs along the Pacific Coast Highway in Malibu. The proposed pipeline repairs are located at eight creek crossings attached to bridge structures. The project will significantly prevent future leaks and breaks in the main transmission pipeline which is the primary source of water supply for Malibu and Topanga. The development of a maintenance program is essential to maintaining water supply reliability for the region.
42	Deauville Distributed Water Reuse Project	City of Santa Monica	The project would harvest stormwater and brackish groundwater for high level treatment and non-potable use around the City, replacing the use of imported potable water. The City would install a 1.3 million gallon storage tank next to the Santa Monica Pier, Deauville lot, to harvest stormwater from the Pier sub-watershed during rain events and brackish groundwater during dry periods. The project would have an optional overflow to an infiltration gallery. A saline extraction well would be installed in sand next to the storage tank. The project would install pre-treatment catch basin inserts in the drainage area or a centralized hydrodynamic separator-screening device to remove trash and debris from stormwater. Modular nanofiltration (NF) and a saltwater reverse osmosis (RO) treatment systems at the site would treat these stored local water resources to high quality for various uses around the City in the existing recycled water system. All concentrated brine by-product would be sent to the sanitary sewer.
43	Decker Canyon Recycled Water System Extension	Las Virgenes Municipal Water District	The Decker Canyon recycled water pump station, pipeline, and tank would furnish recycled water primarily to Malibu Country Club Golf Course and Tract 47962-Sycamore Canyon Estates near the pump station location and other nearby ranchettes. The project would comprise a high-lift pump station, ~23,000 linear feet of pipeline along Westlake Blvd and Decker Canyon Rd, and a 60-foot diameter concrete tank near the corner of Decker Canyon Rd and Mulholland Hwy. Approximately 229 AF of recycled water per year would be used by this project.

44	Del Rey Lagoon Water Quality Improvement Project	City of Los Angeles Bureau of Sanitation Watershed Protection Division	The Del Rey Lagoon Water Quality Improvement Project proposes to improve water quality by reducing the source and amount of fecal indicator bacteria in the Del Rey Lagoon and surrounding waterbodies such as the Santa Monica Bay and Dockweiler Beach. Project components include stormdrain systems, vegetated swales, irrigation system retrofit, and drainage modifications. Education and outreach to the public will also be included in the project scope. The vegetated swales are designed to capture, retain, and treat runoff from the adjacent residential, transportation, and landscaped area during dry weather and partially during wet weather. Existing irrigation system will be retrofitted with a smart irrigation system to reduce excessive irrigation runoff, thereby conserving water and reducing flow. Catch basins and storm drains will be installed to capture and divert excess wet-weather flow into the sewer system. Project also includes a nature viewing deck and educational displays that explain local flora-fauna.
45	Demonstration Gardens at Los Angeles County Fire Department Stations	West Basin Municipal Water District	This project involves the installation of drought-tolerant demonstration gardens at a minimum of five fire stations throughout the West Basin service area. These gardens will replace turf and/or concrete areas that are directly in front of the fire stations in order to provide a maximum visibility to the public. The gardens will be utilizing drought-tolerant and/or native plants that will be designed by professional landscape designers that specialize in climate-appropriate plans and trees. The main goal is to provide water conservation and runoff reduction measures and secondarily to educate the public about the measures so that they can create these spaces at their own homes. West Basin strives to reduce demands by implementing conservation and education programs throughout the communities it serves. This project aims to continue implementing outdoor water conservation/education programs to influence the public to create these spaces in their own homes.
46	Devil's Gate Dam and Reservoir Water Conservation	Los Angeles County Flood Control District	This project proposes to conserve stormwater by holding a reservoir pool behind Devil's Gate Dam and diverting the water to Eaton Wash Dam and Eaton Wash Spreading Grounds for poststorm groundwater recharge. A pump will be installed in the Devil's Gate Dam reservoir and water will be pumped out and conveyed through over 26,000 feet of pipeline to Eaton Wash Dam where it can be held for recharge at downstream spreading ground facilities.

47	Devil's Gate Reservoir Sediment Removal and Management Project	Los Angeles County Flood Control District	The 2009 Station Fire was the largest fire in Angeles National Forest recorded history and burned over 160,000 acres in the San Gabriel Mountains. Approximately 68% of the watershed tributary to Devil's Gate Reservoir was burned and as a result of the storms that occurred in the two wet seasons after the fire, sediment levels in the reservoir increased by more than one million cubic yards. The County of Los Angeles Department of Public Works on behalf of the Los Angeles County Flood Control District is planning a sediment removal project of up to 4 million cubic yards. A sediment removal project from behind Devil's Gate Dam is vital to the health of the Arroyo Seco flood control system. The goal of this project is to restore flood control capacity and establish a reservoir configuration more suitable for routine maintenance activities. The project will last approximately 5 years with construction starting in 2014.
48	Dominguez Channel Greenway Phase III	Los Angeles County Flood Control District	The project will consist of development of a native landscaped greenway and bikeway/pedestrian trail along the north side of the Dominguez Channel, between Vermont Av and Normandie Av. The project will include the following: access/maintenance road improvements for the new/improved bikeway; AC repair and replacement, slurry seal, American Disability Act (ADA) access ramps and bikeway/pedestrian signage and striping. Landscaping improvements include landscaping using native and drought-tolerant plants, irrigation, as-needed fencing repair/replacement. Educational/interpretive signage will also be included along the bikeway/pedestrian trail. A study is also recommended to consider additional pedestrian crosswalks with street lamp lighting for added safety. The project is currently on hold until the LACFCD completes a study to address deficiencies in its levees.
49	Dominguez Channel Trash Reduction Via ARS Installation in the City of Carson, CA	City of Carson, Development Services Department, Engineering Services Division	This project would install Automatic Retracting Screens (ARS) in the 1800 Storm Drain Catch Basins in the City of Carson. The proponents favor ARS to collect trash at street level where the trash can be quickly and cost effectively collected weekly by the existing City Street Sweeping Contractor and eliminates the need for other more costly and difficult to maintain downstream trash control systems. This project anticipates the continuing development of local and state waterway trash control efforts and alleviates the need to develop these expensive federal, state and local requlatory mandates. In comparison to other "downstream" trash control systems, the maintenance status of ARS is easily assessed and visible to the public, which is then able to report those locations where maintenance is warranted. Since ARS systems are located in the street sweeper path, maintenance (trash collection) occurs weekly, the trash stays dry and is less subject to the degradation that generates other pollutants (bacteria).

50	Dominguez Gap Spreading Grounds West Basin Percolation Enhancement	Los Angeles County Flood Control District	The proposed project will increase the percolation within the spreading grounds facility in order to increase groundwater recharge. The preliminary scope includes removing between 5 to 10-feet of clay sediment or installing vertical trenches/drains through the poorly draining strata in the facility's west basin. Preliminary studies have been conducted including boring samples which will be used to further develop conceptual plans and estimate project benefits.
51	Duck Farm River Parkway Phase 1 - Water Enhancement Project	Watershed Conservation Authority	The Duck Farm River Park, once a natural floodplain, has been disconnected from the natural processes of the river for decades as a result of urbanization & flood management. The Project reintroduces natural systems through a riparian/pocket wetland/seasonal streambed that improves both habitat and collect, filter & infiltrate stormwater flows onsite, as well as stormwater from the adjacent freeway in collaboration w/Caltrans. The project will transition irrigation source (annually forecasted to require 19M gallons) from imported, highly processed potable water to either local groundwater or recycled water as its source of supply. The public will benefit by being reconnected to nature, the river, & from educational & interpretive programming possible at the site. This change in supply will reduce greenhouse gases & the parks carbon footprint. Outdoor classroom & interactive educational experiences with children will inspire local youth to learn more about our watershed, water conservation & sustainability
52	Eaton Spreading Grounds Intake Improvements	Los Angeles County Flood Control District	The project will increase the intake and storage capacity of the Eaton Wash Spreading Grounds facility. This will improve the facility's ability to recharge storm water into the groundwater basin, thus greatly increasing the sustainable local groundwater supply that is vital for the region. Los Angeles County Flood Control District will replace the vehicle access slab with a metal grate over the spreading grounds drop intake channel and replace the current diversion flashboards with an inflatable gate within the intake channel. These improvements in Eaton Wash Channel will better direct flows into Eaton Wash Spreading Grounds, thereby increasing its intake capacity. Basin 1 will be enlarged to increase the facility's storage capacity. The project will include improvements to the property along Sierra Madre Boulevard that will significantly improve the sustainability, aesthetics, and safety of the public walkway and street view. Two driveway entrances will be improved by increasing the gate set-back fu
53	Eaton Wash Dam Inlet/Outlet Works Rehabilitation Project	Los Angeles County Flood Control District	The dam outlet works rehabilitation project involves the removal of the existing outlet tower and gate house. Once these major components are removed, construction of a gate valve, debris racks, hydraulic power system with a block house, control systems, modification of the outlet works structure, and rehabilitation of the gate valves will commence. It will provide necessary erosion protection measures and improve water quality during low-flow releases from the dam.

54	Elysian Reservoir Water Quality Improvement Project	LADWP	LADWP is planning to cover the existing Elysian Reservoir in order to meet US EPA water quality regulations. In April 2012, the Board of Water & Power Commissioners certified the Environmental Impact Report and approved the floating cover alternative. The project will install a flexible membrane floating cover over the existing water surface. Also included are supporting infrastructure (piping, valves, liner) and site improvements (roadway paving, fencing). The reservoir will operate in the same manner, providing potable storage for the distribution system. Construction is anticipated to being by 2015. In conjuntion with the project, a Community Parks Fund was established by the Board of Commissioners. The fund is to be used for unspecified public purposes related to community parks. Best efforts will be made to locate enhancements primarily in the Elysian Park area, working together with the community and other City of Los Angeles agencies.
55	Encinal Emergency Connection	Los Angeles County Waterworks District No. 29	The project consists of adding a new emergency water source to supply Waterworks District No. 29 through a new interconnection along Encinal Canyon Road at the District boundary with Las Virgenes Municipal Water District (LVMWD). This interconnection would bring water from Metropolitan Water District of Southern California through LVMWD to provide additional supply to the District during emergencies.
56	Foothill Municipal Water District Recycled Water Project	Foothill Municipal Water District	Three hydrologic areas were studied for the development of satellite recycled water facilities. Foothill Municipal Water District (FMWD) is pursuing the construction of one facility near Berkshire Place in La Canada at this time. This project will treat wastewater using a membrane bioreactor and recharge the product into the groundwater basin using infiltration galleries underneath athletic fields for multi-beneficial uses. Cal Poly Pomona has partnered with FMWD and is developing a model that will also capture stormwater for recharge using the same infiltration galleries. A conservation and education component has also been added. Landscaping will be done to showcase drought tolerant plants at both the MBR site and school site. Tours will be available so that students may learn about stormwater capture, groundwater, recycled water, conservation and the watershed since the Arroyo Seco and Hahamongna Park are across the street. This 0.250 MGD plant will save enough energy annually for 80 homes in So. Cal.
57	Freeway Runoff Infiltration Demonstration Project	City of Santa Monica	Divert runoff from a section of the Santa Monica Freeway within the City of Santa Monica, treat and infiltrate within an area near the freeway, either a landscaped area or parking lot. The infiltration zones will be augered, if necessary to by-pass poor permeable soils. There will be pre-treatment before infiltration to remove trash, oil/grease, sediments. It will be a passive system, i.e. gravity-fed and low into the system. The treatment-infiltration areas will be areas either already with a storm drain in the area, or the creation of new ones to harvest the runoff. The goal will be to keep runoff out of the existing storm drains and out of the storm drain system.

58	Glen Oaks Storm Water Capture Project	Los Angeles Beautification Team	The Prop O funded phase I, the installation of six bio-swales and 4 dry wells. This watershed in an average rainfall year brings 300 acre feet of water to Glen Oaks Blvd. Phase I was completed in January 2014 and is currently capturing an estimated 30 acre feet per year leaving approximately 270 acre feet available for storm water capture. Phase II will consist of an additional eight dry wells for an estimated $625,000, plus the cost of City Services (Design fees, permits and over site), that will capture an additional 40 to 45 acre feet annually.
59	Glendale Narrows Habitat Enhancement Project	Council for Watershed Health	The Glendale Narrows Riverwalk will provide approximately one mile of multi-use recreation along the Los Angeles River. There are several invasive plant species that are prevalent adjacent to the Riverwalk in the Glendale Narrows area of the Los Angeles River. These invasive plant infestations jeopardize the improvements to water quality and degrade habitat for native aquatic, avian, reptile, amphibian, and invertebrate species. In collaboration with the City of Glendale Community Services & Parks Department, the Council for Watershed Health (Council) proposes to develop and manage a 3-4 year restoration project to map, control, and monitor invasive arundo and invasive palm trees in the Riverwalk project area in the Glendale Narrows sections of the Los Angeles River. A native plant propagation and replanting effort is also proposed to reestablish riparian plants.
60	Goldsworthy Groundwater Desalter Expansion	City of Torrance	The Goldsworthy Desalter (Desalter) treats water from the saline plume in the West Coast Groundwater Basin for drinking water. The brackish water is treated to meet or exceed municipal drinking water standards through the use of a reverse osmosis system. The existing Desalter produces approximately 2,000 acre-feet of potable drinking water per year. When the Desalter was originally constructed in 2002, it was designed for expansion to over 5000 acre-feet per year of drinking water. In 2012 the Water Replenishment District of Southern California had a Feasibility Study for the Expansion of Desalter prepared for and approved by the U. S. Bureau of Reclamation. The expansion would involve the installation of additional reverse osmosis treatment units, construction of two additional source water wells, transmission mains and related appurtenance. The project also diverts waste water away from Santa Monica Bay where discharges cause TMDL violations for bacteria.

61	Groundwater Reliability Improvement Project (GRIP)	Water Replenishment District of Southern California	The overarching goal of the GRIP Recycled Water Project is to offset the current use of imported water by providing up to 21,000 acre-feet per year (AFY) of recycled water as a reliable supply source for groundwater basin replenishment via the Montebello Forebay within a reasonable timeframe. The source for the recycled water will be the Los Angeles County Sanitation Districts' San Jose Creek Water Reclamation Plant (SJCWRP). Tertiary treated recycled water, advanced treated recycled water (microfiltration, reverse osmosis and advanced oxidation), or a combination of the two will be conveyed from the SJCWRP via an existing pipeline or possibly a new pipeline for recharge in the Central Groundwater Basin through the Montebello Forebay Spreading Grounds or potentially a new injection well field.
62	Groundwater System Improvement Study	LADWP	The purpose of the Groundwater System Imrovement Study (GSIS) is to perform an independent study to identify, characterize, and evaluate emerging water quality constituents for the San Fernando Basin (SFB). This will include a comprehensive analysis that will provide recommendations in developing short and long-term projects, including the design and construction of groundwater treatment facilities, to maximize the use of the groundwater supply in the SFB. As a part of the GSIS, the LADWP will be drilling approxinmately 26 new groundwater monitoring wells, and perform short-term monitoring of existing and new wells, in order to obtain supplemental water quality data necessary for planning the groundwater treatment afcilities in the SFB.
63	Groundwater Treatment Facilities	LADWP	Design and construction of groundwater treatment facilities in North Hollywwod, Rinaldi-Toluca and Tujunga Wellfields in the San Fernando Basin (SFB), with a treatment capacity of 122,900 acre-feet per year.
64	Hansen Dam Golf Course Water Recycling Project	LADWP	Construct 4,500 feet of 20" pipeline, pumping station and pipe support bridge to deliver recycled water from the Tillman Plant to the Hansen Dam Golf Course and other potential future users. Water will be pumped from the Hansen Tank.
65	Hansen Dam Water Conservation Project	Los Angeles County Flood Control District	Hansen Dam, situated adjacent to the Tujunga Wash Channel in the San Fernando Valley, is a vital part of flood control efforts in the Los Angeles River drainage basin. The primary purpose of Hansen Dam is flood control; however the opportunity exists to increase water conservation and water supply through increased water recharge upstream of the dam. The current operation of the dam allows for an average annual water conservation of 17,100 acre feet per year. The Water Conservation Project, which involves utilizing the existing Debris and Flood Control Pools for water conservation purposes by raising their respective maximum elevations to allow for additional water supply storage, would increase the dam's water conservation ability. This extra supply storage would allow for dam releases to downstream spreading grounds and other facilities fo
66	Hansen Dam Water Conservation and Supply	The River Project	Change management regime of Hansen Dam to focus on water conservation by maintaining a water conservation pool within the reservoir during and subsequent to flood season.

67	Headworks East Reservoir	LADWP	onstruction of a 110 MG buried reservoir along with a 4 MW hydroplant at the former Headworks Spreading Grounds to replace the storage capacity lost when Ivanhoe Reservoir is removed from service. Needed to bring the Water System into comliance with state and federal drinking water regulations by the regulatory deadline of November 2014
68	Headworks Ecosystem Restoration	LADWP	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
69	Herondo Parking Lot and Beach Infiltration	City of Redondo Beach	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
70	Hoover, Toll, & Keppel School Recycled Water Project	Glendale Water & Power	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
71	Humboldt Stormwater Greenway	City of Los Angeles, Bureau of Sanitation/Watershed Protection Division	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
72	Improvements to Entradero Storm Drain Channel for Storm Water Infiltration and Habitat Restoration	City of Torrance, SMBBB TMDL Jurisdictional Groups 5 & 6	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
73	Improvements to San Gabriel River Diversion and San Gabriel River Water Committee Canal and Appurtenances	Azusa Light and Water	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
74	Indirect Reuse Replenishment Project	Upper San Gabriel Valley Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
75	Johnny Carson Park Stream Restoration and Park Revitalization	City of Burbank	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
76	Jordan Downs Daylighting Study	Multi-jurisdictional Agencies-LA City Housing and Public Works	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
77	LA River Sixth Street Bridge Greenway	City of Los Angeles, Bureau of Engineering	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
78	LVMWD Woodland Hills Golf Course Recycled Water Pipeline Extension	Las Virgenes Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
79	La Puente Valley County Water District Recycled Water Project	Upper San Gabriel Valley Municipal Water District & La Puente Valley County Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
80	Landscape Irrigation Efficiency Program (LIEP)	West Basin Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
81	Large Landscape Irrigation Survey and Retrofit Project	Upper San Gabriel Valley Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
82	Las Virgenes Creek Bank Stabilization, Stream Restoration, Fish Migration Enhancement and Trail Connection	City of Calabasas	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
83	Live Oak Dam Inlet/Outlet Rehabilitation	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description

84	Live Oak Spreading Grounds Improvement Project	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
85	Lopez Spreading Grounds Improvement	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
86	Los Angeles River Center and Gardens Green Conference Center	Mountains Recreation and Conservation Authority	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
87	Los Angeles River Natural Park	City of Los Angeles Bureau of Sanitation/Watershed Protection Division	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
88	Los Angeles River Revitalization Master Plan 32 Mile Channel and Easement Greening	City of Los Angeles, Bureau of Engineering	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
89	Los Angeles State Historic Park Water Recycling Project	LADWP	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
90	Los Angeles-Burbank Groundwater System Interconnection	LADWP / Burbank Water and Power	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
91	Los Angeles-Glendale Groundwater System Interconnection	LADWP / Glendale Water and Power	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
92	Lower Los Angeles River Area Linear Water Storage Feasibility Study	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
93	Malibu Civic Center Area Recyled Water Delivery Project	City of Malibu	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
94	Malibu Civic Center Linear Park Phase 3	City of Malibu	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
95	Malibu Drought Preparedness Project: Graywater Reuse and Rainwater Harvesting	City of Malibu	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
96	Malibu Equestrian Center Runoff BMPs	City of Malibu	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
97	Malibu Rainwater Harvesting	City of Malibu	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
98	Malibu Road/Malibu Colony Stormwater Management	City of Malibu	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
99	Manhattan Strand 28th Street Subsurface Infiltration Trench	City of Manhattan Beach	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
100	Manhattan Wells Improvement	LADWP / Water Replenishment District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
101	Marsh Park, Phase II	Mountains Recreation and Conservation Authority	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
102	Medea Creek Restoration at Chumash Park	City of Agoura Hills	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
103	Miller Pit Spreading Basins	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description

104	MillerCoors Recycled Water Project	Upper San Gabriel Valley Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
105	Milton Street Park and Green Street project - Ballona Creek	Mountains Recreation and Conservation Authority	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
106	Mission Hills Green Belt	The River Project	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
107	Mission Wells Improvement	LADWP	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
108	North Hollywood Groundwater and Surface Water Benefits Study	Council for Watershed Health	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
109	North Hollywood Street Enhancement	City of Los Angeles	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
110	North Hollywood Transmission Corridor Easement Stormwater Capture Study	Council for Watershed Health	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
111	North Santa Monica Bay Firecamp 13 LID Retrofit	Los Angeles County Deprtment of Public Works	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
112	North Santa Monica Bay Probation Camp Miller LID Retrofit	Los Angeles County Department of Public Works	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
113	Northeast Gardena Recycled Water Line	West Basin Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
114	Northeast Gardena Storm Water Quality Park, Recycled Water Line, and Landscape Makeover	Council for Watershed Health	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
115	Northeast Gardena Water and Landscape Makeover, Community Involvement Module	Council for Watershed Health	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
116	Oak Park Green Streets Urban Retrofit	County of Ventura	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
117	Oak Park Medea Creek Restoration	Mountains Restoration Trust	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
118	Ocean Friendly Garden (OFG) Program	West Basin Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
119	Olive Pit Water Conservation Park	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
120	Oxford Retention Basin Multi-Use Enhancement Project	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
121	Ozone Park Runoff Treatment and ReUse Project	City of Santa Monica	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
122	Pacoima Dam Inlet/Outlet Works Rehabilitation Project	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
123	Pacoima Neighborhood Retrofit	The River Project	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description

124	Pacoima Reservoir Sediment Removal	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
125	Pacoima Spreading Grounds Improvements	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
126	Palos Verdes Peninsula Satellite Facilities Study	West Basin Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
127	Palos Verdes Recycled Water Lateral	West Basin Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
128	Pasadena Recycled Water Project	Pasadena Water and Power	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
129	Peck Water Conservation Improvement Project	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
130	Puddingstone Diversion Dam Inlet/Outlet Works Rehabilitation	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
131	Raw Wastewater Diversion to the City of Los Angeles	Las Virgenes Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
132	Recycled Water On-Site Retrofit Projects	West Basin Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
133	Recycled Water Storage and Distribution System Expansion	Las Virgenes Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
134	Recycled Water Supply for Palos Verdes Golf Course	City of Palos Verdes Estates	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
135	Recycled Water Turnouts	Water Replenishment District of Southern California	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
136	Regional Water Supply Reliability Program Phase 1b	Puente Basin Water Agency	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
137	Residential Indoor Plumbing Retrofit Kits	West Basin Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
138	Residential SMART Timer Retrofit “Plus” Program	West Basin Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
139	Rio Hondo Coastal Basin Spreading Grounds - Sediment Removal from Basins	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
140	Rockhaven Well	Crescenta Valley Water District and Glendale Water and Power	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
141	SMURRF Distributed Water Reuse Project	City of Santa Monica	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
142	San Gabriel Coastal Basin Spreading Grounds Improvement Project	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
143	San Gabriel Dam Penstock Coatings and Valve Repair	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description

144	San Gabriel Valley Water Recycling Project (Phase I - Rose Hills Expansion)	Upper San Gabriel Valley Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
145	San Gabriel Valley Water Recycling Project - Membrane Bioreactor Treatment Plant	Upper San Gabriel Valley Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
146	San Jose Creek Water Reclamation Plant East Process Optimization Project	County Sanitation Districts of Los Angeles County	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
147	San Rafael Creek Restoration	Arroyo Seco Foundation	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
148	San Ramon Canyon Stormwater Flood Reduction Project	City of Rancho Palos Verdes	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
149	Santa Anita Dam Seismic Rehabilitation	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
150	Santa Fe Dam Water Conservation Pool	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
151	Santa Fe Spillway Basins	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
152	Sawpit Debris Dam Seismic Strengthening Project	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
153	Septic-To-Sewer Drinking Waterwell Protection Project	City of Los Angeles Bureau of Sanitation/Wastewater Engineering Services Division	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
154	Sepulveda Basin Sports Complex Multi-Purpose Open Space Project	City of Los Angeles, Bureau of Engineering	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
155	Sepulveda Basin Sports Complex Riparian Buffer	City of Los Angeles, Bureau of Engineering	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
156	Sheldon Pit	LADWP	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
157	Shoestring Park	Council for Watershed Health	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
158	Silver Lake Reservoir Bypass & Regulator Station	LADWP	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
159	Six Basins and Puente Basin Integrated Water Supply Project	Puente Basin Water Agency	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
160	South Coast Botanic Gardens	Los Angeles County Department of Public Works	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
161	South El Monte Recycled Water Expansion Project Package 1	Upper San Gabriel Valley Municipal Water District & San Gabriel Valley Water Company	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
162	South El Monte Recycled Water Expansion Project	Upper San Gabriel Valley Municipal Water District & San Gabriel Valley Water Company	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description

163	South Los Angeles County Groundwater Pipline Project	Water Replenishment District of Southern California	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
164	South Park Subsurface Infiltration Gallery	City of Hermosa Beach	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
165	Southeast Gardena Recycled Water Line	West Basin Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
166	Stormwater Diversion to Walnut Avenue Sump	City of Torrance	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
167	Sun Valley Watershed Rory M. Shaw Wetlands Park Project (a.k.a. Strathern Wetlands Park)	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
168	Taylor Yard River Park Parcel G2	City of Los Angeles, Bureau of Engineering	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
169	Terminal Island WRP Advanced Water Purification Facility and Distribution System Expansion Project	LADWP	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
170	Terminal Island WRP Advanced Water Purification Facility and Distribution System Expansion	LADWP	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
171	Thousand Oaks Boulevard and Westlake Elementary Recycled Water System Extension	Las Virgenes Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
172	Topanga Connection Acquisition	Mountains Restoration Trust	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
173	Transfer Station Cover Structure and Site Improvements	City of Inglewood	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
174	Triunfo Community Park and Evanstar Park Recycled Water Extension	Las Virgenes Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
175	Trunk Sewer Rehabilitation Projects	Las Virgenes Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
176	Turf's Up Water Use Efficiency Program	West Basin Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
177	Valley Generating Station Stormwater Recharge Project	LADWP	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
178	Van Ness and Slauson Infiltration Best Management Project	City of Los Angeles Bureau of Sanitation Watershed Protection Division	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
179	Verdugo Hills Stormwater Project	City of Los Angeles, Bureau of Sanitation/Watershed Protection Division	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
180	Vermont Avenue Storm Water Capture and Green Street Beautification Project	City of Los Angeles, Bureau of Sanitation/Watershed Protection Division	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description

181	Vermont Median Stormwater Park	Council for Watershed Health	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
182	Victoria Street CSUDH Water Reuse Concept Proposal	City of Carson	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
183	WRD Eco Gardener Program	Water Replenishment District of Southern California	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
184	Walnut Creek Spreading Basin Improvements	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
185	Water Budget Based Rate Implementation	Las Virgenes Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
186	Water Star Schools Pilot Program	West Basin Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
187	Well 15	San Gabriel County Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
188	Well 7	City of Inglewood	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
189	Well No. 2 Rehabilitation	City of Inglewood	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
190	West Coast Basin Barrier Project	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
191	Westlake Filtration Plant Enhancement & Backbone Improvements	Las Virgenes Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
192	Westward Beach Road Bioinfiltration Project	City of Malibu	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
193	Westwood Neighborhood Greenway Project	City of Los Angeles Bureau of Sanitation Watershed Protection Division	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
194	Whiting St. and El Segundo Blvd. Dry Weather Diversion Structure	City of El Segundo	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
195	Whitnall HWY Powerline Easement Stormwater Capture Project	LADWP	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description

October 23, 2014

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RE: Public Comment: Notice of Preparation of a Draft Program Environmental Impact Report for Enhanced Watershed Management Programs

Dear Mr. BeGell:

Thank you for your efforts on the Notice of Preparation (NOP) of the Draft Program Environmental Impact Report for the Enhanced Watershed Management Programs (EWMP). I am confident your work will result in an informative and precise first tier final Program Environmental Report (PEIR) that is adequate, complete, and a good faith effort at full disclosure. The purpose of my comments, per Section 15168(c)(5) of the 2014 California Environmental Quality Act (CEQA) Statute and Guidelines, is to assist in the creation of a PEIR "that deals with the effects of the program as specifically and comprehensively as possible." Additionally, I realize that by doing "a good and detailed analysis of the program, many subsequent activities could be found to be within the scope of the project described in the program EIR, and no further environmental documents would be required."

I recognize and appreciate the herculean task involved for the Flood Control District and it is my sincere attempt to keep my comments relevant to the NOP. As such, I have attempted to draft my comments in a reader-friendly manner that identify the issue and, wherever possible, propose a feasible solution. My comments only address the content of the NOP.

COMMENTS ON THE CONTENT OF THE NOP

1. Introduction

COMMENT No. 1: (Page No. 2) Please elaborate on the approval process. It would be informative if the role between the Los Angeles County Flood Control District (LACFCD) and the Los Angeles Regional Water Quality Control Board (LARWQCB) is further explained. The introduction does a good job explaining the steps involved in the EWMP process, but lacks clarity on the connection between the PEIR and LARWQCB. In particular, the sentence in mind states, “The LARWQCB is responsible for approval of the EWMPs in compliance with the MS4 Permit. Implementation of the EMWPs would occur following approval by the LARWQCB.”

If the LARWQCB approves the EWMPs then who adopts the final PEIR? How does this PEIR fit into the responsibilities and mandates of the LARWQCB? All 12 of the EWMPs specify a date when the final EWMPs will be submitted (June 2015) to the LARWQCB, but no mention is made about the PEIR. In addition, the NOI submitted to the LARWQCB by each Watershed Management Group (WMG) span two programs: the EWMPs ‘and’ Coordinated Integrated Monitoring Programs (CIMP). What is a CIMP? Does this PEIR also analyze the CIMP?

COMMENT No. 2: (Page 2) Project Location – Please elaborate as to whether the policies and plans of the EWMPs are targeting public property, public right-of-ways, land owned by the LACFCD and/or private property.

COMMENT No. 3: (Page 4, Figure 1 – Overview of EWMP Groups) The EWMP groups only identify a total of 47 participating cities (Permittees) throughout los Angeles County. However, there are 37 remaining Permittees throughout Los Angeles County that are not part of the

EWMP groups. Is this PEIR broad enough in scope for Los Angeles County? How will the remaining 37 cities meet compliance goals and strategies under the 2012 MS4 Permit?

COMMENT No. 4: (Page 5) The opening paragraph states that "The primary approach to each of the EWMPs, as identified in the Draft Work Plans, includes identifying community-friendly, cost-effective methods of reducing urban runoff pollution and incorporating distributed and centralized structural and nonstructural watershed control measures for a multi-pollutant, multi-benefit approach." However, a review of all 12 EWMPs indicates that there was no cost/benefit analysis or any modeling completed to substantiate the "cost-effectiveness" of these methods. Please identify any additional documentation supporting this claim.

COMMENT No. 5: (Page No. 5) This comment attempts to clarify the scope of the PEIR by asking, "how much information is enough?" Please clarify the use of the term "project." The final sentence in the first paragraph states, "The EWMPs will also evaluate multi-benefit regional projects that will retain (through infiltration or capture and reuse) the stormwater quality design volume (85th percentile storm for 24 hours) for the runoff from the contributing drainage area." Evaluating, site-level projects at the PEIR level creates a lack of agreement between the inherent programmatic and geographic scope of the PEIR and the site-specific goal of a single-project EIR, as Section 21002.1(d) of the CEQA Statute states, "to consider the effects, both individual and collective, of all activities involved in 'a' project." I reviewed all 12 of the EWMPs and CIMPs and they do not identify projects currently in the works and no analysis is provided. The EWMPs seem to be evaluating plans and policies. Clarification of the term project would be beneficial in order to clearly understand the scope of this PEIR.

Providing additional contrast is, Section 21003 which states, “All persons and public agencies involved in the environmental review process be responsible for carrying out the process in the most efficient, expeditious manner in order to conserve the available financial, governmental, physical, and social resources with the objective that those resources may be better applied toward the mitigation of actual significant effects on the environment.” In an effort to avoid the possibility of imposing an unfunded mandate on local cities and/or non-profit groups to undertake the second tier of this PEIR, the prudent use of public funds, and to promote a second tier CEQA process that is streamlined, I feel it would be beneficial to incorporate an analysis of current projects in the “pipeline.”

This is critical because a review of the Greater Los Angeles County Integrated Regional Water Management (IRWM) database reveals over 190 water resources projects with regionally-significant benefits in the pipeline (Attachment A). The IRWM is a funding mechanism that encourages regional and local collaboration in the design of sustainable water resources infrastructure. To date, regional agencies, cities, non-profits and community representative groups, have collaborated and submitted project proposals of regional significance. Not all of these projects incorporate BMPs, per say (many do), and many have already been deemed categorically exempt. Additional vetting would need to take place in order to identify projects in-line with a low impact development ideal to collaborate and integrate compliance strategies that are based on a multi-pollutant approach with a focus on green infrastructure that maximize the retention and use of urban runoff as a resource for recharging aquifers and for irrigation and other uses.

If this nexus to analyze the impacts of regional projects is deemed reasonably feasible, further vetting of the projects would be required to understand their CEQA status. The question is who conducts this analysis, the LACFCD or the WMGs? This is important to figure out since Section 15152(b) of the CEQA Statute and Guidelines states that, “Tiering does not excuse the lead agency from adequately analyzing reasonably foreseeable significant environmental effects of the project and does not justify deferring such analysis to a later tier EIR or negative declaration.”

COMMENT No. 6: (Page 5) The second paragraph states, “The PEIR will provide a program-level assessment of the overall permit compliance effort, focusing particularly on the structural watershed control measures proposed in each of the 12 EWMP areas.” The project list on Attachment A identifies projects aiming to implement watershed control measures throughout Los Angeles County. Many of these projects are categorically exempt, have concluded their own environmental assessment or already constructed, however, the database (L.A. Water Plan) where I retrieved these does not clearly indicate this information. Furthermore, none of the 12 EWMPs under consideration undertook this task to see how the proposed physical changes within their EWMP may or may not comply with the goals and objectives of their respective plans and policies. In an effort to, as Section 15152© describes, “avoid deferring the potential significant impacts to the second tier and possibly preventing the adequate identification of significant effects of the planning approval at hand,” it may be worthwhile to include this list of “reasonably foreseeable” regional projects in the PEIR analysis or have the WMGs revise their draft plans to incorporate this analysis.

1.1 Project Location

COMMENT No. 7: Refer to Comment No. 2. In addition, the description of the location could be augmented by elaborating on the baseline environmental context. Also, adding maps identifying the tributaries, rivers, channels, etc. within the 12 watersheds could increase understanding of the local watershed functional characteristics. The maps are contained in most of the individual EWMPs. A reference to the website location of each respective EWMP could suffice.

Additionally, there is no reference to the types of soils that underlie the 12 EWMPS. The EWMPs provide a summary of these soil characteristics. A reference to the website location of each respective EWMP would be helpful. It is important to know the soil types and their respective infiltration rates in order to understand the feasibility of implementing certain structural BMPs. I realize that this may be covered in more depth under the Geology, Soils and Seismicity category, but there is no clear reference in the accompanying summary.

2. BACKGROUND

2.1 Stormwater/Water Quality

COMMENT No. 8: (Page 7) The first paragraph states, “Discharges may adversely affect receiving surface water quality with pollutants such as bacteria, nutrients (nitrogen and phosphorus), aluminum, copper, lead, zinc, diazinon, and cyanide. Aquatic toxicity, particularly during wet weather, is also a concern. Stormwater and non-stormwater discharges of debris and trash are also a pervasive water quality problem in the Los Angeles region.” It would be beneficial to add the types of pollution stemming from the natural environment (non-anthropogenic), too. What kind of pollutants exists in the stormwater resulting from the erosion of soil from natural settings and undeveloped vacant parcels of land?

2.2 Total Maximum Daily Loads

COMMENT No. 9: A sentence in section reads, "A TMDL is defined as the "sum of the individual waste load allocations (WLAs) for point sources and load allocations for nonpoint sources and natural background" (40 CFR 130.2), such that the capacity of the water body to assimilate constituent loads (the loading capacity) is not exceeded." What currently happens when TMDLs are exceeded? Is there a monetary fine?

2.3 MS4 Permit

COMMENT No. 10: (Page 7) This section states, "The MS4 Permit identifies conditions, requirements, and programs that municipalities must comply with to protect regional water resources from adverse impacts associated with pollutants in stormwater and urban runoff." What currently happens if these conditions or requirements are not met by municipalities? Is there a monetary fine?

3. Enhanced Watershed Management Plans

COMMENT No. 11: As mentioned in the first comment under the Introduction heading, please elaborate on the approval process. Specifically, how the PEIR fits into the LARWQCBs approval of the EWMPs. Additionally, there's a sentence that states, "The 2012 MS4 Permit includes provisions that allow Permittees to voluntarily choose to implement a EWMP to achieve permit compliance with RWLs." How will permit compliance be verified and who will monitor compliance?

4.1.1 Regional Structural BMPs

COMMENT No. 12: The second paragraph states, "Opportunities for Regional BMPs will be identified and evaluated within and across subwatersheds, with focus on the multi-benefit potential for capture and reuse of wet-weather flows within variable drainage areas." What method and level of detail will be used to identify and evaluate BMPs? This paragraph goes on to state that, "Potential project locations may include areas with open spaces, whether they are within parks, large parking lots, or vacant spaces," indicating that a geographically site-specific analysis is appropriate under this PEIR. Collectively, there is over 190 regional projects identified in Attachment A being proposed by the various members of the WMGs. Based on the site-specific potential project locations stated above, is it feasible to include an analysis of the project list (Attachment A)?

5 Potential Environmental Impacts

COMMENT No. 13: This section (nor the LACoH2Osheds website) does not reference the completion of an Initial Study per Section 15063©(1), nor provide clarity as to what is not being decided. How did the Lead Agency identify the effects determined not to be significant? Is there an explanation of the reasons for determining that potentially significant effects would not be significant?

COMMENT No. 14: The sentence that states, "The PEIR will assess the physical changes to the environment that would likely result from the construction and operation of EWMP projects," does not reference assessing the physical changes that would result from 'maintenance' of said project(s).

COMMENT No. 15: Air Quality Category – In an effort to help identify California communities that are disproportionately burdened by multiple sources of pollution, this category should also consider evaluating the air quality data collected by the Office of Environmental Health Hazard Assessment's (OEHHA) California Communities Environmental Health Screening Tool Version 2.0 (CalEnviroScreen 2.0).

COMMENT No. 16: Hazards and Hazardous Materials – In an effort to help identify California communities that are disproportionately burdened by multiple sources of pollution, the following sentence, "Potential hazards will be evaluated and assessed by reviewing the data collected by the California State Water Resources Control Board (SWRCB) GeoTracker and the California Department of Toxic Substances Control (DTSC) Envirostor databases," should also consider evaluating the data collected by the OEHHA California Communities Environmental Health Screening Tool Version 2.0 (CalEnviroScreen 2.0).

COMMENT No. 17: POPULATION AND HOUSING/GROWTH INDUCEMENT – Assuming that not all cities have the staff or capacity to implement the objectives of the plans and policies of EWMPs, what are some of the unforeseen consequences of minimal to no implementation of BMPs or LID in communities/cities with low median household income? Will these cities bear an unfair burden of paying non-compliance fines?

Sincerely,

Enrique Huerta, M.S.

Attachment A

Reasonably Foreseeable Water Resources Projects in LA County - NOP: Draft PEIR, EWMP

	Project Name	Project Proponent	Project Description
1	25 mgd Sea Water Desalinization Plant in West Basin	West Basin Municipal Water District	The project proposes to construct a 25mgd Seawater Desalination Plant in West Basin's service area for potable water use. First, a Demonstration Plant will be necessary to evaluate the water quality performance and treatment stability, assess efficient energy recovery devices, optimize operational performance utilizing full scale process equipment, and to acquire the necessary data to achieve regulatory compliance and approval. West Basin and its partners will perform the full battery of water quality analyses to ensure that the demonstration project meets all Federal and State Drinking Water Standards. With the knowledge gained by operating the Demonstration Plant, West Basin expects to move forward with the planning, design, and construction of a full scale 25,000 AFY seawater desalination and education facility. West Basin anticipates operating the Demonstration Plant for at least two years while plans are being completed and finalized for the full-scale plant. The Demonstration Facility is in design.
2	AMR Conversion Project	Los Angeles County Waterworks District No. 29	The project consists of replacing the older water meters in Waterworks District No. 29. The District maintains approximately 7,700 water meters in Malibu and Topanga. About 40 percent of the meters are older than 15 years and 30 percent are 20 years or older. Meters lose accuracy over time, representing unaccounted water consumption in the District. Older meters typically under-measure water use. Replacing old water meters with automated meter reading (AMR) meters will yield timely, reliable water consumption patterns for detecting leaks and producing accurate customer bills. Higher bills with higher water use volumes will alert District customers about their water consumption habits, which is expected to encourage conservation. The current practice is to replace meters as the meters stop functioning or become unreadable. About 20% of the water meters in Malibu and Topanga have been replaced with AMR meters.
3	Agoura Road Gap Recycled Water System Expansion	Las Virgenes Municipal Water District	The project would extend the existing recycled water line along Agoura Road to serve existing customers who use potable water for landscape irrigation. Pipeline for this project is estimated at 9250 feet of 8 inch pipe and would connect to existing recycled water pipelines on both east and west sides of the extension. This would connect the gap that exists between Reyes Adobe Road and Lewis Road and improve the system hydraulics and reliability of service to customers. The estimated maximum daily demand for the Agoura Road Extension is 73 gpm.

4	Agua Amarga Lunada Canyon Habitat Restoration	Palos Verdes Peninsula Land Conservancy & City of Rancho Palos Verdes	Restore 20 acres at Agua Amarga Reserve, to provide habitat for the Federally threatened Coastal California gnatcatcher, the Federally endangered Palos Verdes blue butterfly, and the rare cactus wren. A one-mile trail in the Reserve continues to the coast. A year-round flow of water is discharged to the head of Lunada Canyon via a County of Los Angeles storm drain; the water then flows below ground through the canyon, the course of an historic blue line stream, and re-emerges at its confluence with Agua Amarga Canyon, also a blue-line stream that flows into the Santa Monica Bay. Invasive plant species provide little water infiltration and threaten to spread to the pristine lower canyon. The project will remove invasive plants, restore 18 acres of riparian and coastal sage scrub; install 2 acres of cactus scrub in highly degraded fuel modification areas; improve trails and add trail signage. Interpretive signage will educate hikers about creating wildlife-friendly fuel modification zone.
5	Aliso Creek - Limekiln Creek Restoration Project	City of Los Angeles Bureau of Sanitation Watershed Protection Division	Stormwater runoff would be diverted from Aliso Creek and from Limekiln Creek and stormwater runoff generated on site will be treated. In addition to providing water quality benefits, the project will result in the creation of self-sustaining riparian woodland vegetation and other re-vegetated areas, as well as providing recreational opportunities to area residents.The site has an area of approx. 11.8 acres and is currently used as a flood control facility, provides open space, and serves as part of Vanalden Park.Wet weather runoff and dry weather runoff from an approx. 12,091 acres that drains to the confluence of Aliso Creek and Limekiln Creek is going to be captured and conveyed to the project site for treatment.On-site generated flows will also be captured and treated.Proposed BMPs to treat captured water:Low flow channel diversions and pumping:Pre-screening devices, Bioswales, Vegetated detention basins, Landscaping with native upland and riparian species and Installing decomposed granite pathways.
6	Alondra Regional Park	Successor Agency, City of Compton	Alondra Regional Park is a multi-benefit project that serves disadvantaged communities while meeting IRWMP water management objectives. The entire site is currently an empty 18-acre lot owned by the City of Compton. This proposal is for Phase I of the project and covers 12 acres on the southern half of the parcel. The park provides recreational opportunities while improving surface water discharges into the Dominguez Channel Watershed. The project site sits low on the drainage area and will capture 1.5AF of stormwater. The park features a swale and daylighted stream to remove nutrients and pollutants that otherwise flow to local waterways. The large biofiltration field will reduce peak flows, improve water quality and occasionally serve as a recreational field. Surface water quality improvements would help the region meet requirements under the Municipal Separate Storm Sewer System Permit. The project also includes native shrubs and trees that will increase habitat for birds, butterfly species and mammals.

7	Alternative Decker Canyon Recycled Water Extension	Las Virgenes Municipal Water District	As with the original Decker Canyon Recycled Water Extension pipeline route, this alternate would primarily serve the Malibu Golf Club, the largest potable water user in the LVMWD service area. The 2007 Master Plan advocated that serving the golf course with recycled water could be an important strategy for relieving eventual stress on the potable system. The longer alternative route used in this project would also serve other demands along the way. In addition to the golf club, significant recycled water demands are expected to come from a new development (Triangle Ranch) and conversion of the existing Medea Valley ranchettes to recycled water use. The project is projected to deliver 459 AF/Y of recycled water, offsetting the same amount of potable demand that would occur if the extension were not built.
8	Andrews Park Subsurface Storage, Use and Infiltration Project	City of Redondo Beach	The project will consist of a diversion, conveyance pipes, a gross solids removal device (GSRD), an irrigation storage tank, and an infiltration gallery. Dry- and wet-weather flows will be diverted from the existing storm drain up to the maximum diversion flow rate and will then enter the storage tank through the conveyance pipe and GSRD. Once the storage tank reaches a depth of 1.5 feet, flows will be pumped to be used for onsite subsurface irrigation. When the storage volume of the irrigation tank reaches capacity, runoff will flow via an overflow pipe into the infiltration gallery, where the water will infiltrate subsurface soils. When continual flows fill the infiltration gallery and irrigation storage vault to storage capacity, diverted flows will back-up through the diversion piping and prevent additional flow diversion until capacity is freed up due to irrigation use and/or infiltration losses.
9	Arroyo Seco Confluence Gateway	Arroyo Seco Foundation	The Confluence Gateway Greenway Program will restore a 1/3 mile stretch of urban land alongside the Arroyo Seco, in the Arroyo Seco Scenic Byway Corridor, into a riparian greenway and open space park with native landscaping and a bicycle/pedestrian path. Not only would the project embody a first step in enhancing river access and recreation opportunities, it would provide a key link between the planned Los Angeles River greenways at the confluence and the Metro Rail station in the historic Lincoln Heights neighborhood, thus enabling light rail and bicycle access to the Arroyo Seco and the Los Angeles River. Ultimately, the Arroyo Seco greenway is envisioned to extend to South Pasadena, and this initial segment at the confluence would be an important hub in the regional river parkway and bicycle trail network.

10	Arroyo Seco North Branch Creek Daylighting	Arroyo Seco Foundation	Naturalize north branch storm drain and restore stream through Sycamore Grove Park. Primary Objectives Addressed by the Project: By re-establishing an urban stream, this project addresses water quality, riparian habitat restoration, groundwater recharge, flood management, and public education. The Sycamore Grove Park site is approximately 800 feet long and 400 feet wide. This 8-acre site is located in northeast Los Angeles and situated west of the SR-110 (). This site encompasses Sycamore Grove Park and is bounded by South Avenue 49 to the northeast, the SR-110 to the east, medium density residential uses to the south, and North Figueroa Street to the west. Sycamore Grove Park is a landscaped area consisting of a large lawn, playground, and parking area. The North Branch tributary is contained within a storm drain beneath Sycamore Grove Park.
11	Baldwin Lake	Los Angeles Arboretum Foundation	For centuries the waters of Baldwin Lake have sustained human endeavor. A rich historic site, its role began in the Native America period when springs and marsh, precursors to today's lake, supported nearby habitation. In the late 19th Century, Elias Jackson Baldwin chose the Lake as the center for agriculture and land development that shaped the establishment of the east San Gabriel Valley. Today, as the centerpiece of the Los Angeles County Arboretum, the Lake is an educational and scenic resource serving hundreds of thousands of visitors. Looking to the future, Baldwin Lake is envisioned as a model for community-based environmental stewardship and regional approaches to water management and conservation. Ideally located at the edge of the Raymond Basin aquifer, the Lake offers great potential as the nexus for water management and ground water recharge for the Arboretum's 127 acres, as well as the surrounding urban watershed. Educational programming that interprets the history of the Lake, particul
12	Ballona Creek Water Quality and Beach Improvement & Beneficial Use Project	City of Los Angeles Bureau of Sanitation Watershed Protection Division	Project is to implement the valuable uses of stormwater and to improve the water quality in Ballona Creek Watershed. Ballona Creek Low Flow Treatment Facility (LFTF), also known as North Outfall Treatment Facility (NOTF), is one of several projects proposed in Ballona Creek TMDL Implementation Plans for Bacteria, Metals, and Toxic Pollutants. The LFTF includes a 1 million gallon storage facility and has the capacity to treat up to 150 cfs, including screening of coarse, fine sediments, and disinfection with sodium hypochlorite. NOTF was constructed in 1987 by City of Los Angeles. The project proposes to use the existing treatment facility and construct a low-flow diversion structure in Ballona Creek Channel to divert and treat full dry-weather flow and partial wet-weather flow. 65 percent of Ballona Creek Watershed (85 square miles) is located upstream of the Project, with average dry-weather flows ranging from 14 to 25 cfs. Treatment will include coarse screens, sedimentation, filtration, and disinfection.

13	Be A Water Saver Water Conservation Program	City of Burbank Water and Power	The City of Burbank proposes to expand and increase water conservation through the expansion of a comprehensive indoor/outdoor financial incentive program that will result in immediate and sustainable water savings. The proposed Rebate Program to install 1,300 HE toilets, replace 300,000 square feet of turf with native landscapes, capture and reuse rain water 3 million gallons of rain water with rain barrels, and increase water conservation education efforts will save an estimated 500 AF of water annually. Grant funding for the proposed project will facilitate greater water savings by providing funding for greater levels of participation sooner than would be realized under typical funding efforts. Furthermore, these benefits will be realized faster by utilizing a proven system for conservation, a truly ready to proceed project. This project has the potential to double participation levels.
14	Bette Davis Park Water Recycling Project	LADWP	This project will consist of planning, design, and construction of approximately 4,625 feet of new 8-inch PVC and Ductile Iron recycled water pipeline to extend Glendale's recycled water distribution system from the intersection of Flower St. and Grandview Ave. to Bette Davis Park. Approximately 4,300 feet of pipeline will be installed within Glendale's city right of way. Through an Agreement with the City of Glendale, this project will be designed and constructed by Glendale's contractors and LADWP will reinburse Glendale for the costs. This will reduce the City's potable demand for non-potable uses. This project will offset up to 75 AFY of potable water with recycled water.
15	Big Dalton Sluiceway Rehabilitation	Los Angeles County Flood Control District	This project will upgrade the sluiceway to function as a low level outlet for regulating flows under high reservoir pressure and repair various facility components for the dam. The existing sluice gate at the upstream end is to be replaced with a new heavy duty hydraulic actuated gate, the sluiceway is to be lined with new pipe for the entire length, and a throttling valve is to be installed at the outlet. Storm releases through the sluiceway will reduce the rate of sediment accumulation and prevent sediment deposits at the face of the dam. Incoming sediments during storm flows could be routed through the reservoir to restore a more natural sediment transport system and maintain reservoir capacity
16	Big Dalton Spreading Grounds Improvements	Los Angeles County Flood Control District	The proposed project will modify and motorize the diversion box at Big Dalton Spreading Grounds to better control flows taken into the facility. The spreading basins will be reconfigured to increase percolation rates and storage capacity. An intake will be constructed from Little Dalton Diversion Channel so that additional storm flows can be diverted to the facility. A proposed outlet from Metropolitan Water District's PM-26 imported water line to the Little Dalton Diversion channel will enable imported water to be recharged at the spreading grounds.

17	Big Rock Bypass	Los Angeles County Waterworks District No. 29	The project consists of constructing three 18-inch diameter bypass water pipelines approximately 1,500 feet in length within the areas of active landslides along Pacific Coast Highway. This bypass will serve as a permanent replacement of an existing 30-inch diameter water pipeline that has experienced significant breaks resulting in large water loss. The proposed pipeline will be raised to a shallow trench and protected by a reinforced concrete box covered with steel plates to provide quick access if any leakage occurs. In addition, 18-inch Flexible Expansion Joints will also be installed at several locations with the areas of the active landslides to prevent damage or rupture of pipelines from ground movement.
18	Big Tujunga Dam Spillway Dam	Los Angeles County Flood Control District	Construction of a dam within the spillway at Big Tujunga Dam to increase the maximum storage capacity of the reservoir by approximately 705 acre-feet.
19	Big Tujunga Reservoir Sediment Removal	Los Angeles County Flood Control District	The 2009 Station Fire was the largest fire in Angeles National Forest recorded history and burned over 160,000 acres before containment on October 16, 2009. Approximately 87% of the watershed tributary to Big Tujunga Reservoir was affected. On average, a watershed will take five years or more to recover from a forest fire burn. During this time, increased amounts of debris production are anticipated from the denuded ground surface. Based on the 2010-11 storm season surveys, the total amount of sediment in the Big Tujunga Reservoir is approximately 2 million cubic yards. The County of Los Angeles Department of Public Works on behalf of the Los Angeles County Flood Control District proposes a sediment removal project to permanently remove up to 4.4 mcy of sediment from Big Tujunga Reservoir. Sediment will be excavated and transported using low emission trucks or conveyor belt to Maple Canyon Sediment Placement Site adjacent to Big Tujunga Dam. The project will be completed over four years starting in the sum
20	Boulevard Pit Stormwater Capture Project	LADWP	Acquire and develop Boulevard Pit into a multi-use retention and recharge facility to enhance stormwater conservation.
21	Branford Spreading Basin Cleanout and Pump	Los Angeles County Flood Control District	Branford Spreading Ground has very low percolation rates compared to the Tujunga Spreading Ground directly across the Tujunga Wash Channel. This project will install a pump from Branford Spreading Ground to direct water into the Tujunga Spreading Ground leading to more groundwater recharge. In addition, the project will clean out the clogging layer at the bottom of basin, which will also improve percolation rates.

22	Broadway Neighborhood Stormwater Greenway Project	City of Los Angeles Bureau of Sanitation	In partnership with Water Replenishment District of Southern California and it's "Regional and Distributed Stormwater Capture Feasibiltiy Study," the proposed project will design and implement stormwater Best Management Practices (BMPs) in the City of Los Angeles with the primary goals of TMDL compliance and stormwater infiltration. Three levels of BMPs will be developed; local parcel based Low Impact Development (LID) for 8 acres (60 residential parcels), neighborhood scale LID for 12 acres (3 residential streets and 2 blocks of commercial streets), and a sub-regional scale facility for 30 acres of mixed land uses. The local and neighborhood BMPs will capture and infiltrate all dry-weather flow and up to the ¾ inch storm. The sub regional BMP will capture up to the 2 inch storm for 30 acres. The sub regional BMP will also receive dry-weather flows from 228 acres of mixed land uses. Designs will be standardized to remote widespread implementation.
23	Bull Creek Stormwater Capture	Los Angeles County Flood Control District	Historical records show that an annual average of 625 acre-feet of water passes though Bull Creek. All flows from Bull Creek are lost to the ocean via the Los Angeles River. This project proposes conserving the lost water by diverting flows from the new LADWP facility using a rubber dam and conveying flows through a pipeline to Pacoima Spreading Grounds where it would be captured and recharge the local aquifier.
24	Bull CreekLos Angeles Reservoir Water Quality Improvement Project	LADWP	Plan, design, and construct stormwater conveyance facilities for compliance with the Enhanced Surface Water Treatment Rule. Facilities will be designed according to standards adopted by Department of Water Resources, Division of Safety of Dams. Improvements include widening a portion of the Bull Creek Extension Channel, realigning a section downstream of the widening, construction of a new diversion structure and overflow structure, and improvements to inlet structures. The Los Angeles Reservoir spillway will be removed from service. Proposed design facilitates a future stormwater capture program.
25	Burbank Partnership Water Recycling Project	LADWP	The Burbank Partnership Water Recycling Project involves the planning, design, and construction of approximately 27,000 feet of recycled water pipelines in the North Hollywood area. The three individual segments that comprise the project are the Chandler Boulevard Bike Path segment, the Whitnall Dog Park segment, and the North Hollywood Park segment. These segments will connect to Burbank's recycled water distribution system at three separate connection points and will be served by recycled water treated at the Burbank Water Reclamation Plant. This project is expected to offset up to 285 AFY of potable water with recycled water.

26	Burbank Water and Power Recycled Water System Expansion, Phase 3	City of Burbank Water and Power	The third phase of the City of Burbank's recent recycled water system expansion. As a result of previous phases, over 20 miles of recycled water pipelines have been installed resulting in the distribution of over 2,300 AF of recycled water annually; amounting to 13% of the City's water demand by the end of 2014. The City will continue expanding its recycled water distribution to offset potable water use in this phase by constructing two new recycled water pipelines known as, the LA Equestrian Center (LAEC) and the Naomi pipelines. The LAEC is located on the borders of the cities of Burbank and Los Angeles consisting of landscape areas, stables, offices and corrals; the latter requiring dust control with water trucks. The Naomi pipeline would primarily provide recycled water to a very large commercial data center and smaller customers. Completion of these pipelines will increase recycled water distribution by an estimated 61 AFY, resulting in a direct and immediate potable water savings of 61 AF annually.
27	C Marvin Brewer Desalter Brackish Groundwater Facility Expansion	West Basin Municipal Water District	The Desalter currently has the capacity to extract up to 2,000 acre-feet annually of brackish water. In 2003 the old wells at the site were decommissioned and construction began in 2005 for the first replacement well. The facility became operational in 2006 at a reduced capacity using the new well and the original RO unit. The facility has not been operating to its full capacity since it came online again in 2007 because of water quality issues. Funding is also needed to correct the water quality problems in order to get the facility to its full operating capacity. The proposed 500 AFY capacity expansion will allow the facility to become operational at its full capacity of 2,000 acre-feet per year. The site is already owned by California Water Service Co. and leased by West Basin and is developed as a desalting facility. The expansion will include the installation of a new production well, and the addition of an acid pretreatment unit and a reverse osmosis treatment unit on the existing site.
28	CITYWIDE STORM DRAIN CATCH BASIN CURB SCREENS	CITY of CALABASAS	Installation of storm drain catch basin curb screens at all applicable locations citywide. These screens are the stainless variety approved curb by Los Angeles County. The purpose of the curb screens is to stop trash from entering the catch basins which eventually discharge into both the Los Angeles River and Malibu Creek watersheds. By implementing this project, City of Calabasas will be in compliance with the Trash TMDL both for LA River and Malibu Creek watersheds. Based on studies done, reduction in trash and debris loadings will also reduce Bacterial and sediment loading in the watershed. By implementing the project, disadvantaged communities downstream of Calabasas in Los Angeles River will benefit from cleaner water. The scope work consists of measuring all catch basin openings, drafting RFP with detailed specifications, soliciting proposals from the list of Los Angeles County's approved venders, negotiating contract, implementation/construction, monitoring and reporting.

29	Caballero Creek & Los Angeles River Confluence Park	Mountains Recreation and Conservation Authority	The project will convert a 1.55 acre vacant parcel at the confluence of the Los Angeles River and Caballero Creek into a publicly-accessible natural park with habitat restoration, paths, site furnishings, water quality improvements, waterfront-access, and educational amentities. The design utilizes an innovative mixes low-tech mechanical and biological methods to filter and infiltrate storm waters increases regional water quality. The project creates a multi-benefit park that provides ecosystem services as well as cultural services, like recreation and eco-tourism. The project concept was developed in partnership with the City and County of Los Angeles who have committed to retain ownership, maintenance and operation responsibilities while allowing the Mountains Recreation and Conservation Authority (MRCA) to oversee design and construction. Nearby Reseda High School will monitor the project and use it for hands-on learning and community service opportunities.
30	Camino San Rafael Recycled Water Project	Glendale Water & Power	This project will consist of design and construction of approximately 8300 feet & 6000 feet of new 4"and 8" PVC recycled water pipeline, respectively. The project also consists of installing a two booster stations. This project will extend Glendale's recycled water distribution system to provide recycled water for common area irrigation to the Camino San Rafael Homes. This project will offset up to 90 AFY of potable water with recycled water. This will reduce the City's demand on potable water.
31	Carson Regional Water Recycling Project	West Basin Municipal Water District	The Carson Regional Water Recycling Expansion Project includes the expansion of the existing recycled water treatment facility and the construction of several laterals. This is a new demand on the system and will require expansion of treatment process capacity and conveyance to include; lateral pipelines, pump stations, treatment units, storage tanks, and waste management facilities. The BP Refinery requires single-pass reverse osmosis treatment units. BP Refinery is estimating a need of 2,100 acre-feet per year (AFY). The project will be further expanded to serve customers within the City of Los Angeles' jurisdiction for the refineries in the port area. The City will need recycled water to satisfy a use of 9,300 AFY. The City is in the preliminary design stage.

32	Chase Street Stormwater Greenway	City of Los Angeles Bureau of Sanitation, Watershed Protection Division	The Project will provide a street-end interpretive area on Bull Creek at Chase Street, and install a Stormwater Greenway along Chase Street from the eastern street end on the north side right-of-way to Hayvenhurst, and on the north and south right-of-way to Gothic. Vegetated planters in the parkways will capture and infiltrate street runoff, and will provide storm water filtration, and tree shading. The Bull Creek street-end will feature a native landscape as habitat and a recreational rest stop along the channel, and will provide an interpretive site for wildlife selected and supported by the specific native planting used in the project. A channel diversion from Bull Creek, with a pre-filter and lift station, will transfer runoff through a pipeline to a local Sod Farm where it will be used to irrigate up to 30-commercial acres. The project will integrate water conservation goals (LADWP), Storm water objectives (BOS), Economic enhancements to city property (LAWA), & public health and recreation benefits.
33	Chemical Study - Rio Hondo	Los Angeles County Flood Control District	This project will install a chemical treatment system at the Rio Hondo Coastal Spreading Grounds to remove sediment fines from the water and improve the percolation rates. A Percolation Optimization Investigation (POI) report was done by Montgomery Watson Harza (MWH) in 2003 to evaluate the County's spreading grounds and the impact of suspended solids on percolation rates. The report made a number of recommendations and the recommendations will be implemented at the Rio Hondo flood control facility. The project will install a coagulant chemical feeder and mixer at the grounds intake. This will allow the silt in the stormwater to coagulate and settle prior the cleaner water to flowing into spreading grounds. When this occurs, the spreading grounds will be able to percolate more water, thus conserving and recharging more groundwater.
34	Chevy Oaks Recycled Water Project	Glendale Water & Power	This project will consist of design and construction of approximately 920 feet, 1900 feet & 2100 feet of new 4", 8" and 12" PVC recycled water pipeline, respectively. The project also consists of installing a small booster station. This project will extend Glendale's recycled water distribution system to provide recycled water for irrigation to the Chevy Oaks Homes. This project will offset up to 30 AFY of potable water with recycled water. This will reduce the City's demand on potable water.
35	City of Carson Rain Barrel Give Away Phase II	City of Carson, Development Services Department, Engineering Services Division	At completion of a prior grant, a modest amount of money remained unused. With the acquiesence of the granting agency, the City of Carson purchased 16 rain barrels and set up a website lottery system in order to award them to residents. The response was overwhelming and with no advertising over 100 contestents were disappointed to not receive a rain barrel. This proposal would lead to the purchase of an additional 1,000 rainbarrels (depending on cost and grant amount) to restock the lottery reserves. Advertising and management of the program would be provided as part of the City of Carson grant match. More information on Fiskar Rain Barrels is available at http://www2.fiskars.com/Products/Yard-and-Garden/Rain-Barrel-Systems

36	City of Monrovia Fire Department - Training Center Water Recycling Project	Upper San Gabriel Valley Municipal Water District	Upper District in cooperation with the City and Fire Department of Monrovia are submitting this project incorporating both dry and wet weather runoff capture, treatment and storage for the new Regional Training Center. Once collected, the fire training water and the 85th percentile of a 24 hour storm event (as required by the City's MS4 permit) will be treated before being discharged into storage holding tanks which will store the treated water for future reuse by the training facility. The objective is to offset the use of potable water at the facility, eliminate storm water discharge and capture wet-weather storm water runoff. Finally, if the wet-weather event is larger than the 85th percentile, then provisions are being considered to treat as much of the additional wet-weather storm water runoff via a natural infiltration gallery (bioswale) before being discharged into the City's storm water system.
37	Cogswell Dam Inlet/Outlet Works Rehabilitation Project	Los Angeles County Flood Control District	This project will consist of refurbishment and upgrades to the outlet works, tunnels, and repair of various facility components at Cogswell Dam. The project will increase operational effectiveness for flood control and water conservation. The project will involve: a complete overhaul of the dam's entire inlet/outlet works; upgrade on the electrical control equipment; repair of downstream facilities; structural repairs on the upstream facing slab; security upgrades; and other various repairs essential for maintaining and operating a flood control facility. The overall project intent is to improve Cogswell Dam for maintaining dam safety, increased efficiency and reliability of flood control operations, and enhancement of water conservation efforts.
38	Cold Creek Diamond Acquisition	Mountains Restoration Trust	The project will acquire 4.87 acres (APN 4455-021-040) of natural undisturbed open space within the existing 1348-acre Cold Creek Preserve in the Santa Monica Mountains National Recreation Area. The acquisition is part of the state-funded Cold Creek Restoration Plan designed to acquire 539.06 acres to protect the wild and scenic, perennial Cold Creek, the habitat linkage between Topanga State Park and Malibu Creek State Park, the values of Los Angeles County's Significant Ecological Area #9, and a future venue for environmental education, research, and recreation. The area includes significant oak, sycamore, and willow communities, supports a range of wildlife including mountain lion, gray fox and raptors. The pure waters once supported the federally-listed endangered southern steelhead trout.
39	Conservation Budget Based Tiered Rate Structure	West Basin Municipal Water District	This project helps our customer agencies to develop a water conservation, budget-based rate structure for their customers. The project is beneficial to West Basin's cities and retail water agencies because it provides a pricing structure that will incentivizes its customers to conserve water. This pricing method has been used in other parts of the State and has been successssful at reducing water usage and reqarding those who do so with lower rates on their water bill.

40	Conversion of 237th Street Sump Tributary to Machado Lakes for Nutrient and Toxics TMDL BMPs	City of Torrance	This project would convert the 237th St. Sump (4.5 acre-feet) into a retention/infiltration basin BMP for Toxics and Nutrient TMDL compliance and provide open spaces for wildlife habitat. This project would install diversion structures that would divert the first 4.5 acre-feet of stormwater from a 71 acre tributary area away from the system tributary to Machado Lake (Wilmington Drain) to be retained and infiltrated in this basin. Trash screens would be installed at the catch basin in the watershed by a seperate project. During the dry season the basin would remain an open space for wild life and retain urban run-off and nutrients form 71 acres. By diverting stormwater back into this basin, the City and County storm drain systems would have more capacity during rain events. This project would also increase groundwater recharge.
41	Creek Crossings Repairs	Los Angeles County Waterworks District No. 29	This project consists of repairing corroded and deteriorated sections of aboveground pipeline and developing a Corrosion Monitoring, Control, and Maintenance Program. The Waterworks District 29 transmission water pipeline runs along the Pacific Coast Highway in Malibu. The proposed pipeline repairs are located at eight creek crossings attached to bridge structures. The project will significantly prevent future leaks and breaks in the main transmission pipeline which is the primary source of water supply for Malibu and Topanga. The development of a maintenance program is essential to maintaining water supply reliability for the region.
42	Deauville Distributed Water Reuse Project	City of Santa Monica	The project would harvest stormwater and brackish groundwater for high level treatment and non-potable use around the City, replacing the use of imported potable water. The City would install a 1.3 million gallon storage tank next to the Santa Monica Pier, Deauville lot, to harvest stormwater from the Pier sub-watershed during rain events and brackish groundwater during dry periods. The project would have an optional overflow to an infiltration gallery. A saline extraction well would be installed in sand next to the storage tank. The project would install pre-treatment catch basin inserts in the drainage area or a centralized hydrodynamic separator-screening device to remove trash and debris from stormwater. Modular nanofiltration (NF) and a saltwater reverse osmosis (RO) treatment systems at the site would treat these stored local water resources to high quality for various uses around the City in the existing recycled water system. All concentrated brine by-product would be sent to the sanitary sewer.
43	Decker Canyon Recycled Water System Extension	Las Virgenes Municipal Water District	The Decker Canyon recycled water pump station, pipeline, and tank would furnish recycled water primarily to Malibu Country Club Golf Course and Tract 47962-Sycamore Canyon Estates near the pump station location and other nearby ranchettes. The project would comprise a high-lift pump station, ~23,000 linear feet of pipeline along Westlake Blvd and Decker Canyon Rd, and a 60-foot diameter concrete tank near the corner of Decker Canyon Rd and Mulholland Hwy. Approximately 229 AF of recycled water per year would be used by this project.

44	Del Rey Lagoon Water Quality Improvement Project	City of Los Angeles Bureau of Sanitation Watershed Protection Division	The Del Rey Lagoon Water Quality Improvement Project proposes to improve water quality by reducing the source and amount of fecal indicator bacteria in the Del Rey Lagoon and surrounding waterbodies such as the Santa Monica Bay and Dockweiler Beach. Project components include stormdrain systems, vegetated swales, irrigation system retrofit, and drainage modifications. Education and outreach to the public will also be included in the project scope. The vegetated swales are designed to capture, retain, and treat runoff from the adjacent residential, transportation, and landscaped area during dry weather and partially during wet weather. Existing irrigation system will be retrofitted with a smart irrigation system to reduce excessive irrigation runoff, thereby conserving water and reducing flow. Catch basins and storm drains will be installed to capture and divert excess wet-weather flow into the sewer system. Project also includes a nature viewing deck and educational displays that explain local flora-fauna.
45	Demonstration Gardens at Los Angeles County Fire Department Stations	West Basin Municipal Water District	This project involves the installation of drought-tolerant demonstration gardens at a minimum of five fire stations throughout the West Basin service area. These gardens will replace turf and/or concrete areas that are directly in front of the fire stations in order to provide a maximum visibility to the public. The gardens will be utilizing drought-tolerant and/or native plants that will be designed by professional landscape designers that specialize in climate-appropriate plans and trees. The main goal is to provide water conservation and runoff reduction measures and secondarily to educate the public about the measures so that they can create these spaces at their own homes. West Basin strives to reduce demands by implementing conservation and education programs throughout the communities it serves. This project aims to continue implementing outdoor water conservation/education programs to influence the public to create these spaces in their own homes.
46	Devil's Gate Dam and Reservoir Water Conservation	Los Angeles County Flood Control District	This project proposes to conserve stormwater by holding a reservoir pool behind Devil's Gate Dam and diverting the water to Eaton Wash Dam and Eaton Wash Spreading Grounds for poststorm groundwater recharge. A pump will be installed in the Devil's Gate Dam reservoir and water will be pumped out and conveyed through over 26,000 feet of pipeline to Eaton Wash Dam where it can be held for recharge at downstream spreading ground facilities.

47	Devil's Gate Reservoir Sediment Removal and Management Project	Los Angeles County Flood Control District	The 2009 Station Fire was the largest fire in Angeles National Forest recorded history and burned over 160,000 acres in the San Gabriel Mountains. Approximately 68% of the watershed tributary to Devil's Gate Reservoir was burned and as a result of the storms that occurred in the two wet seasons after the fire, sediment levels in the reservoir increased by more than one million cubic yards. The County of Los Angeles Department of Public Works on behalf of the Los Angeles County Flood Control District is planning a sediment removal project of up to 4 million cubic yards. A sediment removal project from behind Devil's Gate Dam is vital to the health of the Arroyo Seco flood control system. The goal of this project is to restore flood control capacity and establish a reservoir configuration more suitable for routine maintenance activities. The project will last approximately 5 years with construction starting in 2014.
48	Dominguez Channel Greenway Phase III	Los Angeles County Flood Control District	The project will consist of development of a native landscaped greenway and bikeway/pedestrian trail along the north side of the Dominguez Channel, between Vermont Av and Normandie Av. The project will include the following: access/maintenance road improvements for the new/improved bikeway; AC repair and replacement, slurry seal, American Disability Act (ADA) access ramps and bikeway/pedestrian signage and striping. Landscaping improvements include landscaping using native and drought-tolerant plants, irrigation, as-needed fencing repair/replacement. Educational/interpretive signage will also be included along the bikeway/pedestrian trail. A study is also recommended to consider additional pedestrian crosswalks with street lamp lighting for added safety. The project is currently on hold until the LACFCD completes a study to address deficiencies in its levees.
49	Dominguez Channel Trash Reduction Via ARS Installation in the City of Carson, CA	City of Carson, Development Services Department, Engineering Services Division	This project would install Automatic Retracting Screens (ARS) in the 1800 Storm Drain Catch Basins in the City of Carson. The proponents favor ARS to collect trash at street level where the trash can be quickly and cost effectively collected weekly by the existing City Street Sweeping Contractor and eliminates the need for other more costly and difficult to maintain downstream trash control systems. This project anticipates the continuing development of local and state waterway trash control efforts and alleviates the need to develop these expensive federal, state and local regulatory mandates. In comparison to other "downstream" trash control systems, the maintenance status of ARS is easily assessed and visible to the public, which is then able to report those locations where maintenance is warranted. Since ARS systems are located in the street sweeper path, maintenance (trash collection) occurs weekly, the trash stays dry and is less subject to the degradation that generates other pollutants (bacteria).

50	Dominguez Gap Spreading Grounds West Basin Percolation Enhancement	Los Angeles County Flood Control District	The proposed project will increase the percolation within the spreading grounds facility in order to increase groundwater recharge. The preliminary scope includes removing between 5 to 10-feet of clay sediment or installing vertical trenches/drains through the poorly draining strata in the facility's west basin. Preliminary studies have been conducted including boring samples which will be used to further develop conceptual plans and estimate project benefits.
51	Duck Farm River Parkway Phase 1 - Water Enhancement Project	Watershed Conservation Authority	The Duck Farm River Park, once a natural floodplain, has been disconnected from the natural processes of the river for decades as a result of urbanization & flood management. The Project reintroduces natural systems through a riparian/pocket wetland/seasonal streambed that improves both habitat and collect, filter & infiltrate stormwater flows onsite, as well as stormwater from the adjacent freeway in collaboration w/Caltrans. The project will transition irrigation source (annually forecasted to require 19M gallons) from imported, highly processed potable water to either local groundwater or recycled water as its source of supply. The public will benefit by being reconnected to nature, the river, & from educational & interpretive programming possible at the site. This change in supply will reduce greenhouse gases & the parks carbon footprint. Outdoor classroom & interactive educational experiences with children will inspire local youth to learn more about our watershed, water conservation & sustainability
52	Eaton Spreading Grounds Intake Improvements	Los Angeles County Flood Control District	The project will increase the intake and storage capacity of the Eaton Wash Spreading Grounds facility. This will improve the facility's ability to recharge storm water into the groundwater basin, thus greatly increasing the sustainable local groundwater supply that is vital for the region. Los Angeles County Flood Control District will replace the vehicle access slab with a metal grate over the spreading grounds drop intake channel and replace the current diversion flashboards with an inflatable gate within the intake channel. These improvements in Eaton Wash Channel will better direct flows into Eaton Wash Spreading Grounds, thereby increasing its intake capacity. Basin 1 will be enlarged to increase the facility's storage capacity. The project will include improvements to the property along Sierra Madre Boulevard that will significantly improve the sustainability, aesthetics, and safety of the public walkway and street view. Two driveway entrances will be improved by increasing the gate set-back fu
53	Eaton Wash Dam Inlet/Outlet Works Rehabilitation Project	Los Angeles County Flood Control District	The dam outlet works rehabilitation project involves the removal of the existing outlet tower and gate house. Once these major components are removed, construction of a gate valve, debris racks, hydraulic power system with a block house, control systems, modification of the outlet works structure, and rehabilitation of the gate valves will commence. It will provide necessary erosion protection measures and improve water quality during low-flow releases from the dam.

54	Elysian Reservoir Water Quality Improvement Project	LADWP	LADWP is planning to cover the existing Elysian Reservoir in order to meet US EPA water quality regulations. In April 2012, the Board of Water & Power Commissioners certified the Environmental Impact Report and approved the floating cover alternative. The project will install a flexible membrane floating cover over the existing water surface. Also included are supporting infrastructure (piping, valves, liner) and site improvements (roadway paving, fencing). The reservoir will operate in the same manner, providing potable storage for the distribution system. Construction is anticipated to being by 2015. In conjuntion with the project, a Community Parks Fund was established by the Board of Commissioners. The fund is to be used for unspecified public purposes related to community parks. Best efforts will be made to locate enhancements primarily in the Elysian Park area, working together with the community and other City of Los Angeles agencies.
55	Encinal Emergency Connection	Los Angeles County Waterworks District No. 29	The project consists of adding a new emergency water source to supply Waterworks District No. 29 through a new interconnection along Encinal Canyon Road at the District boundary with Las Virgenes Municipal Water District (LVMWD). This interconnection would bring water from Metropolitan Water District of Southern California through LVMWD to provide additional supply to the District during emergencies.
56	Foothill Municipal Water District Recycled Water Project	Foothill Municipal Water District	Three hydrologic areas were studied for the development of satellite recycled water facilities. Foothill Municipal Water District (FMWD) is pursuing the construction of one facility near Berkshire Place in La Canada at this time. This project will treat wastewater using a membrane bioreactor and recharge the product into the groundwater basin using infiltration galleries underneath athletic fields for multi-beneficial uses. Cal Poly Pomona has partnered with FMWD and is developing a model that will also capture stormwater for recharge using the same infiltration galleries. A conservation and education component has also been added. Landscaping will be done to showcase drought tolerant plants at both the MBR site and school site. Tours will be available so that students may learn about stormwater capture, groundwater, recycled water, conservation and the watershed since the Arroyo Seco and Hahamongna Park are across the street. This 0.250 MGD plant will save enough energy annually for 80 homes in So. Cal.
57	Freeway Runoff Infiltration Demonstration Project	City of Santa Monica	Divert runoff from a section of the Santa Monica Freeway within the City of Santa Monica, treat and infiltrate within an area near the freeway, either a landscaped area or parking lot. The infiltration zones will be augered, if necessary to by-pass poor permeable soils. There will be pre-treatment before infiltration to remove trash, oil/grease, sediments. It will be a passive system, i.e. gravity-fed and low into the system. The treatment-infiltration areas will be areas either already with a storm drain in the area, or the creation of new ones to harvest the runoff. The goal will be to keep runoff out of the existing storm drains and out of the storm drain system.

58	Glen Oaks Storm Water Capture Project	Los Angeles Beautification Team	The Prop O funded phase I, the installation of six bio-swales and 4 dry wells. This watershed in an average rainfall year brings 300 acre feet of water to Glen Oaks Blvd. Phase I was completed in January 2014 and is currently capturing an estimated 30 acre feet per year leaving approximately 270 acre feet available for storm water capture. Phase II will consist of an additional eight dry wells for an estimated $625,000, plus the cost of City Services (Design fees, permits and over site), that will capture an additional 40 to 45 acre feet annually.
59	Glendale Narrows Habitat Enhancement Project	Council for Watershed Health	The Glendale Narrows Riverwalk will provide approximately one mile of multi-use recreation along the Los Angeles River. There are several invasive plant species that are prevalent adjacent to the Riverwalk in the Glendale Narrows area of the Los Angeles River. These invasive plant infestations jeopardize the improvements to water quality and degrade habitat for native aquatic, avian, reptile, amphibian, and invertebrate species. In collaboration with the City of Glendale Community Services & Parks Department, the Council for Watershed Health (Council) proposes to develop and manage a 3-4 year restoration project to map, control, and monitor invasive arundo and invasive palm trees in the Riverwalk project area in the Glendale Narrows sections of the Los Angeles River. A native plant propagation and replanting effort is also proposed to reestablish riparian plants.
60	Goldsworthy Groundwater Desalter Expansion	City of Torrance	The Goldsworthy Desalter (Desalter) treats water from the saline plume in the West Coast Groundwater Basin for drinking water. The brackish water is treated to meet or exceed municipal drinking water standards through the use of a reverse osmosis system. The existing Desalter produces approximately 2,000 acre-feet of potable drinking water per year. When the Desalter was originally constructed in 2002, it was designed for expansion to over 5000 acre-feet per year of drinking water. In 2012 the Water Replenishment District of Southern California had a Feasibility Study for the Expansion of Desalter prepared for and approved by the U. S. Bureau of Reclamation. The expansion would involve the installation of additional reverse osmosis treatment units, construction of two additional source water wells, transmission mains and related appurtenance. The project also diverts waste water away from Santa Monica Bay where discharges cause TMDL violations for bacteria.

61	Groundwater Reliability Improvement Project (GRIP)	Water Replenishment District of Southern California	The overarching goal of the GRIP Recycled Water Project is to offset the current use of imported water by providing up to 21,000 acre-feet per year (AFY) of recycled water as a reliable supply source for groundwater basin replenishment via the Montebello Forebay within a reasonable timeframe. The source for the recycled water will be the Los Angeles County Sanitation Districts' San Jose Creek Water Reclamation Plant (SJCWRP). Tertiary treated recycled water, advanced treated recycled water (microfiltration, reverse osmosis and advanced oxidation), or a combination of the two will be conveyed from the SJCWRP via an existing pipeline or possibly a new pipeline for recharge in the Central Groundwater Basin through the Montebello Forebay Spreading Grounds or potentially a new injection well field.
62	Groundwater System Improvement Study	LADWP	The purpose of the Groundwater System Imrovement Study (GSIS) is to perform an independent study to identify, characterize, and evaluate emerging water quality constituents for the San Fernando Basin (SFB). This will include a comprehensive analysis that will provide recommendations in developing short and long-term projects, including the design and construction of groundwater treatment facilities, to maximize the use of the groundwater supply in the SFB. As a part of the GSIS, the LADWP will be drilling approxinmately 26 new groundwater monitoring wells, and perform short-term monitoring of existing and new wells, in order to obtain supplemental water quality data necessary for planning the groundwater treatment afcilities in the SFB.
63	Groundwater Treatment Facilities	LADWP	Design and construction of groundwater treatment facilities in North Hollywwod, Rinaldi-Toluca and Tujunga Wellfields in the San Fernando Basin (SFB), with a treatment capacity of 122,900 acre-feet per year.
64	Hansen Dam Golf Course Water Recycling Project	LADWP	Construct 4,500 feet of 20" pipeline, pumping station and pipe support bridge to deliver recycled water from the Tillman Plant to the Hansen Dam Golf Course and other potential future users. Water will be pumped from the Hansen Tank.
65	Hansen Dam Water Conservation Project	Los Angeles County Flood Control District	Hansen Dam, situated adjacent to the Tujunga Wash Channel in the San Fernando Valley, is a vital part of flood control efforts in the Los Angeles River drainage basin. The primary purpose of Hansen Dam is flood control; however the opportunity exists to increase water conservation and water supply through increased water recharge upstream of the dam. The current operation of the dam allows for an average annual water conservation of 17,100 acre feet per year. The Water Conservation Project, which involves utilizing the existing Debris and Flood Control Pools for water conservation purposes by raising their respective maximum elevations to allow for additional water supply storage, would increase the dam's water conservation ability. This extra supply storage would allow for dam releases to downstream spreading grounds and other facilities fo
66	Hansen Dam Water Conservation and Supply	The River Project	Change management regime of Hansen Dam to focus on water conservation by maintaining a water conservation pool within the reservoir during and subsequent to flood season.

67	Headworks East Reservoir	LADWP	onstruction of a 110 MG buried reservoir along with a 4 MW hydroplant at the former Headworks Spreading Grounds to replace the storage capacity lost when Ivanhoe Reservoir is removed from service. Needed to bring the Water System into comliance with state and federal drinking water regulations by the regulatory deadline of November 2014
68	Headworks Ecosystem Restoration	LADWP	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
69	Herondo Parking Lot and Beach Infiltration	City of Redondo Beach	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
70	Hoover, Toll, & Keppel School Recycled Water Project	Glendale Water & Power	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
71	Humboldt Stormwater Greenway	City of Los Angeles, Bureau of Sanitation/Watershed Protection Division	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
72	Improvements to Entradero Storm Drain Channel for Storm Water Infiltration and Habitat Restoration	City of Torrance, SMBBB TMDL Jurisdictional Groups 5 & 6	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
73	Improvements to San Gabriel River Diversion and San Gabriel River Water Committee Canal and Appurtenances	Azusa Light and Water	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
74	Indirect Reuse Replenishment Project	Upper San Gabriel Valley Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
75	Johnny Carson Park Stream Restoration and Park Revitalization	City of Burbank	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
76	Jordan Downs Daylighting Study	Multi-jurisdictional Agencies-LA City Housing and Public Works	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
77	LA River Sixth Street Bridge Greenway	City of Los Angeles, Bureau of Engineering	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
78	LVMWD Woodland Hills Golf Course Recycled Water Pipeline Extension	Las Virgenes Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
79	La Puente Valley County Water District Recycled Water Project	Upper San Gabriel Valley Municipal Water District & La Puente Valley County Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
80	Landscape Irrigation Efficiency Program (LIEP)	West Basin Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
81	Large Landscape Irrigation Survey and Retrofit Project	Upper San Gabriel Valley Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
82	Las Virgenes Creek Bank Stabilization, Stream Restoration, Fish Migration Enhancement and Trail Connection	City of Calabasas	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
83	Live Oak Dam Inlet/Outlet Rehabilitation	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description

84	Live Oak Spreading Grounds Improvement Project	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
85	Lopez Spreading Grounds Improvement	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
86	Los Angeles River Center and Gardens Green Conference Center	Mountains Recreation and Conservation Authority	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
87	Los Angeles River Natural Park	City of Los Angeles Bureau of Sanitation/Watershed Protection Division	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
88	Los Angeles River Revitalization Master Plan 32 Mile Channel and Easement Greening	City of Los Angeles, Bureau of Engineering	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
89	Los Angeles State Historic Park Water Recycling Project	LADWP	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
90	Los Angeles-Burbank Groundwater System Interconnection	LADWP / Burbank Water and Power	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
91	Los Angeles-Glendale Groundwater System Interconnection	LADWP / Glendale Water and Power	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
92	Lower Los Angeles River Area Linear Water Storage Feasibility Study	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
93	Malibu Civic Center Area Recyled Water Delivery Project	City of Malibu	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
94	Malibu Civic Center Linear Park Phase 3	City of Malibu	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
95	Malibu Drought Preparedness Project: Graywater Reuse and Rainwater Harvesting	City of Malibu	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
96	Malibu Equestrian Center Runoff BMPs	City of Malibu	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
97	Malibu Rainwater Harvesting	City of Malibu	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
98	Malibu Road/Malibu Colony Stormwater Management	City of Malibu	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
99	Manhattan Strand 28th Street Subsurface Infiltration Trench	City of Manhattan Beach	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
100	Manhattan Wells Improvement	LADWP / Water Replenishment District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
101	Marsh Park, Phase II	Mountains Recreation and Conservation Authority	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
102	Medea Creek Restoration at Chumash Park	City of Agoura Hills	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
103	Miller Pit Spreading Basins	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description

104	MillerCoors Recycled Water Project	Upper San Gabriel Valley Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
105	Milton Street Park and Green Street project - Ballona Creek	Mountains Recreation and Conservation Authority	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
106	Mission Hills Green Belt	The River Project	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
107	Mission Wells Improvement	LADWP	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
108	North Hollywood Groundwater and Surface Water Benefits Study	Council for Watershed Health	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
109	North Hollywood Street Enhancement	City of Los Angeles	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
110	North Hollywood Transmission Corridor Easement Stormwater Capture Study	Council for Watershed Health	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
111	North Santa Monica Bay Firecamp 13 LID Retrofit	Los Angeles County Deprtment of Public Works	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
112	North Santa Monica Bay Probation Camp Miller LID Retrofit	Los Angeles County Department of Public Works	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
113	Northeast Gardena Recycled Water Line	West Basin Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
114	Northeast Gardena Storm Water Quality Park, Recycled Water Line, and Landscape Makeover	Council for Watershed Health	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
115	Northeast Gardena Water and Landscape Makeover, Community Involvement Module	Council for Watershed Health	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
116	Oak Park Green Streets Urban Retrofit	County of Ventura	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
117	Oak Park Medea Creek Restoration	Mountains Restoration Trust	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
118	Ocean Friendly Garden (OFG) Program	West Basin Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
119	Olive Pit Water Conservation Park	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
120	Oxford Retention Basin Multi-Use Enhancement Project	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
121	Ozone Park Runoff Treatment and ReUse Project	City of Santa Monica	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
122	Pacoima Dam Inlet/Outlet Works Rehabilitation Project	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
123	Pacoima Neighborhood Retrofit	The River Project	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description

124	Pacoima Reservoir Sediment Removal	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
125	Pacoima Spreading Grounds Improvements	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
126	Palos Verdes Peninsula Satellite Facilities Study	West Basin Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
127	Palos Verdes Recycled Water Lateral	West Basin Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
128	Pasadena Recycled Water Project	Pasadena Water and Power	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
129	Peck Water Conservation Improvement Project	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
130	Puddingstone Diversion Dam Inlet/Outlet Works Rehabilitation	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
131	Raw Wastewater Diversion to the City of Los Angeles	Las Virgenes Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
132	Recycled Water On-Site Retrofit Projects	West Basin Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
133	Recycled Water Storage and Distribution System Expansion	Las Virgenes Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
134	Recycled Water Supply for Palos Verdes Golf Course	City of Palos Verdes Estates	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
135	Recycled Water Turnouts	Water Replenishment District of Southern California	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
136	Regional Water Supply Reliability Program Phase 1b	Puente Basin Water Agency	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
137	Residential Indoor Plumbing Retrofit Kits	West Basin Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
138	Residential SMART Timer Retrofit "Plus" Program	West Basin Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
139	Rio Hondo Coastal Basin Spreading Grounds - Sediment Removal from Basins	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
140	Rockhaven Well	Crescenta Valley Water District and Glendale Water and Power	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
141	SMURRF Distributed Water Reuse Project	City of Santa Monica	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
142	San Gabriel Coastal Basin Spreading Grounds Improvement Project	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
143	San Gabriel Dam Penstock Coatings and Valve Repair	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description

144	San Gabriel Valley Water Recycling Project (Phase I - Rose Hills Expansion)	Upper San Gabriel Valley Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
145	San Gabriel Valley Water Recycling Project - Membrane Bioreactor Treatment Plant	Upper San Gabriel Valley Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
146	San Jose Creek Water Reclamation Plant East Process Optimization Project	County Sanitation Districts of Los Angeles County	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
147	San Rafael Creek Restoration	Arroyo Seco Foundation	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
148	San Ramon Canyon Stormwater Flood Reduction Project	City of Rancho Palos Verdes	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
149	Santa Anita Dam Seismic Rehabilitation	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
150	Santa Fe Dam Water Conservation Pool	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
151	Santa Fe Spillway Basins	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
152	Sawpit Debris Dam Seismic Strengthening Project	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
153	Septic-To-Sewer Drinking Waterwell Protection Project	City of Los Angeles Bureau of Sanitation/Wastewater Engineering Services Division	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
154	Sepulveda Basin Sports Complex Multi-Purpose Open Space Project	City of Los Angeles, Bureau of Engineering	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
155	Sepulveda Basin Sports Complex Riparian Buffer	City of Los Angeles, Bureau of Engineering	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
156	Sheldon Pit	LADWP	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
157	Shoestring Park	Council for Watershed Health	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
158	Silver Lake Reservoir Bypass & Regulator Station	LADWP	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
159	Six Basins and Puente Basin Integrated Water Supply Project	Puente Basin Water Agency	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
160	South Coast Botanic Gardens	Los Angeles County Department of Public Works	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
161	South El Monte Recycled Water Expansion Project Package 1	Upper San Gabriel Valley Municipal Water District & San Gabriel Valley Water Company	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
162	South El Monte Recycled Water Expansion Project	Upper San Gabriel Valley Municipal Water District & San Gabriel Valley Water Company	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description

163	South Los Angeles County Groundwater Pipline Project	Water Replenishment District of Southern California	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
164	South Park Subsurface Infiltration Gallery	City of Hermosa Beach	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
165	Southeast Gardena Recycled Water Line	West Basin Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
166	Stormwater Diversion to Walnut Avenue Sump	City of Torrance	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
167	Sun Valley Watershed Rory M. Shaw Wetlands Park Project (a.k.a. Strathern Wetlands Park)	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
168	Taylor Yard River Park Parcel G2	City of Los Angeles, Bureau of Engineering	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
169	Terminal Island WRP Advanced Water Purification Facility and Distribution System Expansion Project	LADWP	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
170	Terminal Island WRP Advanced Water Purification Facility and Distribution System Expansion	LADWP	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
171	Thousand Oaks Boulevard and Westlake Elementary Recycled Water System Extension	Las Virgenes Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
172	Topanga Connection Acquisition	Mountains Restoration Trust	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
173	Transfer Station Cover Structure and Site Improvements	City of Inglewood	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
174	Triunfo Community Park and Evanstar Park Recycled Water Extension	Las Virgenes Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
175	Trunk Sewer Rehabilitation Projects	Las Virgenes Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
176	Turf's Up Water Use Efficiency Program	West Basin Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
177	Valley Generating Station Stormwater Recharge Project	LADWP	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
178	Van Ness and Slauson Infiltration Best Management Project	City of Los Angeles Bureau of Sanitation Watershed Protection Division	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
179	Verdugo Hills Stormwater Project	City of Los Angeles, Bureau of Sanitation/Watershed Protection Division	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
180	Vermont Avenue Storm Water Capture and Green Street Beautification Project	City of Los Angeles, Bureau of Sanitation/Watershed Protection Division	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description

181	Vermont Median Stormwater Park	Council for Watershed Health	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
182	Victoria Street CSUDH Water Reuse Concept Proposal	City of Carson	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
183	WRD Eco Gardener Program	Water Replenishment District of Southern California	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
184	Walnut Creek Spreading Basin Improvements	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
185	Water Budget Based Rate Implementation	Las Virgenes Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
186	Water Star Schools Pilot Program	West Basin Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
187	Well 15	San Gabriel County Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
188	Well 7	City of Inglewood	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
189	Well No. 2 Rehabilitation	City of Inglewood	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
190	West Coast Basin Barrier Project	Los Angeles County Flood Control District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
191	Westlake Filtration Plant Enhancement & Backbone Improvements	Las Virgenes Municipal Water District	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
192	Westward Beach Road Bioinfiltration Project	City of Malibu	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
193	Westwood Neighborhood Greenway Project	City of Los Angeles Bureau of Sanitation Watershed Protection Division	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
194	Whiting St. and El Segundo Blvd. Dry Weather Diversion Structure	City of El Segundo	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description
195	Whitnall HWY Powerline Easement Stormwater Capture Project	LADWP	Please refer to the Greater Los Angeles County Integrated Regional Water Management OPTI database for a project description

2195 Sherwood Road
San Marino, CA 91108
October 28, 2014

RECEIVED
NOV 03 2014
DEPT. PUBLIC WORKS
PROJECT MANAGEMENT DIVISION II

Mr. Gregg BeGell, P.E.
County of Los Angeles Department of Public Works
Project Management Division II
900 South Fremont, 5th Floor
Alhambra, CA 91803

Dear Mr. BeGell,

The purpose of this letter is to register my support for the restoration of Baldwin Lake as part of the Enhanced Watershed Management Plan (EWMP) for the Rio Hondo Watershed. The lake has experienced significant deterioration in recent decades as a consequence of surface run-off and its very future is very much at risk. Establishing the restoration of Baldwin Lake as a priority project as part of the EWMP will ensure its status as an important ecological and historic asset for generations to come.

Many thanks for attention to this matter.

Very truly yours,

George L. Ball

Laura Rocha

From: Begell, Gregg - Consultant <gbegell@dpw.lacounty.gov>
Sent: Tuesday, October 14, 2014 4:06 PM
To: Crumpacker, Andrea; David Pohl
Subject: FW: Restoration of Baldwin Lake

Comment for record

Gregg BeGell P E
Project Manager
Project Management Division II

From: Jane Florentinus [mailto:java5@att.net]
Sent: Tuesday, October 14, 2014 1:23 PM
To: Begell, Gregg - Consultant
Subject: Restoration of Baldwin Lake

Hello Mr. BeGell,

I am a volunteer and member of the Arboretum located in Arcadia and would like to express my concern for the poor condition of the lake. As a volunteer docent I provide guided walks through the gardens as well as the lake perimeter. Visitors are dismayed and saddened to see the decline of such a great and wonderful treasure in the midst of our urban lifestyle. To have open space in our crowded communities is truly a rarity and must be preserved for future generations to appreciate. Please take my request for restoring the lake to heart.

Thank you for reading my message.

Jane Florentinus
7140 Hidden Pine Drive
San Gabriel, CA 91775
Copy of email sent to G. Osmena

Paige Anderson

To: Tom Barnes
Subject: RE: Enhanced Watershed Management Plan

From: Jane Williams [mailto:janeann64@yahoo.com]
Sent: Wednesday, October 29, 2014 2:16 PM
To: Begell, Gregg - Consultant; Osmena, Genevieve
Subject: Enhanced Watershed Management Plan

As a volunteer at the L.A. County Arboretum, I would like to voice my support for the Enhanced Watershed Management Plan (EWMP) for the Rio Hondo Watershed, in which the Arboretum resides.

Every time I set foot in the Arboretum and look around me I see what can only be described as a treasure that belongs to the people of Los Angeles County. The condition of Baldwin Lake, the centerpiece around which the Arboretum exists is deplorable. It is in desperate need of restoration. Please do all that you can to see that this plan is instituted and that, through it, funding may be found to preserve Baldwin Lake.

Laura Rocha

From: Begell, Gregg - Consultant <gbegell@dpw.lacounty.gov>
Sent: Monday, September 29, 2014 4:41 PM
To: Crumpacker, Andrea; Tom Barnes; David Pohl
Subject: FW: Comments LACFCD SCH 2014081106 NOP Enhanced Watershed Management Programs due 9.29.2014

Here are a few good comments.

Are you filing all the comments into a file or folder such that the County can view all the comments in one place?

Gregg BeGell P E
Project Manager
Project Management Division II

From: Joyce Dillard [mailto:dillardjoyce@yahoo.com]
Sent: Monday, September 29, 2014 4:30 PM
To: Begell, Gregg - Consultant
Subject: Comments LACFCD SCH 2014081106 NOP Enhanced Watershed Management Programs due 9.29.2014

The Project Description is listed on the State Clearinghouse site as:

The development of the EWMP will involve the evaluation and selection of multiple watershed control measures or best management practices (BMP) types including non-structural and distributed, centralized and regional structural BMPs. These BMPs will be implemented to meet compliance goals and strategies under the 2014 MS4 Permit. Structural BMPs involve the construction of a physical control measure to alter the hydrology and/or water quality of incoming stormwater or non-stormwater. The three major functions for structural BMPs are infiltration, water quality treatment, and storage. These are three categories of structural BMPs, defined by the runoff area treated by the BMP and the required retention volume in accordance with the Permit.

Comments:

Watershed control measures seems to be the emphasis, but that term is not defined. It seems to exclude Watershed Protection Management Measure in areas applicable to the Coastal Zone Act Reauthorization Amendments which recognizes the impact of land-use activities on estuaries, beaches, marine resources and the ocean. *Economically feasible measures* and *greatest degree of pollutant reduction achievable* are terms from that Act.

All receiving waters should be identified as to type and federal jurisdiction.

The project only allows a build environment in a watershed that should have natural lands, ecosystems and normal watershed characteristics including ambient water quality standards and the Southern California Bight.

Antidegradation procedures should be addressed.

Alternatives should be presented for non-structural or structural projects.

Surrounding land uses and settings should be addressed as should settings such as air space in relationship to bird migratory patterns. Ambient air quality should be included.

Other public agencies should be included. US Army Corps of Engineers plays a role in navigable waters as does Caltrans in its responsibility for NPDES compliance.

Private parties, such as Lauren Bon (Water Rights Draft Permit A032212) should be included.

Baselines should be presented.

There should be consistency including applications of the various General Plan and its Elements across jurisdictions. Infrastructure should be addressed including but not limited to age, condition and operations and maintenance.

Since federal regulations are enforced involving Clean Water Act Navigable Waters, we question why there is no NEPA document preparation.

Joyce Dillard
P.O. Box 31377
Los Angeles, CA 90031

Kenneth D. Hill. Ph.D., P.E.
1994 Meadowbrook Rd.
Altadena, CA 91001-3404
(626) 797-2089

October 27, 2014

Mr. Gregg BeGell, P.E.
County of Los Angeles Department of Public Works
Project Management Division II
900 South Fremont, 5th Floor
Alhambra, CA 91803

Subject: Baldwin Lake Restoration
Los Angeles County Arboretum and Botanic Garden

Dear Mr. BeGell:

As president of the L.A. County Arboretum Foundation and as a concerned citizen, I encourage you to restore Baldwin Lake at the Arboretum. I am sure you are aware that the lake has environmental significance to Los Angeles County including impact on water conservation and reclamation, regional ecology, educational opportunity, and historical importance.

The restoration of Baldwin Lake, including improvements to its function as an urban runoff collection basin, should be considered as a high-priority project within the Rio Hondo Enhanced Watershed Management Plan.

Please note the following:

1. Baldwin Lake, with a current capacity of just under four million gallons, if returned to its original depth, would provide over twelve million gallons of storage capacity. With modification, it could also serve as a significant infiltration basin for aquifer recharge.

2. Tule Pond to the north, a canal roughly 600ft. in length, is the point of entry for the urban watershed, feeding directly into Baldwin Lake. Its size, shape and location offer great potential for water quality enhancement through modification as a bioswale.

3. The Lake is a key educational, scenic, wildlife, and historic resource serving over 330,000 visitors per year, including over 16,000 elementary school students on field trips. The project would provide an unrivaled opportunity to educate a broad public about regional water management, home and community water conservation, and the role of the Raymond Basin and other key water resources that sustain us.

4. The Los Angeles Arboretum Foundation, the County's non-profit partner in operating the Arboretum, stands ready to help leverage public dollars to realize the site's unique educational potential. **At our recent strategic planning meeting (October 25th) the restoration of Baldwin Lake was the top priority for the foundation over the next year.**

In sum, Baldwin Lake offers the ideal project to both enhance watershed function and serve the public with remarkable educational, ecological, and scenic benefits. It is an exceptionally strong candidate for inclusion in the Rio Hondo Enhanced Watershed Management Plan.

Sincerely,

Kenneth D. Hill, Ph.D., P.E.
President, L.A. County Arboretum Foundation

Gmail

Marsha Perez <marshaaperez@gmail.co

Baldwin Lake

2 messages

Marsha Perez <marshaaperez@gmail.com>
To: gbegell@dwp.lacounty.gov

Thu, Oct 23, 2014 at 4:45

Dear Mr. BeGell,

I am a frequent visitor to our LA County Arboretum. Here I can find beauty, contentment and sollice for my bus lifestyle.

Baldwin Lake is one of our families favorite visiting areas. Here we find the solitude and the different forms of wildfowl very enjoyable.

Lately we find that our lake is becoming a disaster! The water is murkey, the banks are crumbling and it has a swamp like look in certain areas.

On behalf of my family and many friends and visitors I implore you to take advantage of the opportunity now available to restore the health and beauty of our beloved lake.

Thank you for your consideration.
Sincerely.
Marsha Perez
Marsha Perez

MWD
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Executive Office

September 24, 2014 **Via Mail**

Mr. Gregg BeGell
Project Management Division II
Los Angeles County Flood Control District
900 South Fremont Avenue, 5th Floor
Alhambra, CA 91803

Dear Mr. BeGell:

Notice of Preparation for the Draft Program
Environmental Impact Report for the Enhanced Watershed Management Programs

The Metropolitan Water District of Southern California (Metropolitan) has reviewed the Notice of Preparation of a Draft Program Environmental Impact Report for Enhanced Watershed Management Programs (EWMPs) in Los Angeles County, California. The Los Angeles County Flood Control District (LACFCD) is the Lead Agency. An EWMP is one regulatory compliance mechanism for stormwater management under the Los Angeles County Municipal Separate Storm Sewer System (MS4) Permit adopted in 2012 (hereafter referred to as 2012 LA County MS4 Permit). The LACFCD proposes the development of 12 separate EWMPs in their respective watershed groups. The potential benefits from the EWMPs include the following: (1) improved water quality; (2) reduction in the impairment of water bodies for Designated Beneficial Uses; (3) promotion of water conservation and supply; (4) enhanced recreational opportunities; (4) support for public education opportunities; (5) improved local aesthetics; and (6) management of flood risks. This letter contains Metropolitan's comments to the proposed project as a potentially affected agency.

Metropolitan is a public agency and regional water wholesaler. It is comprised of 26 member public agencies serving approximately 18.4 million people in portions of six counties in Southern California, including Los Angeles County. Metropolitan's mission is to provide its 5,200-square-mile service area with adequate and reliable supplies of high-quality water to meet present and future needs in an environmentally and economically responsible way. Metropolitan owns and operates numerous facilities within Los Angeles County including pipelines, a water treatment plant, power plants, dams, reservoirs, and other infrastructure associated with our water conveyance and distribution system.

The proposed project may impact Metropolitan's ability to dewater its pipelines. As part of a proactive maintenance and refurbishment program, Metropolitan periodically dewaters its treated and raw water pipelines prior to inspection, maintenance, or repair activities. Such periodic inspections and repairs are essential to prevent pipe failures and subsequent damage from high-pressure water releases. These water discharges are short-term in nature and are acknowledged by the LA County Regional Water Quality Control Board as having a *de minimus,* or low-threat, impact to the environment and aquatic life. As such, these discharges are categorized as "Conditionally Exempt Essential Non-Storm Water Discharges" under the 2012 LA County MS4 Permit.

Metropolitan requests that LACFCD and its co-permitees continue to allow for periodic discharges by potable water systems into the MS4 under the proposed EWMPs. These "Conditionally Exempt Essential Non-Storm Water Discharges" are specifically called out as permissible under the 2012 LA County MS4 Permit. Per the conditions set forth in the 2012 LA County MS4 Permit, Metropolitan will continue to follow industry-accepted best management practices (BMPs) for its potable water system discharges. BMPs include, but are not limited to, the following: (a) advanced notification of LACFCD 72 hours prior to all planned discharges greater than 100,000 gallons and as soon as possible after an unplanned discharge greater than 100,000 gallons; (b) dechlorination; (c) monitoring for pollutants of concern; and (d) recordkeeping (e.g., date, time, and location of discharge, discharge pathway, receiving water, total number of gallons discharged, BMPs used, etc.).

Based on a review of the proposed project boundaries, the proposed project has potential to impact Metropolitan facilities. Metropolitan must be allowed to maintain its rights-of-way and requires unobstructed access to its facilities in order to maintain and repair its system. Any future design plans associated with this project should be submitted to the attention of Metropolitan's Substructures Team. Approval of the project should be contingent on Metropolitan's approval of design plans for portions of the proposed project that could impact its facilities.

Detailed prints of drawings of Metropolitan's pipelines and rights-of-way may be obtained by calling Metropolitan's Substructures Information Line at (213) 217-6564. To assist the applicant in preparing plans that are compatible with Metropolitan's facilities and easements, we have enclosed a copy of the "Guidelines for Developments in the Area of Facilities, Fee Properties, and/or Easement of The Metropolitan Water District of Southern California." Please note that all submitted designs or plans must clearly identify Metropolitan's facilities and rights-of-way.
We appreciate the opportunity to provide input to your planning process and we look forward to receiving future documentation and plans for this project. For further assistance, please contact Ms. Michelle Morrison at (213) 217-7906.

Very truly yours,

Deborah Day

for Deirdre West
Manager, Environmental Planning Team

MM:rdl
J:\Environmental Planning&Compliance\COMPLETED JOBS\September2014\EPT Job No. 20140944MIS

Enclosures: Planning Guidelines and Map of Metropolitan Facilities in Project Vicinity

Guidelines for Developments in the Area of Facilities, Fee Properties, and/or Easements of The Metropolitan Water District of Southern California

1. Introduction

a. The following general guidelines should be followed for the design of proposed facilities and developments in the area of Metropolitan's facilities, fee properties, and/or easements.

b. We require that 3 copies of your tentative and final record maps, grading, paving, street improvement, landscape, storm drain, and utility plans be submitted for our review and written approval as they pertain to Metropolitan's facilities, fee properties and/or easements, prior to the commencement of any construction work.

2. Plans, Parcel and Tract Maps

The following are Metropolitan's requirements for the identification of its facilities, fee properties, and/or easements on your plans, parcel maps and tract maps:

a. Metropolitan's fee properties and/or easements and its pipelines and other facilities must be fully shown and identified as Metropolitan's on all applicable plans.

b. Metropolitan's fee properties and/or easements must be shown and identified as Metropolitan's with the official recording data on all applicable parcel and tract maps.

c. Metropolitan's fee properties and/or easements and existing survey monuments must be dimensionally tied to the parcel or tract boundaries.

d. Metropolitan's records of surveys must be referenced on the parcel and tract maps.

3. Maintenance of Access Along Metropolitan's Rights-of-Way

a. Proposed cut or fill slopes exceeding 10 percent are normally not allowed within Metropolitan's fee properties or easements. This is required to facilitate the use of construction and maintenance equipment, and provide access to its aboveground and belowground facilities.

b. We require that 16-foot-wide commercial-type driveway approaches be constructed on both sides of all streets crossing Metropolitan's rights-of-way. Openings are required in any median island. Access ramps, if necessary, must be at least 16-feet-wide. Grades of ramps are normally not allowed to exceed 10 percent. If the slope of an access ramp must exceed 10 percent due to the topography, the ramp must be paved. We require a 40-foot-long level area on the driveway approach to access ramps where the ramp meets the street. At Metropolitan's fee properties, we may require fences and gates.

c. The terms of Metropolitan's permanent easement deeds normally preclude the building or maintenance of structures of any nature or kind within its easements, to ensure safety and avoid interference with operation and maintenance of Metropolitan's pipelines or other facilities. Metropolitan must have vehicular access along the easements at all times for inspection, patrolling, and for maintenance of the pipelines and other facilities on a routine basis. We require a 20-foot-wide clear zone around all above-ground facilities for this routine access. This clear zone should slope away from our facility on a grade not to exceed 2 percent. We must also have access along the easements with construction equipment. An example of this is shown on Figure 1.

d. The footings of any proposed buildings adjacent to Metropolitan's fee properties and/or easements must not encroach into the fee property or easement or impose additional loading on Metropolitan's pipelines or other facilities therein. A typical situation is shown on Figure 2. Prints of the detail plans of the footings for any building or structure adjacent to the fee property or easement must be submitted for our review and written approval as they pertain to the pipeline or other facilities therein. Also, roof eaves of buildings adjacent to the easement or fee property must not overhang into the fee property or easement area.

e. Metropolitan's pipelines and other facilities, e.g. structures, manholes, equipment, survey monuments, etc. within its fee properties and/or easements must be protected from damage by the easement holder on Metropolitan's property or the property owner where Metropolitan has an easement, at no expense to Metropolitan. If the facility is a cathodic protection station it shall be located prior to any grading or excavation. The exact location, description and way of protection shall be shown on the related plans for the easement area.

4. Easements on Metropolitan's Property

a. We encourage the use of Metropolitan's fee rights-of-way by governmental agencies for public street and utility purposes, provided that such use does not interfere with Metropolitan's use of the property, the entire width of the property is accepted into the agency's public street system and fair market value is paid for such use of the right-of-way.

b. Please contact the Director of Metropolitan's Right of Way and Land Division, telephone (213) 250-6302, concerning easements for landscaping, street, storm drain, sewer, water or other public facilities proposed within Metropolitan's fee properties. A map and legal description of the requested easements must be submitted. Also, written evidence must be submitted that shows the city or county will accept the easement for the specific purposes into its public system. The grant of the easement will be subject to Metropolitan's rights to use its land for water pipelines and related purposes to the same extent as if such grant had not been made. There will be a charge for the easement. Please note that, if entry is required on the property prior to issuance of the easement, an entry permit must be obtained. There will also be a charge for the entry permit.

5. Landscaping

Metropolitan's landscape guidelines for its fee properties and/or easements are as follows:

a. A green belt may be allowed within Metropolitan's fee property or easement.

b. All landscape plans shall show the location and size of Metropolitan's fee property and/or easement and the location and size of Metropolitan's pipeline or other facilities therein.

c. Absolutely no trees will be allowed within 15 feet of the centerline of Metropolitan's existing or future pipelines and facilities.

d. Deep-rooted trees are prohibited within Metropolitan's fee properties and/or easements. Shallow-rooted trees are the only trees allowed. The shallow-rooted trees will not be permitted any closer than 15 feet from the centerline of the pipeline, and such trees shall not be taller than 25 feet with a root spread no greater than 20 feet in diameter at maturity. Shrubs, bushes, vines, and ground cover are permitted, but larger shrubs and bushes should not be planted directly over our pipeline. Turf is acceptable. We require submittal of landscape plans for Metropolitan's prior review and written approval. (See Figure 3).

e. The landscape plans must contain provisions for Metropolitan's vehicular access at all times along its rights-of-way to its pipelines or facilities therein. Gates capable of accepting Metropolitan's locks are required in any fences across its rights-of-way. Also, any walks or drainage facilities across its access route must be constructed to AASHTO H-20 loading standards.

f. Rights to landscape any of Metropolitan's fee properties must be acquired from its Right of Way and Land Division. Appropriate entry permits must be obtained prior to any entry on its property. There will be a charge for any entry permit or easements required.

6. Fencing

Metropolitan requires that perimeter fencing of its fee properties and facilities be constructed of universal chain link, 6 feet in height and topped with 3 strands of barbed wire angled upward and outward at a 45 degree angle or an approved equal for a total fence height of 7 feet. Suitable substitute fencing may be considered by Metropolitan. (Please see Figure 5 for details).

7. Utilities in Metropolitan's Fee Properties and/or Easements or Adjacent to Its Pipeline in Public Streets

Metropolitan's policy for the alinement of utilities permitted within its fee properties and/or easements and street rights-of-way is as follows:

a. Permanent structures, including catch basins, manholes, power poles, telephone riser boxes, etc., shall not be located within its fee properties and/or easements.

b. We request that permanent utility structures within public streets, in which Metropolitan's facilities are constructed under the Metropolitan Water District Act, be placed as far from our pipeline as possible, but not closer than 5 feet from the outside of our pipeline.

c. The installation of utilities over or under Metropolitan's pipeline(s) must be in accordance with the requirements shown on the enclosed prints of Drawings Nos. C-11632 and C-9547. Whenever possible we request a minimum of one foot clearance between Metropolitan's pipe and your facility. Temporary support of Metropolitan's pipe may also be required at undercrossings of its pipe in an open trench. The temporary support plans must be reviewed and approved by Metropolitan.

d. Lateral utility crossings of Metropolitan's pipelines must be as perpendicular to its pipeline alinement as practical. Prior to any excavation our pipeline shall be located manually and any excavation within two feet of our pipeline must be done by hand. This shall be noted on the appropriate drawings.

e. Utilities constructed longitudinally within Metropolitan's rights-of-way must be located outside the theoretical trench prism for uncovering its pipeline and must be located parallel to and as close to its rights-of-way lines as practical.

f. When piping is jacked or installed in jacked casing or tunnel under Metropolitan's pipe, there must be at least two feet of vertical clearance between the bottom of Metropolitan's pipe and the top of the jacked pipe, jacked casing or tunnel. We also require that detail drawings of the shoring for the jacking or tunneling pits be submitted for our review and approval. Provisions must be made to grout any voids around the exterior of the jacked pipe, jacked casing or tunnel. If the piping is installed in a jacked casing or tunnel the annular space between the piping and the jacked casing or tunnel must be filled with grout.

g. Overhead electrical and telephone line requirements:

1) Conductor clearances are to conform to the California State Public Utilities Commission, General Order 95, for Overhead Electrical Line Construction or at a greater clearance if required by Metropolitan. Under no circumstances shall clearance be less than 35 feet.

2) A marker must be attached to the power pole showing the ground clearance and line voltage, to help prevent damage to your facilities during maintenance or other work being done in the area.

3) Line clearance over Metropolitan's fee properties and/or easements shall be shown on the drawing to indicate the lowest point of the line under the most adverse conditions including consideration of sag, wind load, temperature change, and support type. We require that overhead lines be located at least 30 feet laterally away from all above-ground structures on the pipelines.

4) When underground electrical conduits, 120 volts or greater, are installed within Metropolitan's fee property and/or easement, the conduits must be incased in a minimum of three inches of red concrete. Where possible, above ground warning signs must also be placed at the right-of-way lines where the conduits enter and exit the right-of-way.

h. The construction of sewerlines in Metropolitan's fee properties and/or easements must conform to the California Department of Health Services Criteria for the Separation of Water Mains and Sanitary Services and the local City or County Health Code Ordinance as it relates to installation of sewers in the vicinity of pressure waterlines. The construction of sewerlines should also conform to these standards in street rights-of- way.

i. Cross sections shall be provided for all pipeline crossings showing Metropolitan's fee property and/or easement limits and the location of our pipeline(s). The exact locations of the crossing pipelines and their elevations shall be marked on as-built drawings for our information.

j. Potholing of Metropolitan's pipeline is required if the vertical clearance between a utility and Metropolitan's pipeline is indicated on the plan to be one foot or less. If the indicated clearance is between one and two feet, potholing is suggested. Metropolitan will provide a representative to assists others in locating and identifying its pipeline. Two-working days notice is requested.

k. Adequate shoring and bracing is required for the full depth of the trench when the excavation encroaches within the zone shown on Figure 4.

l. The location of utilities within Metropolitan's fee property and/or easement shall be plainly marked to help prevent damage during maintenance or other work done in the area. Detectable tape over buried utilities should be placed a minimum of 12 inches above the utility and shall conform to the following requirements:

1) Water pipeline: A two-inch blue warning tape shall be imprinted with:

"CAUTION BURIED WATER PIPELINE"

2) Gas, oil, or chemical pipeline: A two-inch yellow warning tape shall be imprinted with:

"CAUTION BURIED _______ PIPELINE"

3) Sewer or storm drain pipeline: A two-inch green warning tape shall be imprinted with:

"CAUTION BURIED ______ PIPELINE"

4) Electric, street lighting, or traffic signals conduit: A two-inch red warning tape shall be imprinted with:

"CAUTION BURIED _______ CONDUIT"

5) Telephone, or television conduit: A two-inch orange warning tape shall be imprinted with:

"CAUTION BURIED _______ CONDUIT"

m. Cathodic Protection requirements:

1) If there is a cathodic protection station for Metropolitan's pipeline in the area of the proposed work, it shall be located prior to any grading or excavation. The exact location, description and manner of protection shall be shown on all applicable plans. Please contact Metropolitan's Corrosion Engineering Section, located at Metropolitan's F. E. Weymouth Softening and Filtration Plant, 700 North Moreno Avenue, La Verne, California 91750, telephone (714) 593-7474, for the locations of Metropolitan's cathodic protection stations.

2) If an induced-current cathodic protection system is to be installed on any pipeline crossing Metropolitan's pipeline, please contact Mr. Wayne E. Risner at (714) 593-7474 or (213) 250-5085. He will review the proposed system and determine if any conflicts will arise with the existing cathodic protection systems installed by Metropolitan.

3) Within Metropolitan's rights-of-way, pipelines and carrier pipes (casings) shall be coated with an approved protective coating to conform to Metropolitan's requirements, and shall be maintained in a neat and orderly condition as directed by Metropolitan. The application and monitoring of cathodic protection on the pipeline and casing shall conform to Title 49 of the Code of Federal Regulations, Part 195.

4) If a steel carrier pipe (casing) is used:

(a) Cathodic protection shall be provided by use of a sacrificial magnesium anode (a sketch showing the cathodic protection details can be provided for the designers information).

(b) The steel carrier pipe shall be protected with a coal tar enamel coating inside and out in accordance with AWWA C203 specification.

n. All trenches shall be excavated to comply with the CAL/OSHA Construction Safety Orders, Article 6, beginning with Sections 1539 through 1547. Trench backfill shall be placed in 8-inch lifts and shall be compacted to 95 percent relative compaction (ASTM D698) across roadways and through protective dikes. Trench backfill elsewhere will be compacted to 90 percent relative compaction (ASTM D698).

o. Control cables connected with the operation of Metropolitan's system are buried within streets, its fee properties and/or easements. The locations and elevations of these cables shall be shown on the drawings. The drawings shall note that prior to any excavation in the area, the control cables shall be located and measures shall be taken by the contractor to protect the cables in place.

p. Metropolitan is a member of Underground Service Alert (USA). The contractor (excavator) shall contact USA at 1-800-422-4133 (Southern California) at least 48 hours prior to starting any excavation work. The contractor will be liable for any damage to Metropolitan's facilities as a result of the construction.

8. Paramount Right

Facilities constructed within Metropolitan's fee properties and/or easements shall be subject to the paramount right of Metropolitan to use its fee properties and/or easements for the purpose for which they were acquired. If at any time Metropolitan or its assigns should, in the exercise of their rights, find it necessary to remove any of the facilities from the fee properties and/or easements, such removal and replacement shall be at the expense of the owner of the facility.

9. Modification of Metropolitan's Facilities

When a manhole or other of Metropolitan's facilities must be modified to accommodate your construction or reconstruction, Metropolitan will modify the facilities with its forces. This should be noted on the construction plans. The estimated cost to perform this modification will be given to you and we will require a deposit for this amount before the work is performed. Once the deposit is received, we will schedule the work. Our forces will coordinate the work with your contractor. Our final billing will be based on actual cost incurred, and will include materials, construction, engineering plan review, inspection, and administrative overhead charges calculated in accordance with Metropolitan's standard accounting practices. If the cost is less than the deposit, a refund will be made; however, if the cost exceeds the deposit, an invoice will be forwarded for payment of the additional amount.

10. Drainage

a. Residential or commercial development typically increases and concentrates the peak storm water runoff as well as the total yearly storm runoff from an area, thereby increasing the requirements for storm drain facilities downstream of the development. Also, throughout the year water from landscape irrigation, car washing, and other outdoor domestic water uses flows into the storm drainage system resulting in weed abatement, insect infestation, obstructed access and other problems. Therefore, it is Metropolitan's usual practice not to approve plans that show discharge of drainage from developments onto its fee properties and/or easements.

b. If water must be carried across or discharged onto Metropolitan's fee properties and/or easements, Metropolitan will insist that plans for development provide that it be carried by closed conduit or lined open channel approved in writing by Metropolitan. Also the drainage facilities must be maintained by others, e.g., city, county, homeowners association, etc. If the development proposes changes to existing drainage features, then the developer shall make provisions to provide for replacement and these changes must be approved by Metropolitan in writing.

11. Construction Coordination

During construction, Metropolitan's field representative will make periodic inspections. We request that a stipulation be added to the plans or specifications for notification of Mr. __________ of Metropolitan's Operations Services Branch, telephone (213) 250-____, at least two working days prior to any work in the vicinity of our facilities.

12. Pipeline Loading Restrictions

a. Metropolitan's pipelines and conduits vary in structural strength, and some are not adequate for AASHTO H-20 loading. Therefore, specific loads over the specific sections of pipe or conduit must be reviewed and approved by Metropolitan. However, Metropolitan's pipelines are typically adequate for AASHTO H-20 loading provided that the cover over the pipeline is not less than four feet or the cover is not substantially increased. If the temporary cover over the pipeline during construction is between three and four feet, equipment must restricted to that which

imposes loads no greater than AASHTO H-10. If the cover is between two and three feet, equipment must be restricted to that of a Caterpillar D-4 tract-type tractor. If the cover is less than two feet, only hand equipment may be used. Also, if the contractor plans to use any equipment over Metropolitan's pipeline which will impose loads greater than AASHTO H-20, it will be necessary to submit the specifications of such equipment for our review and approval at least one week prior to its use. More restrictive requirements may apply to the loading guideline over the San Diego Pipelines 1 and 2, portions of the Orange County Feeder, and the Colorado River Aqueduct. Please contact us for loading restrictions on all of Metropolitan's pipelines and conduits.

b. The existing cover over the pipeline shall be maintained unless Metropolitan determines that proposed changes do not pose a hazard to the integrity of the pipeline or an impediment to its maintenance.

13. <u>Blasting</u>

a. At least 20 days prior to the start of any drilling for rock excavation blasting, or any blasting, in the vicinity of Metropolitan's facilities, a two-part preliminary conceptual plan shall be submitted to Metropolitan as follows:

b. Part 1 of the conceptual plan shall include a complete summary of proposed transportation, handling, storage, and use of explosions.

c. Part 2 shall include the proposed general concept for blasting, including controlled blasting techniques and controls of noise, fly rock, airblast, and ground vibration.

14. <u>CEQA Requirements</u>

a. <u>When Environmental Documents Have Not Been Prepared</u>

1) Regulations implementing the California Environmental Quality Act (CEQA) require that Metropolitan have an opportunity to consult with the agency or consultants preparing any environmental documentation. We are required to review and consider the environmental effects of the project as shown in the Negative Declaration or Environmental Impact Report (EIR) prepared for your project before committing Metropolitan to approve your request.

2) In order to ensure compliance with the regulations implementing CEQA where Metropolitan is not the Lead Agency, the following minimum procedures to ensure compliance with the Act have been established:

a) Metropolitan shall be timely advised of any determination that a Categorical Exemption applies to the project. The Lead Agency is to advise Metropolitan that it and other agencies participating in the project have complied with the requirements of CEQA prior to Metropolitan's participation.

b) Metropolitan is to be consulted during the preparation of the Negative Declaration or EIR.

c) Metropolitan is to review and submit any necessary comments on the Negative Declaration or draft EIR.

d) Metropolitan is to be indemnified for any costs or liability arising out of any violation of any laws or regulations including but not limited to the California Environmental Quality Act and its implementing regulations.

b. <u>When Environmental Documents Have Been Prepared</u>

If environmental documents have been prepared for your project, please furnish us a copy for our review and files in a timely manner so that we may have sufficient time to review and comment. The following steps must also be accomplished:

1) The Lead Agency is to advise Metropolitan that it and other agencies participating in the project have complied with the requirements of CEQA prior to Metropolitan's participation.

2) You must agree to indemnify Metropolitan, its officers, engineers, and agents for any costs or liability arising out of any violation of any laws or regulations including but not limited to the California Environmental Quality Act and its implementing regulations.

15. <u>Metropolitan's Plan-Review Cost</u>

a. An engineering review of your proposed facilities and developments and the preparation of a letter response

giving Metropolitan's comments, requirements and/or approval that will require 8 man-hours or less of effort is typically performed at no cost to the developer, unless a facility must be modified where Metropolitan has superior rights. If an engineering review and letter response requires more than 8 man-hours of effort by Metropolitan to determine if the proposed facility or development is compatible with its facilities, or if modifications to Metropolitan's manhole(s) or other facilities will be required, then all of Metropolitan's costs associated with the project must be paid by the developer, unless the developer has superior rights.

b. A deposit of funds will be required from the developer before Metropolitan can begin its detailed engineering plan review that will exceed 8 hours. The amount of the required deposit will be determined after a cursory review of the plans for the proposed development.

c. Metropolitan's final billing will be based on actual cost incurred, and will include engineering plan review, inspection, materials, construction, and administrative overhead charges calculated in accordance with Metropolitan's standard accounting practices. If the cost is less than the deposit, a refund will be made; however, if the cost exceeds the deposit, an invoice will be forwarded for payment of the additional amount. Additional deposits may be required if the cost of Metropolitan's review exceeds the amount of the initial deposit.

16. Caution

We advise you that Metropolitan's plan reviews and responses are based upon information available to Metropolitan which was prepared by or on behalf of Metropolitan for general record purposes only. Such information may not be sufficiently detailed or accurate for your purposes. No warranty of any kind, either express or implied, is attached to the information therein conveyed as to its accuracy, and no inference should be drawn from Metropolitan's failure to comment on any aspect of your project. You are therefore cautioned to make such surveys and other field investigations as you may deem prudent to assure yourself that any plans for your project are correct.

17. Additional Information

Should you require additional information, please contact:

Civil Engineering Substructures Section
Metropolitan Water District
of Southern California
P.O. Box 54153
Los Angeles, California 90054-0153
(213) 217-6000

JEH/MRW/lk

Rev. January 22, 1989

Encl.

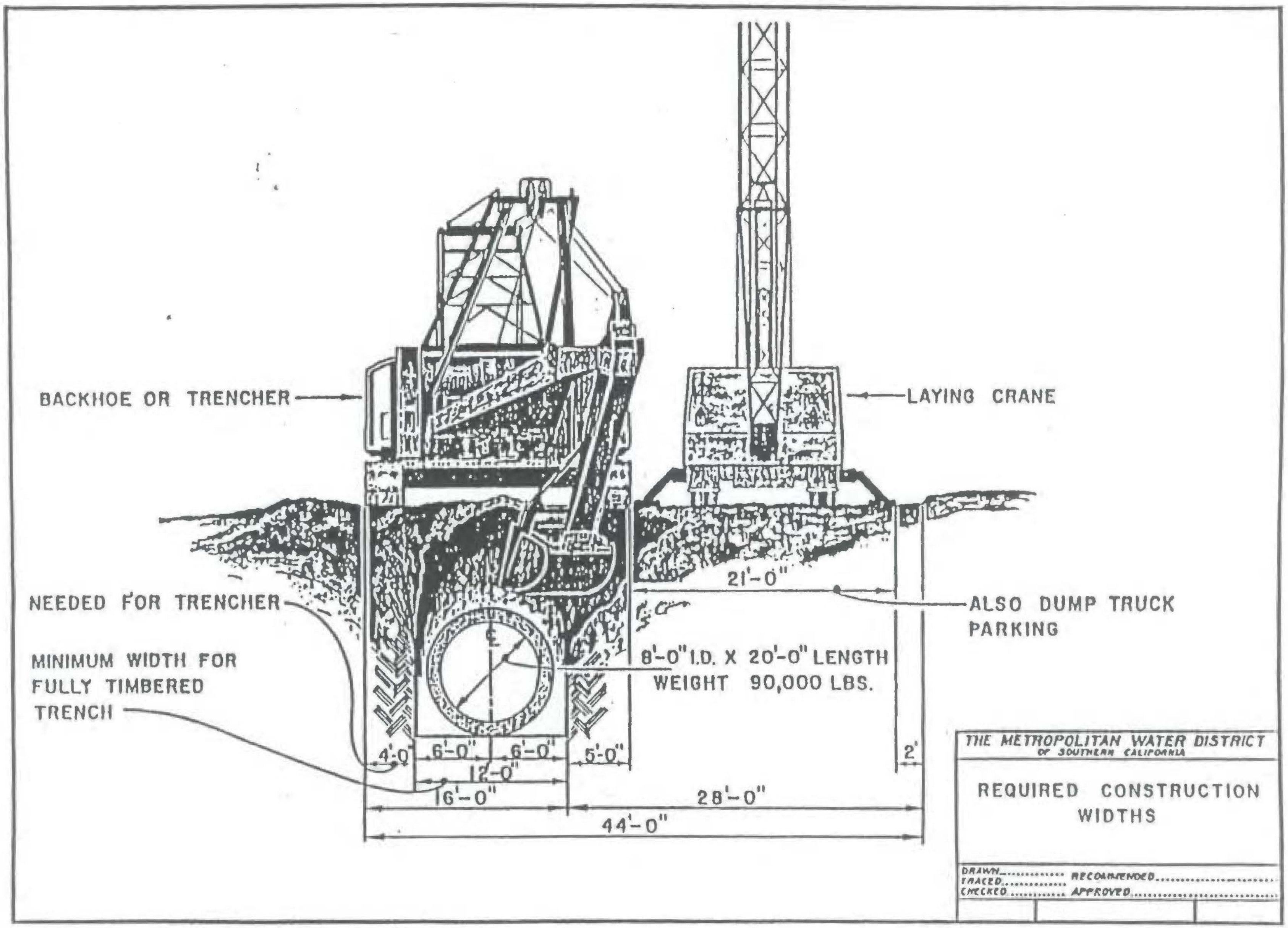
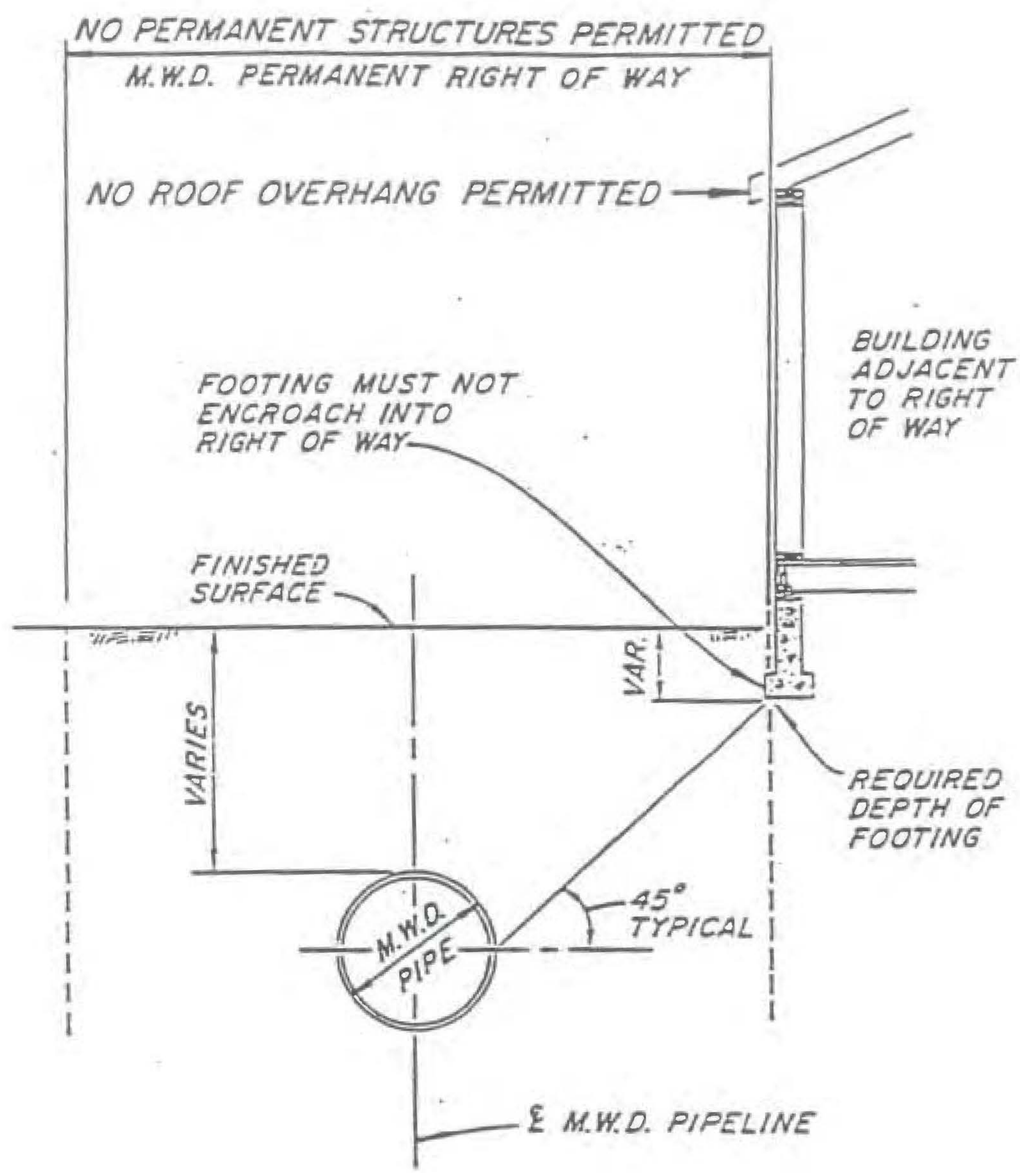

BACKHOE OR TRENCHER
LAYING CRANE
NEEDED FOR TRENCHER
MINIMUM WIDTH FOR FULLY TIMBERED TRENCH
21'-0"
ALSO DUMP TRUCK PARKING
8'-0" I.D. X 20'-0" LENGTH
WEIGHT 90,000 LBS.
4'-0"
6'-0"
6'-0"
5'-0"
2'
12'-0"
16'-0"
28'-0"
44'-0"
THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA
REQUIRED CONSTRUCTION WIDTHS
DRAWN
TRACED
CHECKED
RECOMMENDED
APPROVED

FIGURE 1



NOTE: M.W.D. PIPELINE SIZE, DEPTH, LOCATION AND WIDTH OF PERMANENT RIGHT OF WAY VARIES.

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

REQUIREMENTS FOR BUILDINGS AND FOOTINGS ADJACENT TO M.W.D. RIGHT OF WAY

DRAWN ______ RECOMMENDED ______
TRACED ______
CHECKED ______ APPROVED ______

FIGURE 2

RB-AR 9009

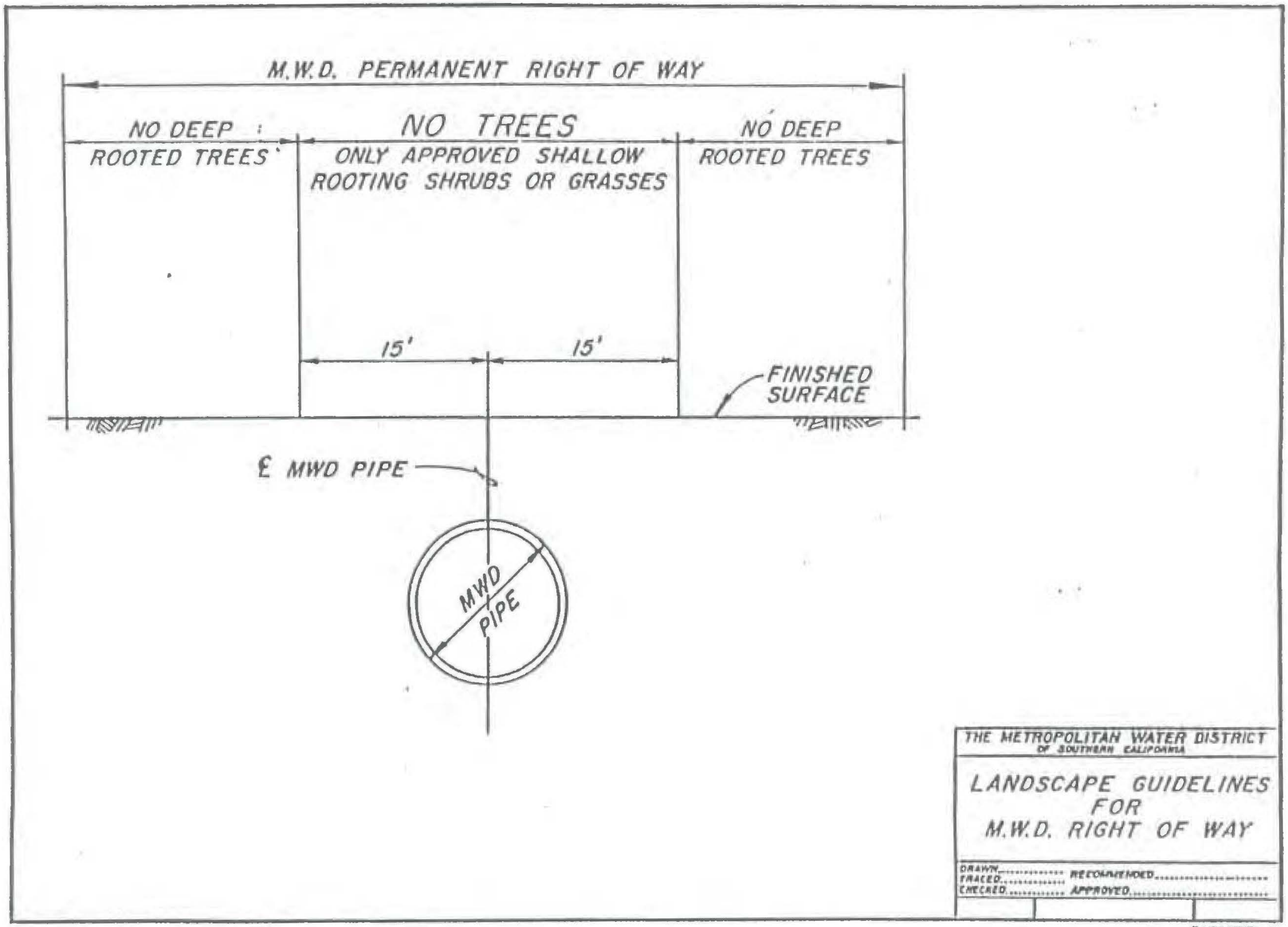

M.W.D. PERMANENT RIGHT OF WAY
NO DEEP ROOTED TREES
NO TREES
ONLY APPROVED SHALLOW ROOTING SHRUBS OR GRASSES
NO DEEP ROOTED TREES
15'
15'
FINISHED SURFACE
℄ MWD PIPE
MWD PIPE
THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA
LANDSCAPE GUIDELINES FOR M.W.D. RIGHT OF WAY
DRAWN
TRACED
CHECKED
RECOMMENDED
APPROVED

FIGURE 3

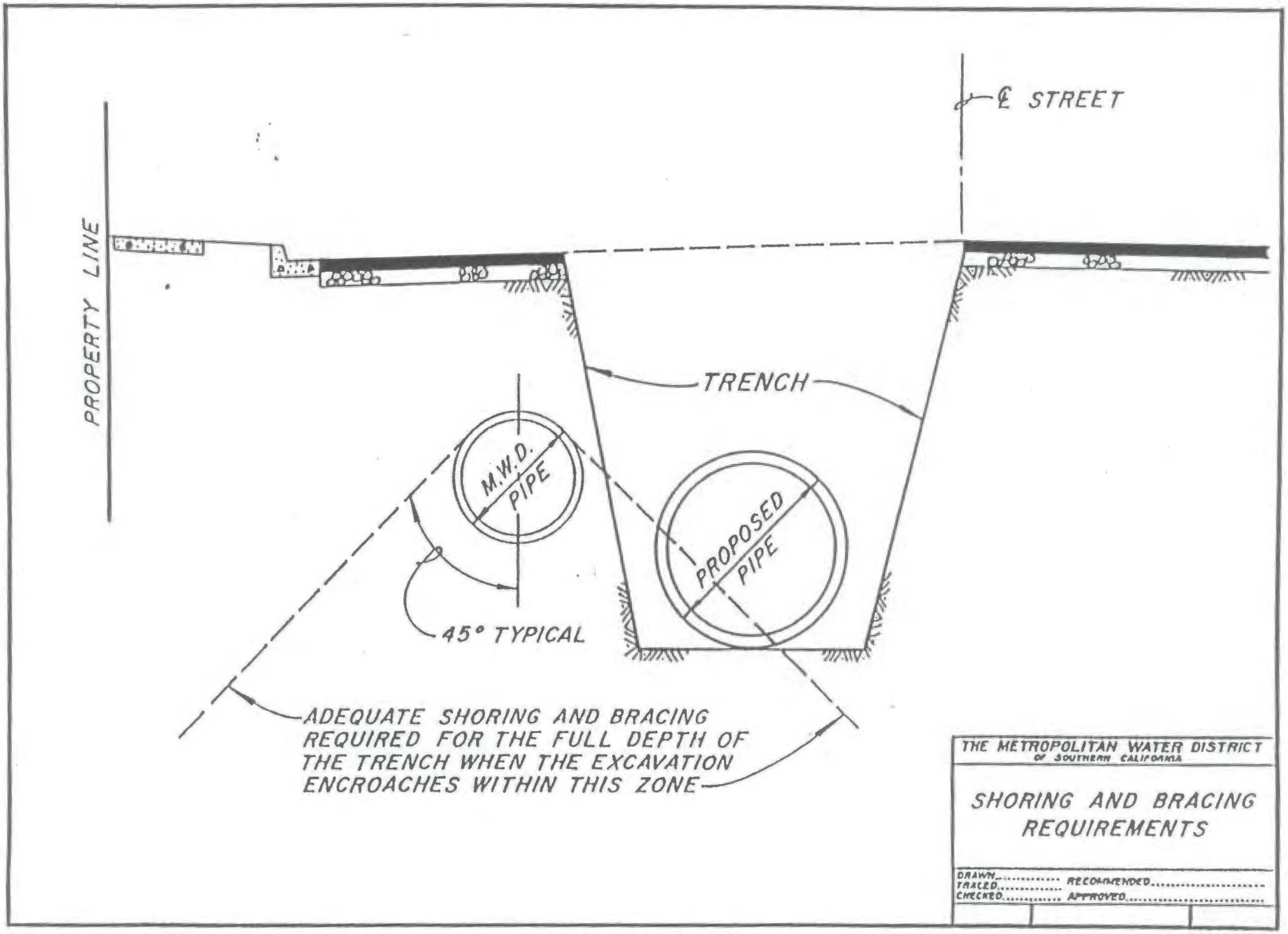
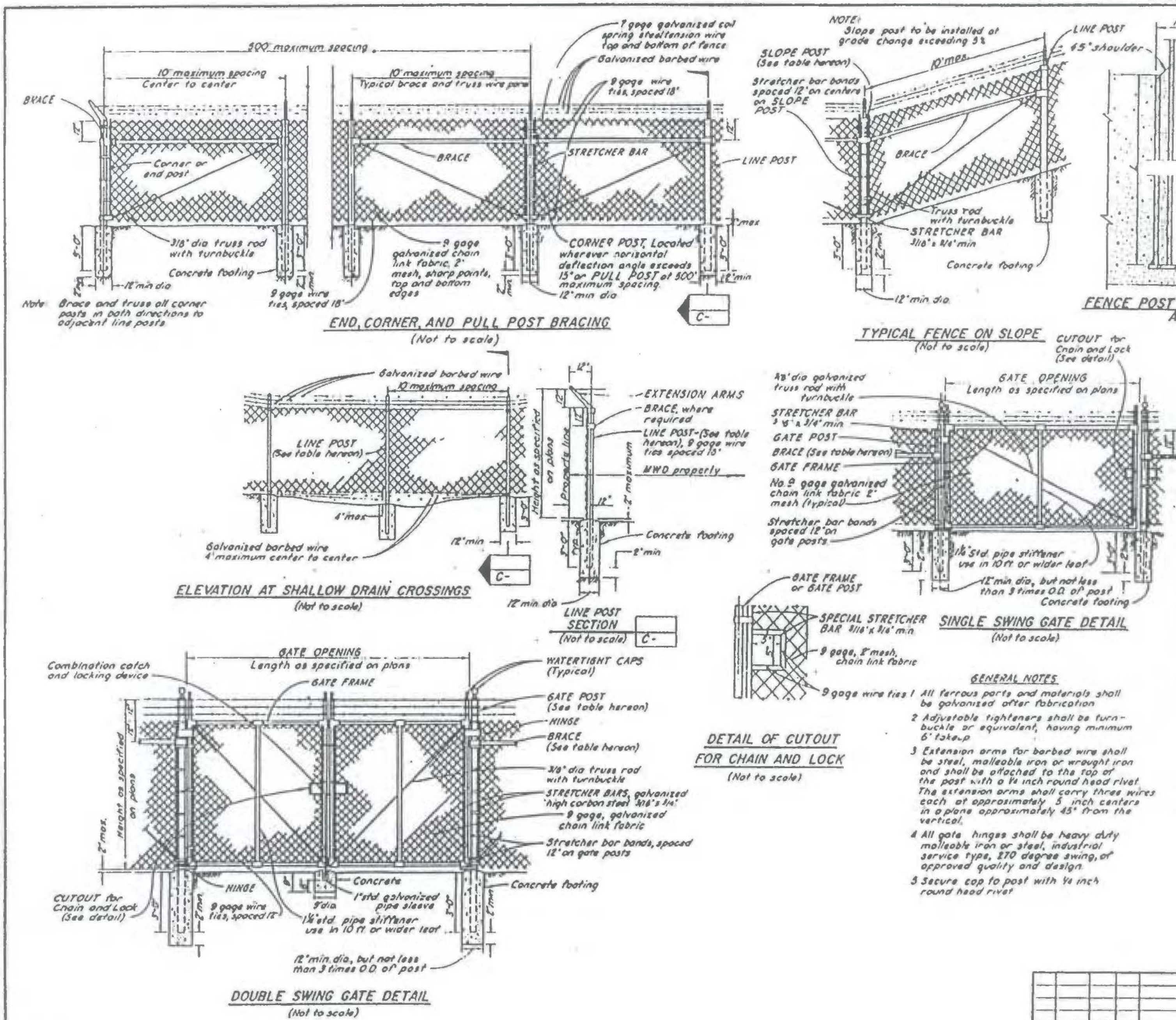

℄ STREET
PROPERTY LINE
TRENCH
M.W.D. PIPE
PROPOSED PIPE
45° TYPICAL
ADEQUATE SHORING AND BRACING REQUIRED FOR THE FULL DEPTH OF THE TRENCH WHEN THE EXCAVATION ENCROACHES WITHIN THIS ZONE
THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA
SHORING AND BRACING REQUIREMENTS
DRAWN
TRACED
CHECKED
RECOMMENDED
APPROVED

FIGURE 4



STANDARD PIPE INSERT SIZE

Post size Nom O.D.	Insert size Std pipe	Std pipe	Wt	L
2 1/2"	2"	3 1/4"	9.11	12"
3"	2 1/2"	4"	10.79	12"
4"	3 1/2"	5"	14.62	16"

Use	Type	Nominal Size (Inches)	Actual O.D. (Inches)	Weight per foot (Pounds)
End, corner, slope, pull and gate posts (for single gates 6 feet or less in width and double gates 12 feet or less in width) for chain link fabric 72" inches or higher	Pipe	2 1/2	2.875	5.79
End, corner, slope, pull and gate posts (for single gates 6 feet or less in width and double gates 12 feet or less in width) for chain link fabric less than 72 inches height	Pipe	2	2.375	3.65
Gate posts for single swing gates over 6 feet but not over 13 feet in width and double swing gates over 12 feet but not over 26 feet in width.	Pipe	3 1/2	4.000	9.11
Gate posts for single swing gates over 13 feet but not over 18 feet in width and double swing gates over 26 feet but not over 36 feet in width.	Pipe	6	6.625	18.97
Gate posts for single swing gates over 18 feet in width and double swing gates over 36 feet in width	Pipe	8	8.625	24.70
Line posts for chain link fabric 72 inches or higher	Pipe	2	2.375	3.65
	H-Section	2 1/4 x 1 7/8		4.10
Line posts for chain link fabric less than 72 inches in height	Pipe	1 1/2	1.900	2.72
	H-Section	1 7/8 x 1 5/8		2.80
Braces	Pipe	1 1/4	1.660	2.27
	H-Section	1 5/8 x 1 1/4		2.80
Frame for gates	Pipe	1 1/2	1.900	2.72
Stiffeners for gates	Pipe	1 1/4	1.660	2.27

GENERAL NOTES

1. All ferrous parts and materials shall be galvanized after fabrication
2. Adjustable tighteners shall be turnbuckle or equivalent, having minimum 6" takeup
3. Extension arms for barbed wire shall be steel, malleable iron or wrought iron and shall be attached to the top of the post with a 1/4 inch round head rivet. The extension arms shall carry three wires each at approximately 5 inch centers in a plane approximately 45° from the vertical.
4. All gate hinges shall be heavy duty malleable iron or steel, industrial service type, 270 degree swing, of approved quality and design
5. Secure cap to post with 1/4 inch round head rivet

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA
DISTRIBUTION SYSTEM

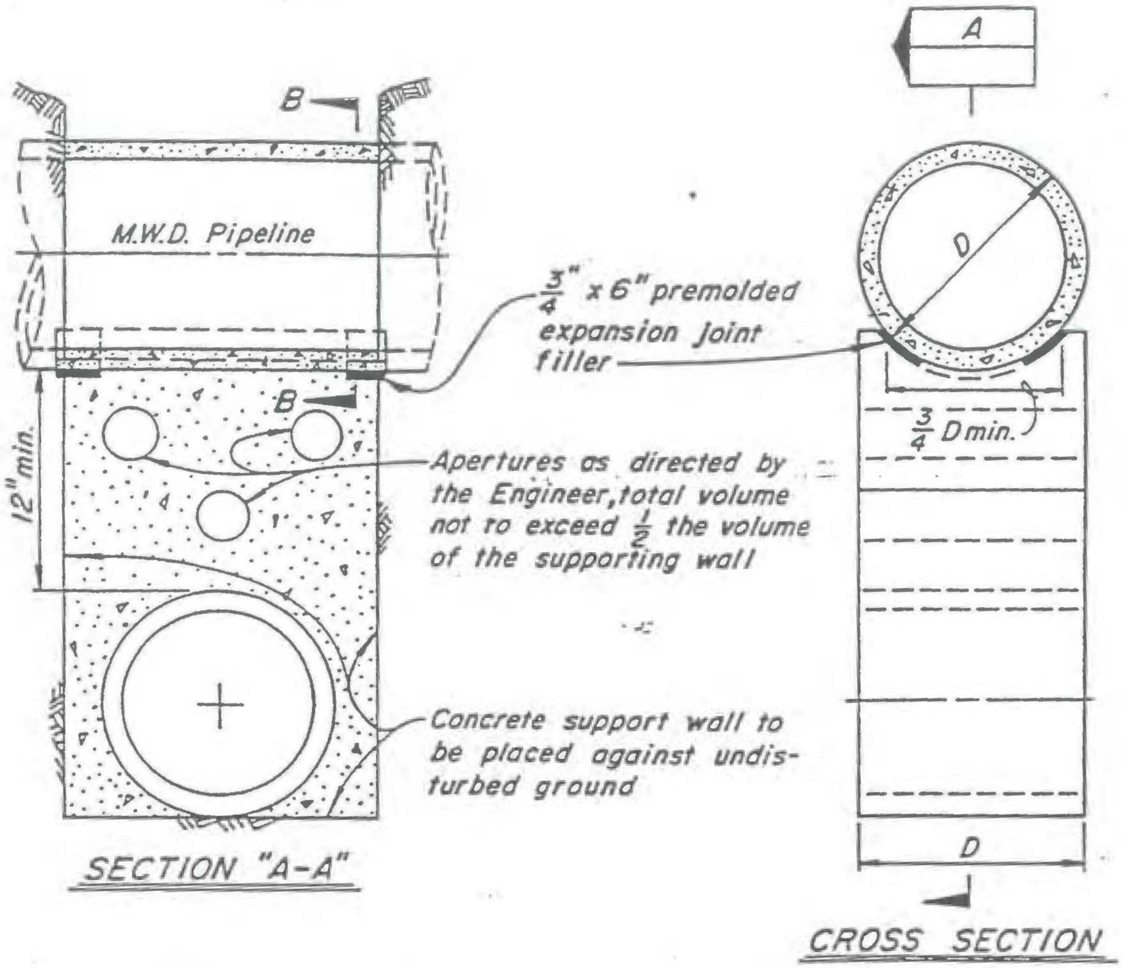
CHAIN LINK FENCE DETAILS

DESIGNED	RECOMMENDED
DRAWN	
CHECKED	APPROVED
WORK ORDER NO.	LOS ANGELES

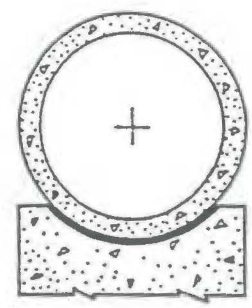
NO.	DATE	DWN.	CKD.	REVISION	REC.	APP.

REVISION COORDINATION CHECK						
ORIGINAL RELEASE	MECH	STRUCT	ELEC	CIVIL	SPECS	DATE
INTERSECTIONAL COORDINATION CHECK						

FIGURE 5



1. Supporting wall shall have a firm bearing on the subgrade and against the side of the excavation.
2. Premolded expansion joint filler per ASTM D-1751-73 to be used in support for steel pipe only.
3. If trench width is 4 feet or greater, measured along centerline of M.W.D. pipe, concrete support must be constructed.
4. If trench width is less than 4 feet, clean sand backfill, compacted to 90% density in accordance with the provisions of ASTM Standard D-1557-70 may be used in lieu of the concrete support wall.



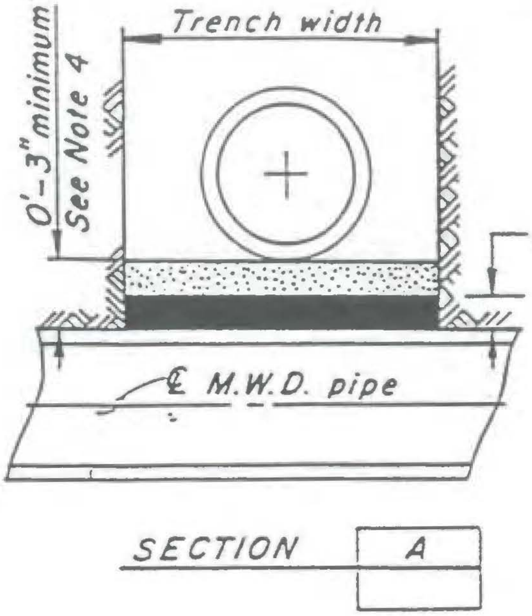
SECTION "B-B"

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

TYPICAL SUPPORT FOR M.W.D. PIPELINE

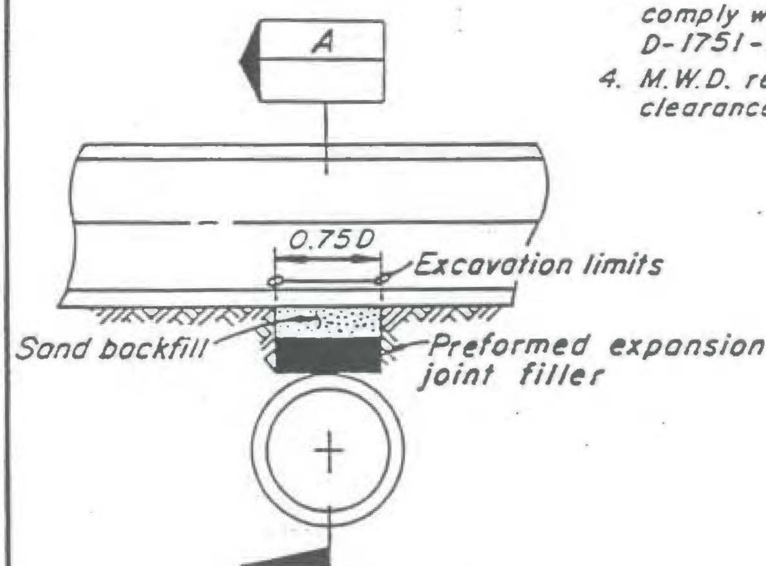
DRAWN ______ RECOMMENDED ______
TRACED ______
CHECKED ______ APPROVED ______

C-9547



NOTES

1. This method to be used where the utility line is 24" or greater in diameter and the clearance between the utility line and M.W.D. pipe is 12" or less.
2. Special protection may be required if the utility line diameter is greater than M.W.D. pipe or if the cover over the utility line to the street surface is minimal and there is 12" or less clearance between M.W.D. pipe and the utility line.
3. Preformed expansion joint filler to comply with ASTM designation D-1751-73.
4. M.W.D. requests 12" minimum clearance whenever possible.



CROSS SECTION

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

TYPICAL EXPANSION JOINT FILLER PROTECTION FOR OVERCROSSING OF M.W.D. PIPELINE

DRAWN ______ RECOMMENDED ______
TRACED ______
CHECKED ______ APPROVED ______

C-11632

Gregg

STATE OF CALIFORNIA
Edmond G. Brown, Jr., *Governor*
NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd., ROOM 100
West SACRAMENTO, CA 95691
(916) 373-3710
Fax (916) 373-5471

RECEIVED
OCT
DEPT. PUBLIC WORKS
PROJECT MANAGEMENT DIVISION

September 25, 2014

Gregg BeGell
Los Angeles County Flood Control District
900 South Fremont Avenue, 11th Floor
Alhambra, CA 91803

RE: SCH# 2014081106 Enhanced Watershed Management Programs (EWMP) Program EIR, Los Angeles County.

Dear Mr. BeGell,

The Native American Heritage Commission (NAHC) has reviewed the Notice of Preparation (NOP) referenced above. The California Environmental Quality Act (CEQA) states that any project that causes a substantial adverse change in the significance of an historical resource, which includes archeological resources, is a significant effect requiring the preparation of an EIR (CEQA Guidelines 15064(b)). To comply with this provision the lead agency is required to assess whether the project will have an adverse impact on historical resources within the area of project effect (APE), and if so to mitigate that effect. To adequately assess and mitigate project-related impacts to archaeological resources, the NAHC recommends the following actions:

- ✓ Contact the appropriate regional archaeological Information Center for a record search. The record search will determine:
  - If a part or all of the area of project effect (APE) has been previously surveyed for cultural resources.
  - If any known cultural resources have already been recorded on or adjacent to the APE.
  - If the probability is low, moderate, or high that cultural resources are located in the APE.
  - If a survey is required to determine whether previously unrecorded cultural resources are present.
- ✓ If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
  - The final report containing site forms, site significance, and mitigation measurers should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for pubic disclosure.
  - The final written report should be submitted within 3 months after work has been completed to the appropriate regional archaeological Information Center.
- ✓ Contact the Native American Heritage Commission for:
  - A Sacred Lands File Check. **USGS 7.5-minute quadrangle name, township, range, and section required**
  - A list of appropriate Native American contacts for consultation concerning the project site and to assist in the mitigation measures. **Native American Contacts List attached**
- ✓ Lack of surface evidence of archeological resources does not preclude their subsurface existence.
  - Lead agencies should include in their mitigation plan provisions for the identification and evaluation of accidentally discovered archeological resources, per California Environmental Quality Act (CEQA) Guidelines §15064.5(f). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American, with knowledge in cultural resources, should monitor all ground-disturbing activities.
  - Lead agencies should include in their mitigation plan provisions for the disposition of recovered cultural items that are not burial associated, which are addressed in Public Resources Code (PRC) §5097.98, in consultation with culturally affiliated Native Americans.
  - Lead agencies should include provisions for discovery of Native American human remains in their mitigation plan. Health and Safety Code §7050.5, PRC §5097.98, and CEQA Guidelines §15064.5(e), address the process to be followed in the event of an accidental discovery of any human remains and associated grave goods in a location other than a dedicated cemetery.

Sincerely,

Katy Sanchez

Katy Sanchez
Associate Government Program Analyst

CC: State Clearinghouse

Native American Contacts
Los Angeles County
September 25, 2014

Tongva Ancestral Territorial Tribal Nation
John Tommy Rosas, Tribal Admin.
, Gabrielino Tongva
tattnlaw@gmail.com
(310) 570-6567

Gabrielino-Tongva Tribe
Bernie Acuna, Co-Chairperson
Contact information unavailable Gabrielino
,
Last attempted verification 9/5/14
(310) 428-5690 Cell

Gabrieleno/Tongva San Gabriel Band of Mission Indian
Anthony Morales, Chairperson
P.O. Box 693 Gabrielino Tongva
San Gabriel , CA 91778
GTTribalcouncil@aol.com
(626) 483-3564 Cell
(626) 286-1262 Fax

Gabrielino-Tongva Tribe
Linda Candelaria, Co-Chairperson
Contact information unavailable Gabrielino
,
Last attempted verification 9/5/14
(626) 676-1184 Cell

Gabrielino /Tongva Nation
Sandonne Goad, Chairperson
106 1/2 Judge John Aiso St. Gabrielino Tongva
Los Angeles , CA 90012
sgoad@gabrielino-tongva.com
(951) 807-0479

Gabrieleno Band of Mission Indians
Andrew Salas, Chairperson
P.O. Box 393 Gabrielino
Covina , CA 91723
gabrielenoindians@yahoo.
(626) 926-4131

Gabrielino Tongva Indians of California Tribal Council
Robert F. Dorame, Tribal Chair/Cultural Resources
P.O. Box 490 Gabrielino Tongva
Bellflower , CA 90707
gtongva@verizon.net
(562) 761-6417 Voice/Fax

Gabrielino-Tongva Tribe
Conrad Acuna
Contact information unavailable Gabrielino
,
Last attempted verification 9/5/14

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed SCH # 2014081106, Enhanced Watershed Management Programs (EWMP) Program EIR, Los Angeles County.

Native American Contacts
Los Angeles County
September 25, 2014

Gabrielino /Tongva Nation
Sam Dunlap, Cultural Resources Director
P.O. Box 86908 Gabrielino Tongva
Los Angeles , CA 90086
samdunlap@earthlink.net
(909) 262-9351

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed SCH # 2014081106, Enhanced Watershed Management Programs (EWMP) Program EIR, Los Angeles County.

Laura Rocha

From: Begell, Gregg - Consultant <gbegell@dpw.lacounty.gov>
Sent: Monday, October 06, 2014 6:59 AM
To: Crumpacker, Andrea; David Pohl
Subject: FW: COMMENTS ON NOTICE OF PREPARATION FOR DRAFT PROGRAM EIR FOR ENHANCED WATERSHED MANAGEMENT PROGRAMS FOR LA COUNTY

Comment Letter.

Gregg BeGell P E
Project Manager
Project Management Division II

From: patricia mc pherson [mailto:patriciamcpherson1@verizon.net]
Sent: Friday, October 03, 2014 1:27 PM
To: Begell, Gregg - Consultant
Subject: COMMENTS ON NOTICE OF PREPARATION FOR DRAFT PROGRAM EIR FOR ENHANCED WATERSHED MANAGEMENT PROGRAMS FOR LA COUNTY

Grassroots Coalition submits its support of the comments made below by Mr. Rex Frankel.
Due on the 29th, GC was in transit from out of state and belatedly requests that its support of the comments below be part of
the record.
Please also note attachment of imagery of California.
Currently, the State Coastal Conservancy and the Dept of Fish and Wildlife have created a preordained outcome for the Ballona Wetlands Restoration. This outcome that has been determined to destroy the freshwater aquifers of Ballona (classified as potential drinking water) without the legal requirements of public participation and transparency of process that the millions of dollars of public bond money set forth in 2004. Such destructive plans to the watershed of the Ballona Valley should not be allowed to proceed.
The failure of the state to fully engage the public and provide accountability and transparency of process has led to the
dire situation of groundwater removal that CAlifornia and Ballona Wetlands have.

http://www.latimes.com/science/sciencenow/la-sci-sn-california-drought-groundwater-satellite-20141002-story.html

Thank you,
Patricia McPherson, President -Grassroots Coalition

COMMENTS ON NOTICE OF PREPARATION FOR DRAFT PROGRAM EIR FOR ENHANCED WATERSHED MANAGEMENT PROGRAMS FOR L.A. COUNTY

September 29, 2014, 1:30 pm

From Rex Frankel, director, Ballona Ecosystem Education Project,
6038 west 75th street, L.A. CA 90045
310-738-0861, email: rexfrankel@yahoo.com

I understand why no one but myself attended the NOP hearing on September 9th in Marina Del Rey. You have no specific projects to analyze for environmental impacts. You are attempting to analyze the environmental impact of words, not specific actions. It is impossible to analyze the impacts of no stated physical projects, just as it is impossible to analyze those unstated projects' impacts on the environmental setting, ie., the proper baseline, because you have no specific locations for these unspecified projects. Thus all you can say is to analyze the entire county. The two most essential parts of an environmental analysis are missing here: specific projects and specific sites. You have the process all backwards here, and thus, commenting on this NOP in any specific manner is impossible.

Some background: In 2002, local governments settled lawsuits and agreed to consent decrees and promised to stop violations of bacterial health codes at our beaches by 2021. This agreement gave the public agencies an extension beyond the original deadline of 2013 but only if the projects created new parkland and river corridors that could catch and clean water before it fouled the beaches.

In 2006, L.A. City proposed its first big plan under this agreement, an Implementation Plan for the Santa Monica Bay Beaches watersheds. This plan was sent back for redrafting by the RWQCB as it only reached 2% of its target and thus, would not accomplish the goal in the consent decree.

Also in 2006, L.A. city proposed the Integrated Resource Plan which mainly focused on building 25 Hyperion-style urban runoff treatment plants which would have cost the average homeowner ratepayer $400 a month. This plan went nowhere.

In 2012, the County Supervisors tried to quietly approve a $300 million per year property tax hike to build a non-existent list of runoff cleansing and capturing projects. Howls of opposition arose and that plan went nowhere. The public wanted to know what they were paying for.

Now, you are finally starting to design the cleanup plan. But how can you ask the public to weigh in on the scope of the environmental analysis of that plan, when your description of that plan contains no specifics? Your stated plan to defer the environmental analysis of specific project impacts to when each one is up for approval thus ignores the cumulative impacts and therefore is "piecemealing", by starting major momentum of a project that is composed of many necessary parts, yet deferring analysis and the controversy to a multitude of separate EIRs and CEQA documents and public hearings, all the while public input is diffused. We never get to weigh in on whether we like the complete plan because the Program EIR has no specifics to arouse concern and the real project discussion is delayed until much later in a way that requires massive efforts by the public to keep track of the success of the big plan.

The people who will pay for this plan want to see the specifics before you raise our taxes to pay for it. We want expanded and unpaved river corridor parks. We do not want the plan to include converting existing wetlands and wildlife habitat into pollution dumps and sumps. We want what we were promised, not a lame compromise that puts the cleanup burden on existing public lands, parks and house front yards. We want a complete plan for us to judge whether it will accomplish its promises and goals before you produce an EIR, not the other way around.

Please put me on the notification list for all actions relating to this project. Thank you.

Paige Anderson

To: Tom Barnes
Subject: RE: ADDITIONAL COMMENTS ON L.A. County Enhanced Watershed Management Program, Notice of Preparation

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From: Rex Frankel [mailto:rexfrankel@yahoo.com]
Sent: Wednesday, October 29, 2014 5:28 PM
To: Begell, Gregg - Consultant
Cc: kathy.knight@verizon.net
Subject: ADDITIONAL COMMENTS ON L.A. County Enhanced Watershed Management Program, Notice of Preparation

ADDITIONAL COMMENTS ON EWMP NOP: October 29, 2014

The problem I have with a Program EIR for a "program" that is devoid of a list of all necessary specific projects is that it short-circuits the cumulative impacts review plus it facilitates illegal piecemealing of the many TMDL compliance projects. A program EIR can be allowed when the individual and currently unknown specific sub projects have "independent utility", thus building and analyzing them separately has no impact on the effectiveness of the other sub projects, nor does it make it mandatory that these other projects also be approved. That is not the case here. The goal of the EWMP and the sub projects is "to achieve permit compliance with RWLs" (NOP page 7 paragraph 3 and page 8, paragraph 1). Thus, all projects must be approved and successfully achieve their goals or the region will not be in compliance with the 2012 MS4 permit, the Federal Clean Water Act and the NPDES permits. If only some of the projects prove feasible and buildable, the construction of the others will not result in CWA compliance. That begs the question of is this project worthwhile if piecemealed at all? Will the beach only be clean in certain locations along the shore, while others will not be as a treatment strategy proved too expensive or technologically infeasible? If the taxpayers ultimately decide this project is too expensive, but certain parts are already built, does that mean that pulling-the-plug will result in non compliance and thus a waste of the taxpayers' dollars already spent? This s

How can the public know if the permits and Clean Water Act will be complied with if the approval of the individual pieces of the compliance strategy are broken up into numerous pieces each receiving their own separate CEQA review? All of this leads me to conclude that the specific projects must be reviewed and approved as part of a master plan project, with the public knowing the full cost of compliance, the full impacts of all projects and alternative policy choices. One specific alternative, distasteful as I find it, would be analysis of only building some projects and also enforcing no-swimming rules for three days after rainfall at beaches.

I will repeat the conclusion of my first NOP comments: The people who will pay for this plan want to all of the see the specifics before you raise our taxes to pay for it. We want expanded and unpaved river corridor parks. We do not want the plan to include converting existing wetlands and wildlife habitat into pollution dumps and sumps. We want what we were promised, not a lame compromise that puts the cleanup burden on existing public lands, parks and house front yards. We want a complete plan for us to judge whether it will accomplish its promises and goals before you analyze and mandate it with an EIR, not the other way around.

Rex Frankel

From: "Begell, Gregg - Consultant" <gbegell@dpw.lacounty.gov>
To: Rex Frankel <rexfrankel@yahoo.com>
Sent: Monday, September 29, 2014 2:26 PM
Subject: RE: L.A. County Enhanced Watershed Management Program, comments on Notice of Preparation

Rex

Thank you for your comments. It will be reviewed for use in the PEIR.

Yes, when people think of an EIR they are thinking of a project. This is a Program EIR, the main PEIR document contains some projects as examples but it’s a program.

We are presently working on the PEIR, check our website for information and details.
www.LACoH2Osheds.com. We will be posting the PEIR plus public review meetings on the website.

Gregg BeGell P E
Project Manager
Project Management Division II

From: Rex Frankel [mailto:rexfrankel@yahoo.com]
Sent: Monday, September 29, 2014 1:59 PM
To: Begell, Gregg - Consultant
Subject: L.A. County Enhanced Watershed Management Program, comments on Notice of Preparation

COMMENTS ON NOTICE OF PREPARATION FOR DRAFT PROGRAM EIR FOR ENHANCED WATERSHED MANAGEMENT PROGRAMS FOR L.A. COUNTY

September 29, 2014, 1:30 pm

From Rex Frankel, director, Ballona Ecosystem Education Project,
6038 west 75th street, L.A. CA 90045
310-738-0861, email: rexfrankel@yahoo.com

I understand why no one but myself attended the NOP hearing on September 9th in Marina Del Rey. You have no specific projects to analyze for environmental impacts. You are attempting to analyze the environmental impact of words, not specific actions. It is impossible to analyze the impacts of no stated physical projects, just as it is impossible to analyze those unstated projects' impacts on the environmental setting, ie., the proper baseline, because you have no specific locations for these unspecified projects. Thus all you can say is to analyze the entire county. The two most essential parts of an environmental analysis are missing here: specific projects and specific sites. You have the process all backwards here, and thus, commenting on this NOP in any specific manner is impossible.

Some background: In 2002, local governments settled lawsuits and agreed to consent decrees and promised to stop violations of bacterial health codes at our beaches by 2021. This agreement gave the public agencies an extension beyond the original deadline of 2013 but only if the projects created new parkland and river corridors that could catch and clean water before it fouled the beaches.

In 2006, L.A. City proposed its first big plan under this agreement, an Implementation Plan for the Santa Monica Bay Beaches watersheds. This plan was sent back for redrafting by the RWQCB as it only reached 2% of its target and thus, would not accomplish the goal in the consent decree.

Also in 2006, L.A. city proposed the Integrated Resource Plan which mainly focused on building 25 Hyperion-style urban runoff treatment plants which would have cost the average homeowner ratepayer $400 a month. This plan went nowhere.

In 2012, the County Supervisors tried to quietly approve a $300 million per year property tax hike to build a non-existent list of runoff cleansing and capturing projects. Howls of opposition arose and that plan went nowhere. The public wanted to know what they were paying for.

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TRANSMITTAL

DATE: October 29, 2014

TO: Gregg BeGell, P.E.
County of Los Angeles, Department of Public Works/LACo Flood Control District
900 South Fremont Avenue, 5th Floor Alhambra, CA 91803
gbegell@dpw.lacounty.gov

CC: **Gloria Molina, LACo Supervisor**
Micheal Antonovich, LACo Supervisor
Sierra Club, Angeles Chapter, Water Committee
CCFAC Executive Director

FROM: **Dr. Tom Williams,**
Sierra Club, Angeles Chapter, Water Committee
Citizens Coalition For A Community
4117 Barrett Road, Los Angeles, CA 90032-1712
ctwilliams2012@yahoo.com, 323-528-9682

SUBJECT: **County of Los Angles, Enhanced Watershed Management Plan**
Scoping for Programmatic EIR

RE: **COMMENTS for Enhanced Watershed Management Plan PEIR CS-CH#2014081106**
Based on NOP and other project information downloaded from www.LACoH2Osheds.com.

Thank you for the opportunities to comment on the Notice of Preparation/Initial Study (NOP/IS) and other Scoping documents related to the proposed LA County Enhanced Watershed Management Plan (EWMP). Also thank you for the extension of the deadline for such comments, I believe it was very helpful for our commenters.

I could have continued for many more pages but I have been exhausted by the lack of real effort on the part of the preparers to make the Enhanced Watershed Program project meaningful, adequate, and complete and initially assess its secondary and tertiary impacts for knowledgeable public reviewers. Unfortunately the current NOP/IS and supporting documents appears to be an initial version of the vague program that has been developed by others, rather than a project or even program level DEIR preparation and is in need of major tecchnical additions, editing, technical, and other revisions. The Scoping documents are inadequate and incomplete for the purposes of Scoping, and Scoping documents must updated, revised, and reissued. If you need further clarifications and many more comments, I am available for discussions or correspondence with your staff.

Dr. TW: Background: 40+ years with Worldwide/California water resources, management plans, water supplies, water distribution and transmission systems, and remote water resources development, with preparation, review, and commenting for 300+ EIRs/EISs/EAs (1972 to Date) and with 30+ years in Parsons and URS Corporations, 12+ years with Dubai Govt./Dubai World, and 6+years with Sierra Club Angeles Chapter (Water, Transportation, and Oil and Gas Comtes) and Citizens Coalition for a Safe Community.

Thank you for the opportunity to review and comment. Our comments form two parts: general and specific comments, as shown below for the Section and the two segments.

I have tried to provide citations in comment format with Doc./page/paragraph. Where appropriate, text has been inserted from documents and emphasis added usually as **<u>bolded/underlines</u>**. ***Comments/Requests are added in bolded/italics.***

Dr. Tom Williams
323-528-9682

1. GENERAL COMMENTS

1-1 Scoping and Project/Program Purposes and Needs

The Program description for any DEIR or PDEIR must include the basis of the project: Purposes, Needs Goals, Objectives,

Absence of clearly defined purposes and need, goals and objectives, and priorities renders both the Program and Projects virtually non-reviewable and thereby inadequate and incomplete for public review and comment.

Without purposes and needs/goals and objectives, the public and reviewers cannot be expected to provide reasonable alternatives.

NOP/IS

p.1/par.2 The **purpose** of the MS4 Permit is to ensure Permittees are not causing or contributing to exceedances of water quality **objectives** or impairments of beneficial uses in the receiving waters of the Los Angeles region.

7/3 2.2 States are required not only to identify these "water quality limited segments" but also to prioritize such waters for the **purpose of developing Total Maximum Daily Loads** (TMDLs).

9/5 4.1.1 Capture and Use BMPs collect and use stormwater where applicable for **purposes** such as irrigation.

1/3 The overarching **goal** of BMPs in the EWMP is to reduce the impact of stormwater and non-stormwater on receiving water 2/1 quality and address the water quality priorities as defined by the MS4 Permit.

2/1 The development of each EWMP will involve the evaluation and selection of multiple BMP types, including nonstructural (institutional) and distributed, centralized, and regional structural watershed control measures, that will be implemented to meet **compliance goals and strategies under the 2012 MS4 Permit**.

8/7 The overarching **goal** of BMPs in the EWMPs is to reduce the impact of stormwater and non-stormwater on receiving water quality and to address water conservation and the water quality **priorities**.

11/3 The MS4 permit allows Permittees to customize MCMs to address high-priority water quality **goals** within their watersheds.

13/2 The PEIR will examine the project's effects on global climate change and evaluate consistency of the project with the State's GHG emissions reduction **goals**.

Scoping Meeting - Pic 4

• **Project Purpose:** MS4 Permit Compliance (R4-2012-0175)
– Each Permittee is responsible for its local MS4 compliance
– Permit compliance through EWMPs
• 12 NOIs submitted to LARWQCB
• Collectively prepared by participating Permittees
– Los Angeles Regional Water Quality Control Board (LARWQCB) approves EWMPs

1-2 PEIR Contents

1-2 Total lack of reference to assignment of significance and related mitigation.

NOP/IS lacks clear definition and presentation as to potential effects, scopes, and schedules of the program and related projects and their implementation, construction, and operations.

As a water resources project, the physical changes represent a small portion of the overall potential effect of the program and projects, and the NOP does not reflect the systemic nature of water resources effects on the environment.

The NOP and the PDEIR andd PjDEIRs must clearly provide a Scope for each basin, schedules, and related environmental sectors, a Schedule for "implementation", construction, and "operations" (?=forever).

The PEIR will -

"result from implementation of the projects and management actions identified in each EWMP
"result from the construction and operation of EWMP projects,
"focus on potential effects.
"assess the physical changes...including direct, indirect, and cumulative impacts.
"identify mitigation measures to minimize potentially significant impacts of each EWMP.
"anticipated to evaluate...following preliminary listing of environmental issues.

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1-3. Environmental Resources, Setting, and Effects - Employment, Costs, Revenues, and Socieconomics

Employment, Costs, Revenues, and Socioeconomics Although mentions are made regarding economic and employment effects related to the Program and its projects, no costs-benefits, financials/funding sources, or other revenues assessments are included in the NOP.

Similarly, socioeconomics for major infrastructure programs and projects are closely related to "Environmental Justice" of those receiving benefits and those experiencing adverse effects directly through water-related operations and indirectly through direct/indirect payments for such effects and prospective benefits for those with much largely parcels and incomes.

5/1 The primary approach to each of the EWMPs, as identified in the Draft Work Plans, includes identifying community-friendly, **cost-effective methods** of reducing urban runoff pollution and incorporating distributed and centralized structural and nonstructural watershed control measures for a multi-pollutant, multi-benefit approach.

8/3 The EWMPs include multi-benefit stormwater management projects that may also provide environmental, aesthetic, recreational, water supply, and/or other community enhancements **cost-effective manner**.

11/1 Most institutional BMPs are implemented to meet Minimum Control Measure (MCM) requirements in the MS4 permit; MCMs are considered a subset of institutional BMPs. MCMs do not involve construction of facilities that physically remove pollutants, but **may involve costs associated with the procurement and installation** of items such as signage or spill response kits.

12.3 Air Quality Construction and operation of EWMP projects could cause air emissions...vehicle trips associated with **any increases in employment**....

14/3 Population...The PEIR will, however, identify current population and **employment projections**...

1-4 Controversies Regarding Program/Projects --- Stormwater Fees

Since the LACo Board of Supervisors have experienced significant controversy regarding the imposition of parcel fees for stormwater revenue and funding and has further created controversies regarding reassignment of parcel-area fees to parcel only fees, a thorough review of the economic, employment, and environmental justice issues must be addressed and defined for the NOP/IS,

As currently understood but avoided in Water agency and County presentations, an increase (e.g., x2+) in LACo stormwater fees would be applied on a parcel basis (no matter the size of parcel) as being proposed under the 2014 Measure P initiative which has no relationship to stormwater runoff and effects, compared to the current Recreation and Parks 1990s initiative which are based on parcel area (sqft) fees. For stormwater generation, area is directly related stormwater generation (e.g., 5000sqft may generate less runoff than 50,000sqft lots).

Therefore the NOP has not discussed the socioeconomic effects and related Environmental Justice issues related to the proposed program and the related controversy. A thorough assessment of all related revenue/costs issues must be presented in the PDEIR, including sources of revenues, revenue streams for life-of-project costs (especially for operations, maintenance, and replacements), basis for revenues (by parcel or by parcel-area), and Environmental Justice (which is not mentioned any where in the NOP/IS or presentation).

1-5 Mitigation Measures

Inconsistency uses and lack of definitions for most if not all related terms.

activities of "develop", identify", "proposed", or "evaluate".

to reduce potential, reduce the level, reduce potential adverse effect, any significant effects, to avoid,

are reduced or avoided, recommend

Vague generalities are presented and are so inconsistently applied within the same or related paragraphs as to render the entire presentation as useless.

The PDEIR must clearly present in matrices with links to discussions and appendices the project and program effects (quantifiedd/ranked), levels of significance for each sector/parameter, criteria levels for significances, proposed mitigations/compensations for significant effects, and a quantitative ranking of the effects levels following mitigation/compensation.

Lack of Mitigation

1-6 No measures are mentioned for many sectors but no basis could be established for such omissions, and comparable effects could be expected within these sectors similar to those that had need for measures mentioned.

12/2 Aesthetics ***No mitigation mentioned.***
12/4 Biology... ***No mitigation mentioned.***
13/2 Greenhouse Gases ***No mitigation mentioned***.
13/6 Land Use... ***No mitigation mentioned.***
14/4 Public Services... ***No mitigation mentioned.***
15/1 The PEIR will **evaluate potential energy consumption** associated with implementation of structural and nonstructural BMPs. ***No mitigation mentioned for Energy***

1-7 Mitigation, protection, and other measures and strategies are mentioned along with textual review of environmental sector but without any clear and concise statement of what they are, when they would be used, and how they could affect impacts, effects, and conditions. Mitigation measures in the Scoping NOP/IS are inconsistently mentioned as shown below.

Mitigation or compensation is required by CEQA for significant impacts.

Although mitigation is mentioned in the NOP/IS, mitigation and compensation are not mentioned in the Scoping Presentation slides; in reverse of "Alternatives", not mentioned in NOP/IS but present once in the Presentation.

Various terms - without definitions and consistent uses.

Protection measures mitigation strategies
significant effects
significant impacts
potentially necessary significant impacts
mitigate secondary effects of growth

As lead agency for the program LACo must clearly state the sole responsibility for thorough and consistent implementation in all projects of CEQA compliance and consistency of impact mitigation and compensation (including Environmental Justice and Socioeconomics).

The recirculated NOP/IS and PDEIR must provide a thorough presentation of:

Definitions of all related terms,
Process and quantified analyses for establishing the level of effects, mitigation, and remaining adverse effects and potential subjects of compensation,
Consistency of mitigations amongst all watersheds,
All current mitigation and compensation measures planned or anticipated by the Program and Project proponents, and
Explanation of absence of mitigation or compensation.

Examples

12/3 Air Quality...The PEIR...will **develop** mitigation measures if necessary to **reduce potential impacts**.

12/5 Cultural Resources Mitigation measures will be **identified** if necessary to **reduce the level of impact where possible**.

13/1 Geology... The PEIR will identify mitigation measures if necessary to **reduce potential adverse effects** to proposed facilities.

13/3 Hazards... Mitigation measures will be **proposed** if necessary to **reduce any significant effects** of the project...enountered during construction would be handled in accordance with applicable regulations.

13/4 Hydrology... The PEIR will identify stormwater quality **protection measures** required during construction and operation of proposed facilities. The PEIR also will **evaluate** potential impacts to flood control capacity and **develop mitigation strategies** if necessary **to avoid significant impacts**.

13/5 The PEIR will **evaluate** potential effects of increased storm water recharge and will identify mitigation measures if necessary to ensure that **potentially necessary significant impacts are reduced or avoided**.

14/2 Noise... The PEIR will **recommend mitigation strategies** to ensure that proposed EWMP projects implemented by local agencies comply with local noise policies and ordinances.

14/3 Population... The PEIR will...identify local planning jurisdictions with the authority to approve growth and **mitigate secondary effects of growth**.

14/5 Traffic... The PEIR will **identify mitigation strategies to reduce any potential effects**.
14/6 Utilities... The PEIR will **evaluate the project's potential to affect utilities** and will **identify mitigation measures to minimize the effects**.

***1-8 Alternatives** Although the project proponent has chosen to prepare an Environmental Impact Report, no mention is made regarding alternatives in the Initial Study/NOP. Only one reference to alternatives in all available related documents occurs in Slide 28, "Issues to be Analyzed" in the PEIR Scoping Presentation.*

As the preparer included one reference to Alternatives, complete exclusion of such from the IS/NOP represents an arbitrary and incomplete presentation of CEQA documents. Without a clear concise statement of purposes and needs (goals and objectives, etc.), reasonable alternatives cannot be developed through the public participation and have not been developed by the watershed stakeholders.

LACo must revise and recirculate the NOP.

LACo must include a thorough description of Purposes and Needs for the project, quantification of such P&Ns, detailed quantified analyses as to how the Program achieves such P&Ns, basis for development of other alternative programs and projects within each alternative, and an assessment as to the best available alternative.

Some prospective alternatives include:

- ***Single parcel fee assessment for 20-plus year full Administration, O&M and replacements;***
- ***Parcel-Area fee assessment for 20-plus year full Administration, O&M and replacements;***
- ***Hybrid Parcel-Area/Runoff fee assessment for 20-plus year full Administration, O&M and replacements;***
- ***Zero-Parcel Discharge Assessment and fee adjustment for 20-plus year full Administration, O&M and replacements;***
- ***Large-Parcel and Large Discharge Assessment and fee increments for 20-plus year full Administration, O&M and replacements;***
- ***Full capture and recharge of flows of >100cfs from all waterways;***

***1-9 Mitigation Monitoring and Report Plan** The Draft Programmatic Environmental Impact Reports must include draft plans for the implementation, monitoring, and enforcements of the Mitigation Monitoring, and Reporting Plan for the Program. Also the PDEIR and draft Programmatic MMR Plan must provide the descriptions and process for funding, staffing, means, monitoring, enforcement, and reporting for the public for the monitoring of all Project-Level activities and compliance which must be subject to noticing/subscriptions, public reviews, and comment as part of the project-DEIR processes and not wait until the "Final EIR" is circulated for projects.*

***1-10 Scoping Report** Because of the poor development of the NOP/IS and lack of coordination between the LACo efforts and those projected for the individual Project DEIRs and dispersed responsibilities for compliance and responsibilities, following the October 29th deadline for these comments, we request that LACo recirculate the entire NOP/IS, and if not done issue a Scoping Report ass to the LACo responses to comments and the table of contents for the PDEIR in order to establish the level of incorporation provided for the Scoping comments herein.*

1-11 As indicated elsewhere many terms have been used and will be used inconsistently in the NOP/IS and Scoping Presentation and has created confusion and such must be avoided in the PDEIR.

The PDEIR must contain a single glossary and set of definitions for all terms for the PDEIR, and preparers and editors must assure full and specific compliance and consistency for all usage. Such a glossary may be included as an appendix with proper references throughout the PDEIR.

***1-12 Program Compliance and Monitoring** The LACo, Department of Public Works, Flood Control District is assumed to be in charge of the EWMP Program and has 12 groups responsible for specific areas and is related to the Los Angeles Regional Water Quality Control Board through the MS4 permit and sub-permits for water quality and flows within the Program regional and*

area watersheds. No formal agreement has been presented as part of the NOP/IS and discussion seems to differ between the NOP/IS and the Scoping Presentation. As the LACFCD is scoping the PDEIR, reviewers must assume that only the LACo shall answer to the LARWQCB for compliance and monitoring for the next 20 years and that LACo shall have the powers, staffing, expertise, and funding to assure compliance of 12 different agencies/sub-permittees.

The Program description of the PDEIR must clearly and concisely present the administrative and operational arrangement and oversight assurance mechanisms to achieve implementation of all aspects of the MS4 permit and sub-permits and any and all CEQA and MS4 permit terms, conditions, mitigations, and compensations which may be related the Program and its projects. All contractual, regulatory, and judicial records must be provided as appendices and referenced within the text.

1-13 During a 20+ year Program, Implementation and Enforcement of all elements for 12+ different plans represent a major quality control/assurance and management and must be provided with adequate enforcement capabilities and support. The LACo, Department of Public Works, Flood Control District is assumed to be in charge of the EWMP Program and has 12 groups responsible for implementation, completion, and enforcement activities related to but in addition to those of the Los Angeles Regional Water Quality Control Board through the MS4 permit and sub-permits for water quality and flows within the Program regional and area watersheds.

No formal management and enforcement agreement has been presented as part of the NOP/IS and the Scoping Presentation. As the LACFCD is scoping the PDEIR, reviewers must assume that only the LACo shall answer to the LARWQCB for implementation and enforcements for the next 20 years and that LACo shall have the powers, staffing, expertise, and funding to assure implementation and enforcement with 12 different agencies/sub-permittees.

Fundamentally, will LACFCD or LARWQCB assess penalties against the sub-permittees for lack of timely implementation, achievement, and penalties.

The Program description of the PDEIR must clearly and concisely present the administrative and operational arrangement and quality-controls/assurance processes to achieve initiation and completion of all aspects of the MS4 permit and sub-permits and assignment of penalties , both financial and organizational for any and all CEQA and MS4 permits which may be related the Program and its projects. The LACFCD must also have the specific powers to assume direct authority over any projects under its responsibilities to the LARWQCB, and such must be documented within the PDEIR and PFEIR as appendices and referenced within the text

Environmental Sectors

2-1 No mention is made of "wetlands" which are often not included under either riparian (trees and bushes with dry land beneath) or aquatic habitats (open and standing water). Although this is one of the few specific habitats with federal and special protections, it is not mentioned which indicates the lack of background on the preparers part or a specific avoidance of controversial issues. The current NOP/IS lack competence, adequacy, and completeness for the public and stakeholder to review and comment upon the scope and specificity requireed for the PDEIR and subsequent PjDEIRs.

Revise and recirculate the entire NOP/IS and related documents.

The recirculation NOP/IS and the PDEIR must contain a general map of the Program and area maps for each of the projects with the following:

all existing delineated riparian, wetlands, and aquatic habitats;

related existing upstream and adjacent infiltration, recharge, and liquefaction areas;

potential groundwater movement patterns for 1500ft upstream and downstream of wetlands and riparian habitats; and

current surface water flows for 1500ft upstream and downstream of wetlands and riparian habitats.

12/4 **Biological Resources** Implementation of the EWMP projects could occur within existing sensitive habitats...result in changes to wildlife habitat, disruption of natural movement corridors, fragmentation or isolation of wildlife habitats, and disturbance of sensitive species during construction or operation...could alter **riparian and aquatic habitats**. The PEIR will evaluate the

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potential for such facilities to impact biological resources and will also discuss local ordinances and state and federal regulations governing biological resources.

2-2 Geology and Groundwater   Slight mention is made of groundwater, infiltration, recharge, and related liquefaction although much of the stormwater reduction must depend upon groundwater storage of captured runoff. The General Plan has not specific policies regarding changing the entire groundwater regime by massive expansion of septic tank/leach field system in another LACo project (i.e., Hauled Water Initiative) and this Programs LID and related recharge systems.

No information has been provided as to where recharge/infiltration areas are in relation to liquefaction zones and their drier extensions of alluvium and other permeable soils and bedrock.

The recirculation NOP/IS and the PDEIR must contain a general map of the Program and area maps for each of the projects with the following:

All geologically potential recharge/infiltration areas, existing recharging project, and proposed recharging areas and of all areas with more than 10 septic tanks per any 100 acres;

Currently delineated liquefaction areas and geologically similar surface materials which are not now considered as liquefiable due to lack of high groundwater tables;

Known groundwater levels and elevations of stream beds downslope of the groundwater tables; and

Anticipated local and project recharging rates.

12/6 5.   Geology, Soils, and Seismicity   Southern Los Angeles County is a seismically active region. The proposed EWMP BMPs would require **construction** of structural BMPs that could be subject to potential seismic and geologic hazards, including   13/1   ground shaking, **liquefaction**, soil stability conditions, soil erosion rates, expansive soils, and landslides.   Policies provided in the County's General Plan and applicable standard County requirements will be evaluated as to their effect of **mitigating or avoiding any potentially significant effects.**...

13/4   Hydrology and Water Quality   Implementation of the proposed EWMP BMPs may change **local drainage patterns at construction sites**,...which could affect the hydrology, hydraulics, and/or water quality of streams, rivers, and other receiving waters...The PEIR also will evaluate potential impacts to flood control capacity and develop mitigation strategies if necessary to avoid significant impacts.

13/5   Implementation of the proposed EWMP BMPs would likely result in **increased infiltration and recharge** in various locations throughout the EWMP watersheds. **Such activities could affect local groundwater levels and water quality**. The PEIR will evaluate potential effects of **increased storm water recharge** and will identify mitigation measures if necessary to ensure that potentially necessary significant impacts are reduced or avoided.

2-3   Hazards and Groundwater Recharge   No mention is made regarding the influence of groundwater movements upon hazards and hazardous materials in the soil/alluvium/bedrock context. Groundwater plumes have cause major expansions of underground contamination from storage tanks and contaminated soil. Contaminated groundwater in the northeastern and western San Fernando Valley and elsewhere are known to be migrating based on the groundwater flows and basin pumping for water supplies.

Current LACo policies do not reflect the responsibilities and liabilities of LACo approved watershed plans causing the changes of hazardous materials migration induced by groundwater flows fed by LACo and agency approved recharge/infiltration projects.

No information has been provided as to where recharge/infiltration areas, groundwater flows, and known or expected contaminated groundwater and soils, and potential routes for plume migration through extensions of alluvium and other permeable soils and bedrock.

The recirculation NOP/IS and the PDEIR must contain a general map of the Program and projects' area maps with the following:

Known subsurface contaminated soils and groundwater and active remediation sites;

Known pump/treat/use or pump/treat/recharge projects;

Current and expected recharge/infiltration areas; and

Known/Expected groundwater migration pathways.

13/3   **Hazards and Hazardous Materials**   Excavation during construction of proposed EWMP BMPs could uncover **contaminated soils or hazardous substances** that pose a substantial hazard to human health or the environment...The policies provided in the County's General Plan and any standard County requirements will be evaluated as to their effect of mitigating or avoiding any potentially significant effects.

2-4 Socioeconomics (including Total and Disposal Incomes, Employment, Existing Infrastructure Costs, and Property and Other Revenues)

No information has been provided as to any socioeconomic setting, effects, and mitigation for the program or the projects.

The recirculation NOP/IS and the PDEIR must contain an overall socioeconomic review of the Program area and separate project area for each of the projects with the following:

Educational, employment, age/gender, and other socioeconomic parameters to characterize the areas for the Program and its projects;

Incomes, Current Taxes and Fees, and other Ability-To-Pay parameters to characterize the areas for the Program and its projects;

Existing Special Assessment Districts and Other Urban Costs for Local Residents and Property Owners for the Program's and its projects' areas; and

State and conditions of existing infrastructure and potential for major future projects in the same Program's and its projects' areas.

2-5 "Environmental Justice" No information has been provided as to any information regarding the setting, effects, and mitigation for the program or the projects related to issues of Environmental Justice.

The recirculation NOP/IS and the PDEIR must contain an overall and specific projects' Environmental Justice review of the similar major infrastructure programs and projects as related to those receiving benefits and those experiencing adverse effects directly through water-related operations and indirectly through direct/indirect payments for such effects and prospective benefits for those with much largely parcels and incomes.

2-6 Mitigation Monitoring and Reporting Plan The Draft Programmatic and Draft Project Environmental Impact Reports must include tiered draft plans for the implementation, monitoring, and enforcements of the Mitigation Monitoring, and Reporting Plan which will be subject to public review and comment as part of the DEIR processes and not wait until the "Final EIR" is circulated.

STATE OF CALIFORNIA
Governor's Office of Planning and Research
State Clearinghouse and Planning Unit

Edmund G. Brown Jr.
Governor

Ken Alex
Director

Notice of Preparation

RECEIVED
SEP 09 2014
DEPT. PUBLIC WORKS
PROJECT MANAGEMENT DIVISION II

August 29, 2014

To: Reviewing Agencies

Re: Enhanced Watershed Management Programs (EWMP) Program EIR
SCH# 2014081106

Attached for your review and comment is the Notice of Preparation (NOP) for the Enhanced Watershed Management Programs (EWMP) Program EIR draft Environmental Impact Report (EIR).

Responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

Gregg BeGell
Los Angeles County Flood Control District
900 South Fremont Avenue, 11th Floor
Alhambra, CA 91803

with a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

Scott Morgan
Director, State Clearinghouse

Attachments
cc: Lead Agency

Document Details Report
State Clearinghouse Data Base

SCH# **2014081106**
Project Title Enhanced Watershed Management Programs (EWMP) Program EIR
Lead Agency Los Angeles County Flood Control District

Type **NOP** Notice of Preparation

Description The development of the EWMP will involve the evaluation and selection of multiple watershed control measures or best management practices (BMP) types including non-structural and distributed, centralized and regional structural BMPs. These BMPs will be implemented to meet compliance goals and strategies under the 2014 MS4 Permit. Structural BMPs involve the construction of a physical control measure to alter the hydrology and/or water quality of incoming stormwater or non-stormwater. The three major functions for structural BMPs are infiltration, water quality treatment, and storage. These are three categories of structural BMPs, defined by the runoff area treated by the BMP and the required retention volume in accordance with the Permit.

Lead Agency Contact

Name Gregg BeGell
Agency Los Angeles County Flood Control District
Phone 626 300 3298 *Fax*
email
Address 900 South Fremont Avenue, 11th Floor
City Alhambra *State* CA *Zip* 91803

Project Location

County Los Angeles
City Los Angeles, City of
Region
Cross Streets Throughout Los Angeles County
Lat / Long
Parcel No. Various
Township *Range* *Section* *Base*

Proximity to:

Highways Various
Airports LAX, Burbank
Railways Various
Waterways Various
Schools Various
Land Use Various land uses throughout the County

Project Issues Aesthetic/Visual; Agricultural Land; Air Quality; Archaeologic-Historic; Biological Resources; Drainage/Absorption; Flood Plain/Flooding; Geologic/Seismic; Minerals; Noise; Population/Housing Balance; Public Services; Recreation/Parks; Soil Erosion/Compaction/Grading; Toxic/Hazardous; Traffic/Circulation; Water Quality; Vegetation; Water Supply; Wetland/Riparian; Wildlife; Cumulative Effects; Other Issues

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Reviewing Agencies Resources Agency; Coachella Valley Mountains Conservancy; Department of Parks and Recreation; Department of Water Resources; Department of Fish and Wildlife, Headquarters; Department of Fish and Wildlife, Marine Region; Native American Heritage Commission; Santa Monica Bay Restoration; Caltrans, District 7; Air Resources Board; State Water Resources Control Board, Division of Water Quality; State Water Resources Control Board, Division of Water Rights; Regional Water Quality Control Board, Region 4; San Gabriel & Lower Los Angeles Rivers & Mountains Conservancy; Santa Monica Mountains Conservancy

---

Date Received 08/29/2014 *Start of Review* 08/29/2014 *End of Review* 09/29/2014

NOP Distribution List

County: LOS ANGELES

SCH# 2014081106

Resources Agency

- [x] **Resources Agency**
  Nadell Gayou
  - [ ] **Dept. of Boating & Waterways**
    Nicole Wong
  - [x] **California Coastal Commission**
    Elizabeth A. Fuchs
  - [ ] **Colorado River Board**
    Lisa Johansen
  - [ ] **Dept. of Conservation**
    Elizabeth Carpenter
  - [ ] **California Energy Commission**
    Eric Knight
  - [ ] **Cal Fire**
    Dan Foster
  - [ ] **Central Valley Flood Protection Board**
    James Herota
  - [ ] **Office of Historic Preservation**
    Ron Parsons
- [x] **Dept of Parks & Recreation**
  Environmental Stewardship Section
  - [ ] **California Department of Resources, Recycling & Recovery**
    Sue O'Leary
  - [ ] **S.F. Bay Conservation & Dev't. Comm.**
    Steve McAdam
  - [x] **Dept. of Water Resources**
    Resources Agency
    Nadell Gayou

Fish and Game

- [x] **Depart. of Fish & Wildlife**
  Scott Flint
  Environmental Services Division
- [ ] **Fish & Wildlife Region 1**
  Donald Koch
- [ ] **Fish & Wildlife Region 1E**
  Laurie Harnsberger
- [ ] **Fish & Wildlife Region 2**
  Jeff Drongesen
- [ ] **Fish & Wildlife Region 3**
  Charles Armor
- **Fish & Wildlife Region 4**
  Julie Vance
- **Fish & Wildlife Region 5**
  Leslie Newton-Reed
  Habitat Conservation Program
- [ ] **Fish & Wildlife Region 6**
  Tiffany Ellis
  Habitat Conservation Program
- **Fish & Wildlife Region 6 I/M**
  Heidi Sickler
  Inyo/Mono, Habitat Conservation Program
- [x] **Dept. of Fish & Wildlife M**
  George Isaac
  Marine Region

Other Departments

- [ ] **Food & Agriculture**
  Sandra Schubert
  Dept. of Food and Agriculture
- [ ] **Depart. of General Services**
  Public School Construction
- [ ] **Dept. of General Services**
  Anna Garbeff
  Environmental Services Section
- [ ] **Delta Stewardship Council**
  Kevan Samsam

Independent Commissions,Boards

- [ ] **Delta Protection Commission**
  Michael Machado
- [ ] **OES (Office of Emergency Services)**
  Dennis Castrillo
- [x] **Native American Heritage Comm.**
  Debbie Treadway
  - [ ] **Public Utilities Commission**
    Leo Wong
  - [x] **Santa Monica Bay Restoration**
    Guangyu Wang
  - [ ] **State Lands Commission**
    Jennifer Deleong
  - [ ] **Tahoe Regional Planning Agency (TRPA)**
    Cherry Jacques

Business, Trans & Housing

- [ ] **Caltrans - Division of Aeronautics**
  Philip Crimmins
- [ ] **Caltrans - Planning**
  Terri Pencovic
- [ ] **California Highway Patrol**
  Suzann Ikeuchi
  Office of Special Projects
- [ ] **Housing & Community Development**
  CEQA Coordinator
  Housing Policy Division

Dept. of Transportation

- [ ] **Caltrans, District 1**
  Rex Jackman
- [ ] **Caltrans, District 2**
  Marcelino Gonzalez
- [ ] **Caltrans, District 3**
  Eric Federicks – South
  Susan Zanchi - North
- [ ] **Caltrans, District 4**
  Erik Alm
- [ ] **Caltrans, District 5**
  David Murray
- [ ] **Caltrans, District 6**
  Michael Navarro
- [x] **Caltrans, District 7**
  Dianna Watson
- [ ] **Caltrans, District 8**
  Dan Kopulsky
- [ ] **Caltrans, District 9**
  Gayle Rosander
- [ ] **Caltrans, District 10**
  Tom Dumas
- [ ] **Caltrans, District 11**
  Jacob Armstrong
- [ ] **Caltrans, District 12**
  Maureen El Harake

Cal EPA

Air Resources Board

- [x] All Other Projects
  Cathi Slaminski
  - [ ] Transportation Projects
    Nesamani Kalandiyur
  - [ ] Industrial Projects
    Mike Tollstrup
- [ ] **State Water Resources Control Board**
  Regional Programs Unit
  Division of Financial Assistance
- [ ] **State Water Resources Control Board**
  Jeffery Werth
  Division of Drinking Water
- [x] **State Water Resources Control Board**
  Student Intern, 401 Water Quality Certification Unit
  Division of Water Quality
- [x] **State Water Resouces Control Board**
  Phil Crader
  Division of Water Rights
- [ ] **Dept. of Toxic Substances Control**
  CEQA Tracking Center
- [ ] **Department of Pesticide Regulation**
  CEQA Coordinator

Regional Water Quality Control Board (RWQCB)

- [ ] **RWQCB 1**
  Cathleen Hudson
  North Coast Region (1)
- [ ] **RWQCB 2**
  Environmental Document Coordinator
  San Francisco Bay Region (2)
- [ ] **RWQCB 3**
  Central Coast Region (3)
- [x] **RWQCB 4**
  Teresa Rodgers
  Los Angeles Region (4)
- [ ] **RWQCB 5S**
  Central Valley Region (5)
  - [ ] **RWQCB 5F**
    Central Valley Region (5)
    Fresno Branch Office
  - [ ] **RWQCB 5R**
    Central Valley Region (5)
    Redding Branch Office
- [ ] **RWQCB 6**
  Lahontan Region (6)
  - [ ] **RWQCB 6V**
    Lahontan Region (6)
    Victorville Branch Office
- [ ] **RWQCB 7**
  Colorado River Basin Region (7)
- [ ] **RWQCB 8**
  Santa Ana Region (8)
- [ ] **RWQCB 9**
  San Diego Region (9)

- [ ] Other SAN GABRIEL AND LA RIVER ~~[illegible]~~ CONSERVANCY
- [x] ~~[illegible]~~ SANTA-MON MTN Conservancy

Last Updated 8/27/2014

RB-AR 9035

Appendix C
CalEEMod Air Quality Data

ESA

Centralized BMP

South Coast Air Basin, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	0.00	User Defined Unit	10.00	435,600.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2015
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	1227.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

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1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - 2ac, 2,000 sq. feet

Construction Phase - correct days/ratios

Off-road Equipment - Equipment for Blding Const

Off-road Equipment - Eqipment for Grading

Off-road Equipment - Equipment for Site Prep

Grading - ac. disturbed

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	230.00	33.00
tblConstructionPhase	NumDays	20.00	17.00

tblConstructionPhase	NumDays	10.00	16.00
tblGrading	AcresOfGrading	17.00	10.00
tblGrading	AcresOfGrading	0.00	10.00
tblGrading	MaterialExported	0.00	45,173.00
tblLandUse	LandUseSquareFeet	0.00	435,600.00
tblLandUse	LotAcreage	0.00	10.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	3.00
tblProjectCharacteristics	OperationalYear	2014	2015

RB-AR 9038

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	12.3264	165.4322	117.0269	0.2835	18.9218	4.8885	23.8103	8.3619	4.4971	12.8590	0.0000	28,945.2292	28,945.2292	1.3553	0.0000	28,973.6910
Total	**12.3264**	**165.4322**	**117.0269**	**0.2835**	**18.9218**	**4.8885**	**23.8103**	**8.3619**	**4.4971**	**12.8590**	**0.0000**	**28,945.2292**	**28,945.2292**	**1.3553**	**0.0000**	**28,973.6910**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	12.3264	165.4322	117.0269	0.2835	11.7891	4.8885	16.6776	4.6586	4.4971	9.1557	0.0000	28,945.2292	28,945.2292	1.3553	0.0000	28,973.6910
Total	**12.3264**	**165.4322**	**117.0269**	**0.2835**	**11.7891**	**4.8885**	**16.6776**	**4.6586**	**4.4971**	**9.1557**	**0.0000**	**28,945.2292**	**28,945.2292**	**1.3553**	**0.0000**	**28,973.6910**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**37.70**	**0.00**	**29.96**	**44.29**	**0.00**	**28.80**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

RB-AR 9039

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	11.3906	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**11.3906**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	11.3906	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**11.3906**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

RB-AR 9040

0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/1/2015	4/22/2015	5	16	
2	Grading	Grading	4/23/2015	5/15/2015	5	17	
3	Building Construction	Building Construction	5/16/2015	7/1/2015	5	33	

Acres of Grading (Site Preparation Phase): 10

Acres of Grading (Grading Phase): 10

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

RB-AR 9041

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Excavators	2	6.00	162	0.38
Site Preparation	Other General Industrial Equipment	1	8.00	87	0.34
Site Preparation	Rubber Tired Dozers	0	8.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Grading	Excavators	0	8.00	162	0.38
Grading	Graders	2	8.00	174	0.41
Grading	Rubber Tired Dozers	2	8.00	255	0.40
Grading	Scrapers	0	8.00	361	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	0	7.00	226	0.29
Building Construction	Forklifts	2	8.00	89	0.20
Building Construction	Generator Sets	2	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	5,647.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	8	183.00	71.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.6628	0.0000	0.6628	0.0716	0.0000	0.0716			0.0000			0.0000
Off-Road	2.1028	20.9856	14.5647	0.0198		1.4545	1.4545		1.3381	1.3381		2,081.4286	2,081.4286	0.6214		2,094.4779
Total	**2.1028**	**20.9856**	**14.5647**	**0.0198**	**0.6628**	**1.4545**	**2.1173**	**0.0716**	**1.3381**	**1.4097**		**2,081.4286**	**2,081.4286**	**0.6214**		**2,094.4779**

Unmitigated Construction Off-Site

RB-AR 9042

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0709	0.0951	0.9938	1.9900e-003	0.1677	1.4800e-003	0.1691	0.0445	1.3500e-003	0.0458		173.3466	173.3466	9.9400e-003		173.5553
Total	**0.0709**	**0.0951**	**0.9938**	**1.9900e-003**	**0.1677**	**1.4800e-003**	**0.1691**	**0.0445**	**1.3500e-003**	**0.0458**		**173.3466**	**173.3466**	**9.9400e-003**		**173.5553**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Fugitive Dust					0.2983	0.0000	0.2983	0.0322	0.0000	0.0322			0.0000			0.0000
Off-Road	2.1028	20.9856	14.5647	0.0198		1.4545	1.4545		1.3381	1.3381	0.0000	2,081.4286	2,081.4286	0.6214		2,094.4779
Total	**2.1028**	**20.9856**	**14.5647**	**0.0198**	**0.2983**	**1.4545**	**1.7528**	**0.0322**	**1.3381**	**1.3704**	**0.0000**	**2,081.4286**	**2,081.4286**	**0.6214**		**2,094.4779**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0709	0.0951	0.9938	1.9900e-003	0.1677	1.4800e-003	0.1691	0.0445	1.3500e-003	0.0458		173.3466	173.3466	9.9400e-003		173.5553
Total	**0.0709**	**0.0951**	**0.9938**	**1.9900e-003**	**0.1677**	**1.4800e-003**	**0.1691**	**0.0445**	**1.3500e-003**	**0.0458**		**173.3466**	**173.3466**	**9.9400e-003**		**173.5553**

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3.3 Grading - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					12.9685	0.0000	12.9685	6.7333	0.0000	6.7333			0.0000			0.0000
Off-Road	5.3907	57.3739	36.7654	0.0365		3.1019	3.1019		2.8538	2.8538		3,836.9708	3,836.9708	1.1455		3,861.0263
Total	**5.3907**	**57.3739**	**36.7654**	**0.0365**	**12.9685**	**3.1019**	**16.0704**	**6.7333**	**2.8538**	**9.5871**		**3,836.9708**	**3,836.9708**	**1.1455**		**3,861.0263**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	6.8648	107.9632	79.2677	0.2451	5.7856	1.7851	7.5707	1.5842	1.6420	3.2261		24,934.9118	24,934.9118	0.1999		24,939.1094
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0709	0.0951	0.9938	1.9900e-003	0.1677	1.4800e-003	0.1691	0.0445	1.3500e-003	0.0458		173.3466	173.3466	9.9400e-003		173.5553
Total	**6.9357**	**108.0583**	**80.2615**	**0.2470**	**5.9533**	**1.7866**	**7.7399**	**1.6286**	**1.6433**	**3.2719**		**25,108.2583**	**25,108.2583**	**0.2098**		**25,112.6648**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.8358	0.0000	5.8358	3.0300	0.0000	3.0300			0.0000			0.0000
Off-Road	5.3907	57.3739	36.7654	0.0365		3.1019	3.1019		2.8538	2.8538	0.0000	3,836.9708	3,836.9708	1.1455		3,861.0263
Total	**5.3907**	**57.3739**	**36.7654**	**0.0365**	**5.8358**	**3.1019**	**8.9377**	**3.0300**	**2.8538**	**5.8837**	**0.0000**	**3,836.9708**	**3,836.9708**	**1.1455**		**3,861.0263**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	6.8648	107.9632	79.2677	0.2451	5.7856	1.7851	7.5707	1.5842	1.6420	3.2261		24,934.9118	24,934.9118	0.1999		24,939.1094
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0709	0.0951	0.9938	1.9900e-003	0.1677	1.4800e-003	0.1691	0.0445	1.3500e-003	0.0458		173.3466	173.3466	9.9400e-003		173.5553
Total	**6.9357**	**108.0583**	**80.2615**	**0.2470**	**5.9533**	**1.7866**	**7.7399**	**1.6286**	**1.6433**	**3.2719**		**25,108.2583**	**25,108.2583**	**0.2098**		**25,112.6648**

3.4 Building Construction - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.4820	25.4773	18.6212	0.0269		1.9712	1.9712		1.8869	1.8869		2,633.9358	2,633.9358	0.5358		2,645.1874
Total	**3.4820**	**25.4773**	**18.6212**	**0.0269**		**1.9712**	**1.9712**		**1.8869**	**1.8869**		**2,633.9358**	**2,633.9358**	**0.5358**		**2,645.1874**

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Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.7370	7.1583	9.1286	0.0154	0.4436	0.1221	0.5657	0.1263	0.1123	0.2386		1,553.3543	1,553.3543	0.0127		1,553.6200
Worker	0.8645	1.1604	12.1246	0.0243	2.0455	0.0180	2.0635	0.5425	0.0165	0.5590		2,114.8280	2,114.8280	0.1213		2,117.3749

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Total	**1.6015**	**8.3187**	**21.2532**	**0.0397**	**2.4891**	**0.1401**	**2.6292**	**0.6688**	**0.1288**	**0.7976**		**3,668.1823**	**3,668.1823**	**0.1339**		**3,670.9949**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.4820	25.4773	18.6212	0.0269		1.9712	1.9712		1.8869	1.8869	0.0000	2,633.9358	2,633.9358	0.5358		2,645.1874
Total	**3.4820**	**25.4773**	**18.6212**	**0.0269**		**1.9712**	**1.9712**		**1.8869**	**1.8869**	**0.0000**	**2,633.9358**	**2,633.9358**	**0.5358**		**2,645.1874**

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Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.7370	7.1583	9.1286	0.0154	0.4436	0.1221	0.5657	0.1263	0.1123	0.2386		1,553.3543	1,553.3543	0.0127		1,553.6200
Worker	0.8645	1.1604	12.1246	0.0243	2.0455	0.0180	2.0635	0.5425	0.0165	0.5590		2,114.8280	2,114.8280	0.1213		2,117.3749
Total	**1.6015**	**8.3187**	**21.2532**	**0.0397**	**2.4891**	**0.1401**	**2.6292**	**0.6688**	**0.1288**	**0.7976**		**3,668.1823**	**3,668.1823**	**0.1339**		**3,670.9949**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

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4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.515437	0.060435	0.179988	0.139880	0.041945	0.006639	0.015487	0.028746	0.001918	0.002517	0.004333	0.000596	0.002079

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

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	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	11.3906	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	11.3906	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

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6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.7658					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	8.6249					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**11.3906**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.7658					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	8.6249					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**11.3906**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

7.0 Water Detail

7.1 Mitigation Measures Water

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8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Distributed BMP

South Coast Air Basin, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	0.00	User Defined Unit	2.00	87,120.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2015
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	1227.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - 2ac, 2,000 sq. feet

Construction Phase - correct days/ratios

Off-road Equipment - Equipment for Blding Const

Off-road Equipment - Eqipment for Grading

Off-road Equipment - Equipment for Site Prep

Grading - ac. disturbed

Construction Off-road Equipment Mitigation -

Trips and VMT - VMT trips reduced

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Interior	130680	3000

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tblConstructionPhase	NumDays	200.00	14.00
tblConstructionPhase	NumDays	2.00	5.00
tblGrading	AcresOfGrading	1.00	2.00
tblGrading	AcresOfGrading	0.00	2.00
tblGrading	MaterialExported	0.00	9,000.00
tblLandUse	LandUseSquareFeet	0.00	87,120.00
tblLandUse	LotAcreage	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblProjectCharacteristics	OperationalYear	2014	2015
tblTripsAndVMT	HaulingTripNumber	1,125.00	989.00
tblTripsAndVMT	VendorTripNumber	14.00	0.00

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2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	6.6754	96.4709	69.9358	0.1942	8.1916	2.2393	10.4309	2.9538	2.0599	5.0137	0.0000	19,775.3226	19,775.3226	0.4893	0.0000	19,785.5988
Total	**6.6754**	**96.4709**	**69.9358**	**0.1942**	**8.1916**	**2.2393**	**10.4309**	**2.9538**	**2.0599**	**5.0137**	**0.0000**	**19,775.3226**	**19,775.3226**	**0.4893**	**0.0000**	**19,785.5988**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	6.6754	96.4709	69.9358	0.1942	6.1039	2.2393	8.3432	1.9908	2.0599	4.0507	0.0000	19,775.3226	19,775.3226	0.4893	0.0000	19,785.5988
Total	**6.6754**	**96.4709**	**69.9358**	**0.1942**	**6.1039**	**2.2393**	**8.3432**	**1.9908**	**2.0599**	**4.0507**	**0.0000**	**19,775.3226**	**19,775.3226**	**0.4893**	**0.0000**	**19,785.5988**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**25.49**	**0.00**	**20.01**	**32.60**	**0.00**	**19.21**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Area	1.8728	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.8728**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.8728	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.8728**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

RB-AR 9054

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	3/1/2015	3/6/2015	5	5	
2	Grading	Grading	3/7/2015	3/12/2015	5	4	

3	Building Construction	Building Construction	3/13/2015	4/1/2015	5	14	

Acres of Grading (Site Preparation Phase): 2

Acres of Grading (Grading Phase): 2

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Excavators	1	8.00	162	0.38
Site Preparation	Graders	0	8.00	174	0.41
Site Preparation	Other General Industrial Equipment	1	8.00	87	0.34
Site Preparation	Scrapers	0	8.00	361	0.48
Site Preparation	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Grading	Graders	1	4.00	174	0.41
Grading	Rubber Tired Dozers	1	4.00	255	0.40
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction	Cranes	0	6.00	226	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45

RB AR 9055

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	3	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	0.00	989.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	37.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4242	0.0000	0.4242	0.0458	0.0000	0.0458			0.0000			0.0000
Off-Road	1.0837	10.8309	7.3875	0.0102		0.7300	0.7300		0.6716	0.6716		1,066.8039	1,066.8039	0.3185		1,073.4921
Total	**1.0837**	**10.8309**	**7.3875**	**0.0102**	**0.4242**	**0.7300**	**1.1542**	**0.0458**	**0.6716**	**0.7174**		**1,066.8039**	**1,066.8039**	**0.3185**		**1,073.4921**

RB-AR 9056

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0378	0.0507	0.5300	1.0600e-003	0.0894	7.9000e-004	0.0902	0.0237	7.2000e-004	0.0244		92.4515	92.4515	5.3000e-003		92.5628
Total	**0.0378**	**0.0507**	**0.5300**	**1.0600e-003**	**0.0894**	**7.9000e-004**	**0.0902**	**0.0237**	**7.2000e-004**	**0.0244**		**92.4515**	**92.4515**	**5.3000e-003**		**92.5628**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1909	0.0000	0.1909	0.0206	0.0000	0.0206			0.0000			0.0000
Off-Road	1.0837	10.8309	7.3875	0.0102		0.7300	0.7300		0.6716	0.6716	0.0000	1,066.8039	1,066.8039	0.3185		1,073.4921
Total	**1.0837**	**10.8309**	**7.3875**	**0.0102**	**0.1909**	**0.7300**	**0.9209**	**0.0206**	**0.6716**	**0.6922**	**0.0000**	**1,066.8039**	**1,066.8039**	**0.3185**		**1,073.4921**

Mitigated Construction Off-Site

RB-AR 9057

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0378	0.0507	0.5300	1.0600e-003	0.0894	7.9000e-004	0.0902	0.0237	7.2000e-004	0.0244		92.4515	92.4515	5.3000e-003		92.5628
Total	**0.0378**	**0.0507**	**0.5300**	**1.0600e-003**	**0.0894**	**7.9000e-004**	**0.0902**	**0.0237**	**7.2000e-004**	**0.0244**		**92.4515**	**92.4515**	**5.3000e-003**		**92.5628**

3.3 Grading - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Fugitive Dust					3.7957	0.0000	3.7957	1.7509	0.0000	1.7509			0.0000			0.0000
Off-Road	1.5279	16.0596	10.4042	0.0107		0.9098	0.9098		0.8370	0.8370		1,122.9865	1,122.9865	0.3353		1,130.0270
Total	**1.5279**	**16.0596**	**10.4042**	**0.0107**	**3.7957**	**0.9098**	**4.7055**	**1.7509**	**0.8370**	**2.5879**		**1,122.9865**	**1,122.9865**	**0.3353**		**1,130.0270**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	5.1097	80.3606	59.0016	0.1824	4.3064	1.3287	5.6351	1.1791	1.2222	2.4013		18,559.8845	18,559.8845	0.1488		18,563.0090
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0378	0.0507	0.5300	1.0600e-003	0.0894	7.9000e-004	0.0902	0.0237	7.2000e-004	0.0244		92.4515	92.4515	5.3000e-003		92.5628
Total	**5.1475**	**80.4113**	**59.5316**	**0.1835**	**4.3958**	**1.3295**	**5.7253**	**1.2029**	**1.2229**	**2.4258**		**18,652.3360**	**18,652.3360**	**0.1541**		**18,655.5718**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.7081	0.0000	1.7081	0.7879	0.0000	0.7879			0.0000			0.0000
Off-Road	1.5279	16.0596	10.4042	0.0107		0.9098	0.9098		0.8370	0.8370	0.0000	1,122.9865	1,122.9865	0.3353		1,130.0270
Total	**1.5279**	**16.0596**	**10.4042**	**0.0107**	**1.7081**	**0.9098**	**2.6179**	**0.7879**	**0.8370**	**1.6249**	**0.0000**	**1,122.9865**	**1,122.9865**	**0.3353**		**1,130.0270**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	5.1097	80.3606	59.0016	0.1824	4.3064	1.3287	5.6351	1.1791	1.2222	2.4013		18,559.8845	18,559.8845	0.1488		18,563.0090
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0378	0.0507	0.5300	1.0600e-003	0.0894	7.9000e-004	0.0902	0.0237	7.2000e-004	0.0244		92.4515	92.4515	5.3000e-003		92.5628
Total	**5.1475**	**80.4113**	**59.5316**	**0.1835**	**4.3958**	**1.3295**	**5.7253**	**1.2029**	**1.2229**	**2.4258**		**18,652.3360**	**18,652.3360**	**0.1541**		**18,655.5718**

3.4 Building Construction - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.0613	13.7974	10.4618	0.0150		1.0709	1.0709		1.0282	1.0282		1,442.0192	1,442.0192	0.3024		1,448.3690
Total	**2.0613**	**13.7974**	**10.4618**	**0.0150**		**1.0709**	**1.0709**		**1.0282**	**1.0282**		**1,442.0192**	**1,442.0192**	**0.3024**		**1,448.3690**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1748	0.2346	2.4514	4.9100e-003	0.4136	3.6400e-003	0.4172	0.1097	3.3400e-003	0.1130		427.5882	427.5882	0.0245		428.1031
Total	**0.1748**	**0.2346**	**2.4514**	**4.9100e-003**	**0.4136**	**3.6400e-003**	**0.4172**	**0.1097**	**3.3400e-003**	**0.1130**		**427.5882**	**427.5882**	**0.0245**		**428.1031**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.0613	13.7974	10.4618	0.0150		1.0709	1.0709		1.0282	1.0282	0.0000	1,442.0192	1,442.0192	0.3024		1,448.3690
Total	**2.0613**	**13.7974**	**10.4618**	**0.0150**		**1.0709**	**1.0709**		**1.0282**	**1.0282**	**0.0000**	**1,442.0192**	**1,442.0192**	**0.3024**		**1,448.3690**

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Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1748	0.2346	2.4514	4.9100e-003	0.4136	3.6400e-003	0.4172	0.1097	3.3400e-003	0.1130		427.5882	427.5882	0.0245		428.1031

Total	**0.1748**	**0.2346**	**2.4514**	**4.9100e-003**	**0.4136**	**3.6400e-003**	**0.4172**	**0.1097**	**3.3400e-003**	**0.1130**		**427.5882**	**427.5882**	**0.0245**		**428.1031**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

RB-AR 9061

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.515437	0.060435	0.179988	0.139880	0.041945	0.006639	0.015487	0.028746	0.001918	0.002517	0.004333	0.000596	0.002079

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

RB-AR 9062

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

RB-AR 9063

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.8728	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	1.8728	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					

Architectural Coating	0.1478					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.7250					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.8728**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1478					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.7250					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.8728**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

RB-AR 9064

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

RB-AR 9065

Regional BMP

South Coast Air Basin, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	0.00	User Defined Unit	40.00	1,742,400.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2015
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	1227.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - 2ac, 2,000 sq. feet

Construction Phase - correct days/ratios

Off-road Equipment - Equipment for Blding Const

Off-road Equipment - Eqipment for Grading

Off-road Equipment - Equipment for Site Prep

Grading - ac. disturbed

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	740.00	65.00
tblConstructionPhase	NumDays	75.00	20.00

tblConstructionPhase	NumDays	30.00	25.00
tblConstructionPhase	PhaseEndDate	7/31/2015	8/1/2015
tblConstructionPhase	PhaseEndDate	4/3/2015	4/4/2015
tblGrading	AcresOfGrading	20.00	40.00
tblGrading	AcresOfGrading	0.00	40.00
tblGrading	MaterialExported	0.00	90,346.00
tblLandUse	LandUseSquareFeet	0.00	1,742,400.00
tblLandUse	LotAcreage	0.00	40.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblProjectCharacteristics	OperationalYear	2014	2015

RB-AR 9067

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	18.5176	256.2670	184.4165	0.4654	30.7563	6.8767	37.6330	12.9892	6.3260	19.3151	0.0000	47,469.4995	47,469.4995	1.8018	0.0000	47,507.3371

Total	**18.5176**	**256.2670**	**184.4165**	**0.4654**	**30.7563**	**6.8767**	**37.6330**	**12.9892**	**6.3260**	**19.3151**	**0.0000**	**47,469.4995**	**47,469.4995**	**1.8018**	**0.0000**	**47,507.3371**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	18.5176	256.2670	184.4165	0.4654	19.3724	6.8767	26.2491	7.3588	6.3260	13.6848	0.0000	47,469.4995	47,469.4995	1.8018	0.0000	47,507.3371
Total	**18.5176**	**256.2670**	**184.4165**	**0.4654**	**19.3724**	**6.8767**	**26.2491**	**7.3588**	**6.3260**	**13.6848**	**0.0000**	**47,469.4995**	**47,469.4995**	**1.8018**	**0.0000**	**47,507.3371**

RB-AR 9068

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**37.01**	**0.00**	**30.25**	**43.35**	**0.00**	**29.15**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	45.5626	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Total	**45.5626**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	45.5626	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**45.5626**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

RB-AR 9069

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	3/1/2015	4/4/2015	5	25	
2	Grading	Grading	4/5/2015	5/1/2015	5	20	
3	Building Construction	Building Construction	5/2/2015	8/1/2015	5	65	

Acres of Grading (Site Preparation Phase): 40

Acres of Grading (Grading Phase): 40

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Excavators	3	8.00	162	0.38
Site Preparation	Other General Industrial Equipment	3	8.00	87	0.34
Site Preparation	Rubber Tired Dozers	2	8.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	0	8.00	162	0.38
Grading	Graders	2	8.00	174	0.41
Grading	Rubber Tired Dozers	3	8.00	255	0.40
Grading	Scrapers	0	8.00	361	0.48
Grading	Tractors/Loaders/Backhoes	3	6.00	97	0.37
Building Construction	Cranes	0	7.00	226	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	4	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	4	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45

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Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	12	30.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	11,293.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	12	732.00	286.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					13.7410	0.0000	13.7410	6.8037	0.0000	6.8037			0.0000			0.0000
Off-Road	6.4281	67.2729	48.3602	0.0537		4.0026	4.0026		3.6824	3.6824		5,641.3776	5,641.3776	1.6842		5,676.7455
Total	**6.4281**	**67.2729**	**48.3602**	**0.0537**	**13.7410**	**4.0026**	**17.7436**	**6.8037**	**3.6824**	**10.4861**		**5,641.3776**	**5,641.3776**	**1.6842**		**5,676.7455**

RB-AR 9071

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1417	0.1902	1.9876	3.9800e-003	0.3353	2.9500e-003	0.3383	0.0889	2.7100e-003	0.0916		346.6931	346.6931	0.0199		347.1106
Total	**0.1417**	**0.1902**	**1.9876**	**3.9800e-003**	**0.3353**	**2.9500e-003**	**0.3383**	**0.0889**	**2.7100e-003**	**0.0916**		**346.6931**	**346.6931**	**0.0199**		**347.1106**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Fugitive Dust					6.1834	0.0000	6.1834	3.0617	0.0000	3.0617			0.0000			0.0000
Off-Road	6.4281	67.2729	48.3602	0.0537		4.0026	4.0026		3.6824	3.6824	0.0000	5,641.3776	5,641.3776	1.6842		5,676.7455
Total	**6.4281**	**67.2729**	**48.3602**	**0.0537**	**6.1834**	**4.0026**	**10.1861**	**3.0617**	**3.6824**	**6.7441**	**0.0000**	**5,641.3776**	**5,641.3776**	**1.6842**		**5,676.7455**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1417	0.1902	1.9876	3.9800e-003	0.3353	2.9500e-003	0.3383	0.0889	2.7100e-003	0.0916		346.6931	346.6931	0.0199		347.1106
Total	**0.1417**	**0.1902**	**1.9876**	**3.9800e-003**	**0.3353**	**2.9500e-003**	**0.3383**	**0.0889**	**2.7100e-003**	**0.0916**		**346.6931**	**346.6931**	**0.0199**		**347.1106**

RB-AR 9072

3.3 Grading - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					20.6981	0.0000	20.6981	10.2371	0.0000	10.2371			0.0000			0.0000
Off-Road	6.7539	72.6190	48.3483	0.0462		3.8403	3.8403		3.5331	3.5331		4,852.7740	4,852.7740	1.4488		4,883.1979

Total	**6.7539**	**72.6190**	**48.3483**	**0.0462**	**20.6981**	**3.8403**	**24.5384**	**10.2371**	**3.5331**	**13.7701**		**4,852.7740**	**4,852.7740**	**1.4488**		**4,883.1979**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	11.6691	183.5212	134.7432	0.4166	9.8347	3.0344	12.8691	2.6928	2.7911	5.4839		42,385.5968	42,385.5968	0.3398		42,392.7321
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0945	0.1268	1.3251	2.6600e-003	0.2236	1.9700e-003	0.2255	0.0593	1.8000e-003	0.0611		231.1287	231.1287	0.0133		231.4071
Total	**11.7636**	**183.6480**	**136.0682**	**0.4192**	**10.0582**	**3.0364**	**13.0946**	**2.7521**	**2.7929**	**5.5450**		**42,616.7255**	**42,616.7255**	**0.3530**		**42,624.1392**

RB-AR 9073

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.3142	0.0000	9.3142	4.6067	0.0000	4.6067			0.0000			0.0000
Off-Road	6.7539	72.6190	48.3483	0.0462		3.8403	3.8403		3.5331	3.5331	0.0000	4,852.7740	4,852.7740	1.4488		4,883.1979
Total	**6.7539**	**72.6190**	**48.3483**	**0.0462**	**9.3142**	**3.8403**	**13.1545**	**4.6067**	**3.5331**	**8.1398**	**0.0000**	**4,852.7740**	**4,852.7740**	**1.4488**		**4,883.1979**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	11.6691	183.5212	134.7432	0.4166	9.8347	3.0344	12.8691	2.6928	2.7911	5.4839		42,385.5968	42,385.5968	0.3398		42,392.7321
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0945	0.1268	1.3251	2.6600e-003	0.2236	1.9700e-003	0.2255	0.0593	1.8000e-003	0.0611		231.1287	231.1287	0.0133		231.4071
Total	**11.7636**	**183.6480**	**136.0682**	**0.4192**	**10.0582**	**3.0364**	**13.0946**	**2.7521**	**2.7929**	**5.5450**		**42,616.7255**	**42,616.7255**	**0.3530**		**42,624.1392**

3.4 Building Construction - 2015

Unmitigated Construction On-Site

RB-AR 9074

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.4660	41.0093	29.6913	0.0444		3.1411	3.1411		3.0241	3.0241		4,326.9233	4,326.9233	0.7964		4,343.6475
Total	**5.4660**	**41.0093**	**29.6913**	**0.0444**		**3.1411**	**3.1411**		**3.0241**	**3.0241**		**4,326.9233**	**4,326.9233**	**0.7964**		**4,343.6475**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.9688	28.8349	36.7715	0.0619	1.7868	0.4919	2.2787	0.5088	0.4523	0.9611		6,257.173 7	6,257.1737	0.0510		6,258.2440
Worker	3.4581	4.6417	48.4982	0.0972	8.1820	0.0720	8.2540	2.1699	0.0660	2.2359		8,459.311 8	8,459.3118	0.4851		8,469.4996
Total	**6.4269**	**33.4766**	**85.2697**	**0.1591**	**9.9689**	**0.5639**	**10.5328**	**2.6787**	**0.5183**	**3.1970**		**14,716.48 55**	**14,716.485 5**	**0.5361**		**14,727.743 7**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.4660	41.0093	29.6913	0.0444		3.1411	3.1411		3.0241	3.0241	0.0000	4,326.923 3	4,326.9233	0.7964		4,343.6475
Total	**5.4660**	**41.0093**	**29.6913**	**0.0444**		**3.1411**	**3.1411**		**3.0241**	**3.0241**	**0.0000**	**4,326.923 3**	**4,326.9233**	**0.7964**		**4,343.6475**

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Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.9688	28.8349	36.7715	0.0619	1.7868	0.4919	2.2787	0.5088	0.4523	0.9611		6,257.173 7	6,257.1737	0.0510		6,258.2440
Worker	3.4581	4.6417	48.4982	0.0972	8.1820	0.0720	8.2540	2.1699	0.0660	2.2359		8,459.311 8	8,459.3118	0.4851		8,469.4996
Total	**6.4269**	**33.4766**	**85.2697**	**0.1591**	**9.9689**	**0.5639**	**10.5328**	**2.6787**	**0.5183**	**3.1970**		**14,716.48 55**	**14,716.485 5**	**0.5361**		**14,727.743 7**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

RB-AR 9076

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.515437	0.060435	0.179988	0.139880	0.041945	0.006639	0.015487	0.028746	0.001918	0.002517	0.004333	0.000596	0.002079

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

Land Use	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

RB-AR 9078

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	45.5626	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	45.5626	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	11.0631					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000

Consumer Products	34.4995					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**45.5626**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	11.0631					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	34.4995					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**45.5626**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

RB-AR 9079

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Appendix D
Sensitive Natural Communities Descriptions

APPENDIX D

Sensitive Natural Communities Descriptions

California Walnut Woodland[1]

Description: Similar to and intergrading with Interior Live Oak Woodland or Coast Live Oak Woodland, but with a more open tree canopy dominated by *Juglans californica*. The open tree canopy allows development of a grassy understory. In most sites, this understory is composed of introduced winter-active annuals that complete most of their growth cycle before the deciduous *Juglans* leafs out in spring. *Site Factors*: On relatively moist, fine-textured soils of valley slopes and bottoms, as well as encircling rocky outcrops. These drier, rocky sites often support Venturan or Riversidian Sage Scrub. Intergrades with Coast Live Oak Woodland or Coast Live Oak Forest on more mesic sites, especially in canyons.

Characteristic Species: *Juglans californica*, *Quercus agrifolia*, *Q. engelmannii*, *Rhus ovata*, *R. trilobata*, [*Bromus rubens*],[*Marrubium vulgare*]

Distribution: South side of San Gabriel Mountains to the Santa Ana Mountains, mostly between 500 feet and 3,000 feet.

Canyon Live Oak Ravine Forest*

Description: Similar to Coast Live Oak Forest, but usually denser and not so tall. Dominated by *Quercus chrysolepis*, a broadleaved sclerophyll. Typically forms forests with little understory up to 20 m tall in canyons. Trees often with multiple trunks, probably from crown-sprouting after fires. Growing season from late spring into summer, similar to that of Lower Montane Coniferous Forests.

Site Factors: Transitional between low elevation broadleaved forests and higher elevation coniferous forests. On rocky, often steep slopes with little soil development. Typically in canyons and on north-facing slopes at relatively low elevations and on south-facing slopes at higher elevations. At higher elevations with colder winters than Mixed Evergreen Forest, Blue Oak Woodland, Coast Live Oak Forest or Californian Mixed Chaparral. Often adjacent to Montane Chaparral on dry slopes or lower Montane Coniferous Forest on less rocky soils. May intergrade with any of the above vegetation types and is not always distinct from them.

Characteristic Species: *Calocedrus decurrens*, *Lithocarpus densiflorus*, *Pinus coulteri* (Southern Coast Ranges), *Pseudotsuga menziesii*, *Quercus chrysolepis*, *Umbellularia californica*

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[1] Descriptions taken from: Holland, R. F. 1986. Preliminary descriptions of the terrestrial natural communities of California. Unpublished report. State of California, The Resources Agency, Department of Fish and Game, Natural Heritage Division, Sacramento, California. Please note: Many species names have changed since the preparation of this document. Also, brackets denote species that are non-native.

Distribution: Inner Northern Coast Ranges from Siskiyou County to Lake County, Southern Coast Ranges from Mount Diablo to Monterey County. West slope of the Sierra Nevada from Tehama County to Kern County at elevations of 1,000 to 4,000 feet in the north and 3,000 to 6,000 feet in the south. Replaced by the closely related Bigcone Spruce-Canyon Oak Forest in the Transverse and Peninsular Ranges of Southern California.

Mainland Cherry Forest

Stands of hollyleaf cherry (*Prunus ilicifolia*) on steep, dry, north-facing slopes with rocky, sandstone-derived soils. Plants most often seen as shrubs, but may reach tree size. Stands with large trees are exceptional (California Native Plant Society).

Open Engelmann Oak Woodland*

Description: An evergreen woodland quite reminiscent of Blue Oak Woodland but dominated by *Quercus engelmannii* with an understory of typical "grassland" species.

Site Factors: Relatively moist sites on fine-textured soils of gentle slopes and valley bottoms. Intergrades with Venturan or Riversidean Sage Scrubs on drier, rockier sites, and with Dense Engelmann Oak Woodland on more mesic sites. Often surrounds grassland portreros, occupying the ecotone between the grassland (on fine-textured, deep soils) and surrounding shrub fields (on rockier, drier sites).

Characteristic Species: *Juglans californica*, *Quercus agrifolia*, *Q. engelmannii*, *Rhus ovata*, *R. trilobata*
Distribution: Mainly in the Santa Ana Mountains of San Diego and adjacent Riverside counties, usually below about 4,000 feet.

Riversidean Alluvial Fan Sage Scrub*

Description: This is the most xeric expression of Coastal Sage Scrub south of Point Conception. Typical stands are fairly open and dominated by *Artemisia californica*, *Eriogonum fasciculatum*, and [*Bromus rubens]*, each attaining at least 20 percent cover.

Site Factors: Typically on xeric sites such as steep slopes, severely drained soils, or clays that released stored soil moisture only slowly. Intergrades at slightly higher elevations with several Southern Californian chaparrals.

Characteristic Species: *Artemisia californica*, *Atriplex canescens*, [*Bromus rubens*], *Encelia farinosa*, *Ericameria pinefolia*, *Eriodictyon crassifolium*, *Eriogonum fasciculatum*, *Gutierrezia californica*, *Ericameria linearifolia*, *Isomeris arboreus*, *Lotus scoparius*, *Malacothamnus fasciculatus*, *Salvia apiana*, *S. mellifera*, *Yucca whipplei parishii*

Distribution: Along the coastal base of the Transverse and Peninsular ranges from central Los Angeles County to the Mexican frontier.

Southern California Arroyo Chub/Santa Ana Sucker Stream

Streams used by arroyo chub (*Gila orcuttii*) and/or Santa Ana sucker (*Catostomus santaanae*).

Southern California Coastal Lagoon

Coastal lagoons in Southern California.

Southern California Threespine Stickleback Stream

Streams used by threespine stickleback (*Gasterosteus aculeatus*), typically slow-flowing waterways along the coast with emergent vegetation.

Southern Coast Live Oak Riparian Forest*

Description: Open to locally dense evergreen sclerophyllous riparian woodlands dominated by *Quercus agrifolia*. This type appears to be richer in herbs and poorer in understory shrubs than other riparian communities. Similar to and questionably distinct from Central Coast Live Oak Riparian Forest.

Site Factors: Bottomlands and outer floodplains along larger streams, on fine-grained, rich alluvium.

Characteristic species: *Acer macrophyllum*, *Artemisia douglasiana*, *Cardamine californica*, *Eucrypta chrysanthemifolia*, *Heteromeles arbutifolia*, *Keckiella cordifolia*, *Lonicera hispidula*, *Mara macrocarpus*, *Pholistoma auritum*, *Quercus agrifolia*, *Rhus trilobata*, *Rosa californica*, *Rubus ursinus*, *Sambucus Mexicana*, *Symphoricarpos mollis*, *Toxicodendron diversilobum*, *Umbellularia californica*
Distribution: Canyons and valleys of coastal Southern California, mostly south of Point Conception.

Southern Coastal Bluff Scrub*

Description: Similar to Northern Coastal Bluff Scrub (a low, often prostrate, scrub 5-50 cm high, forming continuous mats or more scattered. Dwarf shrubs, herbaceous perennials, and annuals are represented…), but plants less prostrate (up to 2 meters tall). Most plants woody and/or succulent. Most growth and flowering occur from late winter through spring.

Site Factors: Similar to Northern Coastal Bluff Scrub (exposed to nearly constant winds with high salt content; soil usually rocky and poorly developed), but conditions less extreme as a result of less intense but still moisture-laden winds. Intergrades in less exposed settings with Venturan Coastal Sage Scrub, or on finer-grained soils with Valley and Foothill Grassland.

Characteristic Species: *Atriplex* spp., *Calystegia cyclostegia*, *C. macrostegia*, *Castilleja affinis*, *Chorizanthe orcuttiana*, *Coreopsis gigantea, C. maritima*, *Dudleya* spp., *Encelia californica*, *Erigeron glaucus*, *Eriophyllum staechadifolium*, *Mesembryanthemum* sp., *Haploppappus* spp., *Malacothrix saxatilis*, *Marah macrocarpus*, [*Carpobrotus aequilateralus*], [*Mesembryanthemum crystallinum*], *Opuntia littoralis*, *Rhus integrifolia*

Distribution: At localized sites along the coast, south of Point Conception; Point Mugu, Point Dume, Point Vicente, Dana Point, Torrey Pines State Reserve, Point Loma, etc. Several sites on the off-shore islands.

Southern Coastal Salt Marsh*

Description: Similar to Northern Coastal Salt Marsh (highly productive, herbaceous and suffrutescent, salt-tolerant hydorphytes forming moderate to dense cover and up to 1 meter tall) but with a longer growing season and greater abundance of suffrutescent species in the higher, drier sites. Southern "specialties" include *Atriplex watsonii*, *Batis maritima*, *Lycium californicum*, *Monanthochloe littoralis*, *Sueda californica*, and *Salicornia subterminalis*.

Site Factors: Very similar to Northern Coastal Salt Marsh (usually found along sheltered inland margins of bays, lagoons, and estuaries; these hydric soils are subject to regular tidal inundation by saltwater for at least part of each year) but with warmer water and air temperatures. *Frankenia*, *Sueda*, and/or *Salicornia subterminalis* often occur along the upper, landward edges of the marshes; *Salicornia bigelovii*, *S. virginica*, and *Batis maritima* at middle elevations; and *Spartina* closest to open water.

Characteristic Species: *Amblyopappus pussilus*, *Atriplex watsonii*, *Batis maritima*, *Cressa truxillensis*, *Cuscuta salina*, *Distichlis spicata* var. *spicata*, *Frankenia grandifolia*, *Heliotropium curassavicum*, *Jaumea carnosa*, *Juncus acutus sphaerocarpus*, *Limonium californicum*, [*Carpobrotus aequilateralis*], [*Mesembryanthemum crystalinum*], [*M. nodiflorum*], *Monanthochloe littoralis*, *Salicornia bigelovii*, *Salicornia* spp., *Spartina foliosa*, *Suaeda californica*

Distribution: Bays, lagoons, and estuaries along the coast from about Point Conception to the Mexican border. Intergrades broadly with Northern Coastal Salt Marsh along the south central coast. Nowhere as extensive as the larger northern marshes, and now considerably reduced by land development activities. Good to fair examples occur at Goleta Slough and near Carpinteria, Santa Barbara County; Point Mugu, Ventura County; Upper Newport Bay, Orange County; and several small areas in San Diego County.

Southern Cottonwood-Willow Riparian Forest*

Description: Tall, open, broadleafed winter-deciduous riparian forests dominated by *Populus fremontii*, *P. trichocarpa*, and several tree willows. Similar to Central Coast Cottonwood-Sycamore Riparian Forest, although apparently with less *Quercus agrifolia* or *Alnus rhombifolia* (this merits further study). Understories usually are shrubby willows.

Site Factors: Sub-irrigated and frequently overflowed lands along rivers and streams. The dominant species require moist, bare mineral soil for germination and establishment. This is provided after flood waters recede, leading to uniform-aged stands in this seral type.

Characteristic species: *Artemisia douglasiana*, *Baccaris viminea*, *Marah macrocarpus*, *Platanus racemosa*, *Populus fremontii*, *P. trichocarpa*, *Salix gooddingii*, *S. hindsiana*, *S. lasiandra*, *S. lasiolepis*, *Urtica holosericea*

Distribution: Along perennially wet stream reaches of the Transverse and Peninsular ranges, from Santa Barbara County south to Baja California Norte and east to the edge of the deserts.

Southern Dune Scrub*

Description: Similar to Central Dune Scrub (a dense coastal scrub community of scattered shrubs, subshrubs, and herbs, generally less than 1 meter tall and often developing considerable cover) but plants somewhat shorter and often succulent.

Site Factors: Similar to Central and Northern Dune Scrub (Central: restricted to the coast on ± stabilized backdune slopes, ridges, and flats), but drier and somewhat warmer and probably with less onshore wind. Intergrades toward the coast with Southern Foredunes and away from the coast on rockier soils with Venturan Sage Scrub, or Coastal Succulent Scrub.

Characteristic Species: *Atriplex leucophylla*, *Croton californicus*, *Ephedra californica*, *Ericameria ericoides*, *Haplopappus venetus vernonioides*, *Lupinus chamissonia*, *Lycium brevipes*, [*Mesembryanthemum crystallinum*], *Opuntia littoralis*, *Rhus integrifolia*, *Simmondsia chinensis*
Distribution: Same general areas as Southern Foredunes (areas of sand accumulation along the coast between Point Conception and the Mexican border), but usually a little farther back from the coast. With the notable exception of the El Segundo Dunes, this community has been virtually eliminated from mainland Southern California. Other small examples persist in Baja California and the Channel Islands.

Southern Mixed Riparian Forest

Streamside forest with mixed species composition.

Southern Riparian Forest

Streamside forest with mixed species composition.

Southern Sycamore-Alder Riparian Woodland*

Description: A tall, open, broadleafed, winter-deciduous streamside woodland dominated by *Platanus racemosa* (and often also *Alnus rhombifolia*). These stands seldom form closed canopy forests, and even may appear as trees scattered in a shrubby thicket of sclerophyllous and deciduous species. Lianas include *Rubus ursinus* and *Toxicodendron diversilobum*. Distinctions between this type and Sycamore Alluvial Woodland merit additional study.

Site Factors: Very rocky streambeds subject to seasonally high-intensity flooding. *Alnus* increases in abundance on more perennial streams, while *Platanus* favors more intermittent hydrographs.

Characteristic Species: *Acer macrophyllum*, *Alnus rhombifolia*, *Artemisia douglasiana*, *Aralia californica*, *Equisetum hyemale*, *Oryzopsis miliacea*, *Quercus agrifolia*, *Rubus ursinus*, *Sambucus Mexicana*, *Toxicodendron diversilobum*, *Umbellularia californica*, *Urtica holsoericea*

Distribution: Transverse and Peninsular Ranges from Point Conception south into Baja California Norte.

Southern Willow Scrub*

Description: Dense, broadleafed, winter-deciduous riparian thickets dominated by several *Salix* species, with scattered emergent *Populus fremontii* and *Platanus racemosa*. Most stands are too dense to allow much understory development.

Site Factors: Loose, sandy, or fine gravelly alluvium deposited near stream channels during flood flows. This early seral type requires repeated flooding to prevent succession to Southern Cottonwood-Sycamore Riparian Forest.

Characteristic Species: *Pluchea sericea*, *Populus fremontii*, *Salix gooddingii*, *S. hindsiana*, *S. laevigata arauipa*, *S. lasiandra*, *S. lasiolepis*, *S. leucodendroides*, others?

Distribution: Formerly extensive along the major rivers of coastal Southern California, but now much reduced by urban expansion, flood control, and channel "improvements."

Valley Oak Woodland*

Description: Similar to Northern Oak Woodland and Blue Oak Woodland, but typically more open, forming a grassy-understoried savanna rather than a closed woodland. *Quercus lobata* is usually the only tree present. This winter-deciduous species is California's largest broad-leaved tree, with mature individuals reaching 15–35 meters. Most stands consist of open-canopy growth form trees and seldom exceed 30–40 percent absolute cover.

Site Factors: On deep, well-drained alluvial soils, usually in valley bottoms, apparently with more moisture in summer than in Blue Oak Woodland. Intergrades with Valley Oak Riparian Forest near rivers and with Blue Oak Woodland on drier slopes. Also found on non-alluvial settings in the South Coast and Transverse Ranges. Fire may have prevented some valley oak stands from succeeding to Ponderosa Pine or Coulter Pine forests before fire suppression.

Characteristic Species: *Quercus lobata*, *Elymus triticoides*, *Toxicodendron diversilobum*, *Q. douglasii*
Distribution: Sacramento and San Joaquin valleys adjacent to the Sierra Nevada foothills, valleys of the Coast Ranges from Lake County to western Los Angeles County. Usually below 2000 feet (610 meters).

Walnut Forest

Riparian corridors dominated by California walnut (*Juglans californica*). Other species present may include foothill ash (*Fraxinus dipetala*), coast live oak (*Quercus agrifolia*), Mexican elderberry (*Sambucus Mexicana*), and California bay (*Umbellularia californica*).

Appendix E
CNDDB Species List

Query Criteria: Taxonomic Group is (Fish or Amphibians or Reptiles or Birds or Mammals or Mollusks or Arachnids or Crustaceans or Insects or Ferns or Gymnosperms or Monocots or Dicots or Lichens or Bryophytes) and County is (Los Angeles)

Element Code	Species	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
AAAAD02110	***Batrachoseps gabrieli*** San Gabriel slender salamander	None	None	G2	S2	
AAAAD04011	***Ensatina eschscholtzii croceator*** yellow-blotched salamander	None	None	G5T3	S3	SSC
AAAAD04013	***Ensatina klauberi*** large-blotched salamander	None	None	G2G3	S2S3	SSC
AAAAF02032	***Taricha torosa*** Coast Range newt	None	None	G4	S4	SSC
AAABB01230	***Anaxyrus californicus*** arroyo toad	Endangered	None	G2G3	S2S3	SSC
AAABF02020	***Spea hammondii*** western spadefoot	None	None	G3	S3	SSC
AAABH01022	***Rana draytonii*** California red-legged frog	Threatened	None	G2G3	S2S3	SSC
AAABH01330	***Rana muscosa*** southern mountain yellow-legged frog	Endangered	Endangered	G1	S1	SSC
ABNDC04030	***Oceanodroma homochroa*** ashy storm-petrel	None	None	G2	S2	SSC
ABNGE02020	***Plegadis chihi*** white-faced ibis	None	None	G5	S3S4	WL
ABNKA03010	***Gymnogyps californianus*** California condor	Endangered	Endangered	G1	S1	
ABNKC06010	***Elanus leucurus*** white-tailed kite	None	None	G5	S3	FP
ABNKC10010	***Haliaeetus leucocephalus*** bald eagle	Delisted	Endangered	G5	S2	FP
ABNKC12040	***Accipiter cooperii*** Cooper's hawk	None	None	G5	S3	WL
ABNKC19070	***Buteo swainsoni*** Swainson's hawk	None	Threatened	G5	S3	
ABNKC19120	***Buteo regalis*** ferruginous hawk	None	None	G4	S3S4	WL
ABNKC22010	***Aquila chrysaetos*** golden eagle	None	None	G5	S3	FP
ABNKD06030	***Falco columbarius*** merlin	None	None	G5	S3S4	WL
ABNKD06071	***Falco peregrinus anatum*** American peregrine falcon	Delisted	Delisted	G4T4	S3S4	FP

Element Code	Species	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
ABNKD06090	***Falco mexicanus*** prairie falcon	None	None	G5	S4	WL
ABNME03041	***Laterallus jamaicensis coturniculus*** California black rail	None	Threatened	G4T1	S1	FP
ABNNB03031	***Charadrius alexandrinus nivosus*** western snowy plover	Threatened	None	G3T3	S2	SSC
ABNNB03100	***Charadrius montanus*** mountain plover	None	None	G3	S2?	SSC
ABNNM08103	***Sternula antillarum browni*** California least tern	Endangered	Endangered	G4T2T3Q	S2S3	FP
ABNNN07012	***Synthliboramphus scrippsi*** Scripps's murrelet	Candidate	Threatened	G3	S2	
ABNRB02022	***Coccyzus americanus occidentalis*** western yellow-billed cuckoo	Proposed Threatened	Endangered	G5T3Q	S1	
ABNSB10010	***Athene cunicularia*** burrowing owl	None	None	G4	S3	SSC
ABNSB13040	***Asio flammeus*** short-eared owl	None	None	G5	S3	SSC
ABNUA01010	***Cypseloides niger*** black swift	None	None	G4	S2	SSC
ABPAE33043	***Empidonax traillii extimus*** southwestern willow flycatcher	Endangered	Endangered	G5T1T2	S1	
ABPAT02011	***Eremophila alpestris actia*** California horned lark	None	None	G5T3Q	S3	WL
ABPAU08010	***Riparia riparia*** bank swallow	None	Threatened	G5	S2S3	
ABPBG02095	***Campylorhynchus brunneicapillus sandiegensis*** coastal cactus wren	None	None	G5T3Q	S3	SSC
ABPBJ08081	***Polioptila californica californica*** coastal California gnatcatcher	Threatened	None	G3T2	S2	SSC
ABPBK06100	***Toxostoma lecontei*** Le Conte's thrasher	None	None	G4	S3	SSC
ABPBR01030	***Lanius ludovicianus*** loggerhead shrike	None	None	G4	S4	SSC
ABPBR01036	***Lanius ludovicianus mearnsi*** San Clemente loggerhead shrike	Endangered	None	G4T1Q	S1	SSC
ABPBW01114	***Vireo bellii pusillus*** least Bell's vireo	Endangered	Endangered	G5T2	S2	
ABPBX03010	***Setophaga petechia*** yellow warbler	None	None	G5	S3S4	SSC
ABPBX24010	***Icteria virens*** yellow-breasted chat	None	None	G5	S3	SSC

Element Code	Species	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
ABPBX91091	***Aimophila ruficeps canescens*** southern California rufous-crowned sparrow	None	None	G5T3	S2S3	WL
ABPBX97021	***Artemisiospiza belli belli*** Bell's sage sparrow	None	None	G5T2T4	S2?	WL
ABPBX97024	***Artemisiospiza belli clementeae*** San Clemente sage sparrow	Threatened	None	G5T1Q	S1	SSC
ABPBX99015	***Passerculus sandwichensis beldingi*** Belding's savannah sparrow	None	Endangered	G5T3	S3	
ABPBXA0020	***Ammodramus savannarum*** grasshopper sparrow	None	None	G5	S2	SSC
ABPBXA301C	***Melospiza melodia graminea*** Channel Island song sparrow	None	None	G5T1	S1	SSC
ABPBXB0020	***Agelaius tricolor*** tricolored blackbird	None	None	G2G3	S1S2	SSC
AFCHA0209J	***Oncorhynchus mykiss irideus*** southern steelhead - southern California DPS	Endangered	None	G5T1Q	S1	SSC
AFCJB1303H	***Siphateles bicolor mohavensis*** Mohave tui chub	Endangered	Endangered	G4T1	S1	FP
AFCJB13120	***Gila orcuttii*** arroyo chub	None	None	G2	S2	SSC
AFCJB3705K	***Rhinichthys osculus ssp. 3*** Santa Ana speckled dace	None	None	G5T1	S1	SSC
AFCJC02190	***Catostomus santaanae*** Santa Ana sucker	Threatened	None	G1	S1	SSC
AFCPA03011	***Gasterosteus aculeatus williamsoni*** unarmored threespine stickleback	Endangered	Endangered	G5T1	S1	FP
AFCQN04010	***Eucyclogobius newberryi*** tidewater goby	Endangered	None	G3	S2S3	SSC
AMABA01101	***Sorex ornatus willetti*** Santa Catalina shrew	None	None	G5T1	S1	SSC
AMABA01104	***Sorex ornatus salicornicus*** southern California saltmarsh shrew	None	None	G5T1?	S1	SSC
AMACB01010	***Macrotus californicus*** California leaf-nosed bat	None	None	G4	S3	SSC
AMACC01020	***Myotis yumanensis*** Yuma myotis	None	None	G5	S4?	
AMACC01070	***Myotis evotis*** long-eared myotis	None	None	G5	S4?	
AMACC01090	***Myotis thysanodes*** fringed myotis	None	None	G4	S4	
AMACC01110	***Myotis volans*** long-legged myotis	None	None	G5	S4?	

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AMACC01140	***Myotis ciliolabrum*** western small-footed myotis	None	None	G5	S2S3	
AMACC02010	***Lasionycteris noctivagans*** silver-haired bat	None	None	G5	S3S4	
AMACC05030	***Lasiurus cinereus*** hoary bat	None	None	G5	S4?	
AMACC05060	***Lasiurus blossevillii*** western red bat	None	None	G5	S3?	SSC
AMACC05070	***Lasiurus xanthinus*** western yellow bat	None	None	G5	S3	SSC
AMACC07010	***Euderma maculatum*** spotted bat	None	None	G4	S3	SSC
AMACC08010	***Corynorhinus townsendii*** Townsend's big-eared bat	None	Candidate Threatened	G3G4	S2S3	SSC
AMACC10010	***Antrozous pallidus*** pallid bat	None	None	G5	S3	SSC
AMACD02011	***Eumops perotis californicus*** western mastiff bat	None	None	G5T4	S4	SSC
AMACD04010	***Nyctinomops femorosaccus*** pocketed free-tailed bat	None	None	G4	S3	SSC
AMACD04020	***Nyctinomops macrotis*** big free-tailed bat	None	None	G5	S2	SSC
AMAEB03051	***Lepus californicus bennettii*** San Diego black-tailed jackrabbit	None	None	G5T3T4	S3S4	SSC
AMAFB02172	***Neotamias speciosus speciosus*** lodgepole chipmunk	None	None	G4T2T3	S2S3	
AMAFB04040	***Ammospermophilus nelsoni*** Nelson's antelope squirrel	None	Threatened	G2	S2	
AMAFB05150	***Xerospermophilus mohavensis*** Mohave ground squirrel	None	Threatened	G2G3	S2S3	
AMAFD01041	***Perognathus longimembris brevinasus*** Los Angeles pocket mouse	None	None	G5T1T2	S1S2	SSC
AMAFD01042	***Perognathus longimembris pacificus*** Pacific pocket mouse	Endangered	None	G5T1	S1	SSC
AMAFD01060	***Perognathus inornatus*** San Joaquin Pocket Mouse	None	None	G2G3	S2S3	
AMAFD01082	***Perognathus alticolus inexpectatus*** Tehachapi pocket mouse	None	None	G1G2T1T2	S1S2	SSC
AMAFD03143	***Dipodomys merriami parvus*** San Bernardino kangaroo rat	Endangered	None	G5T1	S1	SSC
AMAFD05031	***Chaetodipus fallax fallax*** northwestern San Diego pocket mouse	None	None	G5T3T4	S3S4	SSC

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AMAFD05032	***Chaetodipus fallax pallidus*** pallid San Diego pocket mouse	None	None	G5T34	S3S4	SSC
AMAFF06022	***Onychomys torridus ramona*** southern grasshopper mouse	None	None	G5T3	S3	SSC
AMAFF08041	***Neotoma lepida intermedia*** San Diego desert woodrat	None	None	G5T3T4	S3S4	SSC
AMAFF11035	***Microtus californicus stephensi*** south coast marsh vole	None	None	G5T1T2	S1S2	SSC
AMAJA04022	***Urocyon littoralis catalinae*** Santa Catalina Island fox	Endangered	Threatened	G1T1	S1	
AMAJA04023	***Urocyon littoralis clementae*** San Clemente Island fox	None	Threatened	G1T1	S1	
AMAJF04010	***Taxidea taxus*** American badger	None	None	G5	S3	SSC
AMALE04013	***Ovis canadensis nelsoni*** desert bighorn sheep	None	None	G4T4	S3	FP
ARAAA02010	***Chelonia mydas*** green turtle	Threatened	None	G3	S1	
ARAAD02030	***Emys marmorata*** western pond turtle	None	None	G3G4	S3	SSC
ARAAF01012	***Gopherus agassizii*** desert tortoise	Threatened	Threatened	G3	S2	
ARACC01012	***Anniella pulchra pulchra*** silvery legless lizard	None	None	G3G4T3T4Q	S3	SSC
ARACF12100	***Phrynosoma blainvillii*** coast horned lizard	None	None	G3G4	S3S4	SSC
ARACJ02143	***Aspidoscelis tigris stejnegeri*** coastal whiptail	None	None	G5T3T4	S2S3	
ARACK01020	***Xantusia riversiana*** island night lizard	Delisted	None	G3	G3	
ARADA01020	***Charina trivirgata*** rosy boa	None	None	G4G5	S3S4	
ARADB10015	***Diadophis punctatus modestus*** San Bernardino ringneck snake	None	None	G5T2T3Q	S2?	
ARADB19062	***Lampropeltis zonata (parvirubra)*** California mountain kingsnake (San Bernardino population)	None	None	G4G5	S2?	SSC
ARADB19063	***Lampropeltis zonata (pulchra)*** California mountain kingsnake (San Diego population)	None	None	G4G5	S1S2	SSC
ARADB36160	***Thamnophis hammondii*** two-striped garter snake	None	None	G4	S3S4	SSC
ICBRA07010	***Streptocephalus woottoni*** Riverside fairy shrimp	Endangered	None	G1G2	S1S2	

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IICOL02080	***Cicindela gabbii*** western tidal-flat tiger beetle	None	None	G2G4	S1	
IICOL02101	***Cicindela hirticollis gravida*** sandy beach tiger beetle	None	None	G5T2	S1	
IICOL02113	***Cicindela latesignata latesignata*** western beach tiger beetle	None	None	G2G4T1T2	S1	
IICOL02121	***Cicindela senilis frosti*** senile tiger beetle	None	None	G2G3T1T3	S1	
IICOL4A010	***Coelus globosus*** globose dune beetle	None	None	G1G2	S1S2	
IICOL4W010	***Onychobaris langei*** Lange's El Segundo Dune weevil	None	None	G1	S1	
IICOL51021	***Trigonoscuta dorothea dorothea*** Dorothy's El Segundo Dune weevil	None	None	G1T1	S1	
IIDIP05022	***Rhaphiomidas terminatus terminatus*** El Segundo flower-loving fly	None	None	G1T1	S1	
IIDIP17010	***Brennania belkini*** Belkin's dune tabanid fly	None	None	G1G2	S1S2	
IIHYM71040	***Ceratochrysis longimala*** Desert cuckoo wasp	None	None	G1	S1	
IILEM0R390	***Eucosma hennei*** Henne's eucosman moth	None	None	G1	S1	
IILEM2X090	***Carolella busckana*** Busck's gallmoth	None	None	G1G3	SH	
IILEP84030	***Panoquina errans*** wandering (=saltmarsh) skipper	None	None	G4G5	S2	
IILEPE2206	***Callophrys mossii hidakupa*** San Gabriel Mountains elfin butterfly	None	None	G4T1T2	S1S2	
IILEPG201B	***Euphilotes battoides allyni*** El Segundo blue butterfly	Endangered	None	G5T1	S1	
IILEPG402A	***Glaucopsyche lygdamus palosverdesensis*** Palos Verdes blue butterfly	Endangered	None	G5T1	S1	
IILEPG6011	***Plebejus saepiolus aureolus*** San Gabriel Mountains blue butterfly	None	None	G5T1	S1	
IILEPG7010	***Plebulina emigdionis*** San Emigdio blue butterfly	None	None	G1G2	S1S2	
IILEPP2010	***Danaus plexippus*** monarch butterfly	None	None	G5	S3	
IIORT32020	***Aglaothorax longipennis*** Santa Monica shieldback katydid	None	None	G1G2	S1S2	
IIORT36300	***Trimerotropis occidentiloides*** Santa Monica grasshopper	None	None	G1G2	S1S2	

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IITRI23010	***Diplectrona californica*** California diplectronan caddisfly	None	None	G1G2	S1S2	
ILARAU7010	***Socalchemmis gertschi*** Gertsch's socalchemmis spider	None	None	G1	S1	
IMGAS19020	***Sterkia clementina*** San Clemente Island blunt-top snail	None	None	G1	S1	
IMGAS36030	***Haplotrema catalinense*** Santa Catalina lancetooth	None	None	G1	S1	
IMGAS80110	***Pristiloma shepardae*** Shepard's snail	None	None	G1	S1	
IMGASB6010	***Radiocentrum avalonense*** Catalina mountainsnail	None	None	G1	S1	
IMGASC5030	***Micrarionta gabbi*** San Clemente islandsnail	None	None	G1	S1	
IMGASD1010	***Xerarionta intercisa*** horseshoe snail	None	None	G1	S1	
IMGASD1030	***Xerarionta redimita*** wreathed cactussnail	None	None	G1G2	S1	
IMGASJ7040	***Tryonia imitator*** mimic tryonia (=California brackishwater snail)	None	None	G2	S2	
NBMUS7L090	***Tortula californica*** California screw moss	None	None	G2?	S2	1B.2
NBMUS80010	***Anomobryum julaceum*** slender silver moss	None	None	G4G5	S2	4.2
NLTES29470	***Graphis saxorum*** Baja rock lichen	None	None	G1G3	S1S3	3
NLTEST7980	***Texosporium sancti-jacobi*** woven-spored lichen	None	None	G3	S1	3
PDAPI0U090	***Cymopterus deserticola*** desert cymopterus	None	None	G2	S2	1B.2
PDAPI1B0W0	***Lomatium insulare*** San Nicolas Island lomatium	None	None	G2G3	S2S3	1B.2
PDAPI1G030	***Oreonana vestita*** woolly mountain-parsley	None	None	G3	S3	1B.3
PDAST0W0W0	***Baccharis malibuensis*** Malibu baccharis	None	None	G1	S1	1B.1
PDAST20095	***Chaenactis glabriuscula var. orcuttiana*** Orcutt's pincushion	None	None	G5T1	S1	1B.1
PDAST3N070	***Eriophyllum mohavense*** Barstow woolly sunflower	None	None	G2	S2	1B.2
PDAST3N090	***Constancea nevinii*** Nevin's woolly sunflower	None	None	G3	S3	1B.3

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PDAST440C0	***Pseudognaphalium leucocephalum*** white rabbit-tobacco	None	None	G4	S2	2B.2
PDAST4H020	***Hazardia cana*** San Clemente Island hazardia	None	None	G2	S2	1B.2
PDAST4N102	***Helianthus nuttallii ssp. parishii*** Los Angeles sunflower	None	None	G5TH	SH	1A
PDAST4N250	***Helianthus inexpectatus*** Newhall sunflower	None	None	G1	S1	1B.1
PDAST4R0J0	***Deinandra minthornii*** Santa Susana tarplant	None	Rare	G2	S2	1B.2
PDAST4R0P4	***Centromadia parryi ssp. australis*** southern tarplant	None	None	G3T2	S2	1B.1
PDAST57091	***Isocoma menziesii var. decumbens*** decumbent goldenbush	None	None	G3G5T2T3	S2	1B.2
PDAST5L0A1	***Lasthenia glabrata ssp. coulteri*** Coulter's goldfields	None	None	G4T2	S2	1B.1
PDAST5N070	***Layia heterotricha*** pale-yellow layia	None	None	G2	S2	1B.1
PDAST6X060	***Pentachaeta lyonii*** Lyon's pentachaeta	Endangered	Endangered	G2	S2	1B.1
PDAST8H060	***Senecio aphanactis*** chaparral ragwort	None	None	G3?	S2	2B.2
PDAST8U0K0	***Munzothamnus blairii*** Blair's munzothamnus	None	None	G3	S3	1B.2
PDAST8Y080	***Stylocline masonii*** Mason's neststraw	None	None	G1	S1	1B.1
PDASTE80C0	***Symphyotrichum defoliatum*** San Bernardino aster	None	None	G2	S2	1B.2
PDASTE80U0	***Symphyotrichum greatae*** Greata's aster	None	None	G3	S3	1B.3
PDBER060A0	***Berberis nevinii*** Nevin's barberry	Endangered	Endangered	G1	S1	1B.1
PDBOR0A370	***Cryptantha traskiae*** Trask's cryptantha	None	None	G2	S2	1B.1
PDBOR0A3M0	***Cryptantha clokeyi*** Clokey's cryptantha	None	None	G2	S2	1B.2
PDBOR0A400	***Cryptantha wigginsii*** Wiggins' cryptantha	None	None	G2	S1	1B.2
PDBOR0H010	***Harpagonella palmeri*** Palmer's grapplinghook	None	None	G4	S3	4.2
PDBOR0V0U0	***Plagiobothrys parishii*** Parish's popcornflower	None	None	G1	S1	1B.1

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PDBRA061M3	***Boechera lincolnensis*** Lincoln rockcress	None	None	G4?	S2	2B.3
PDBRA10020	***Dithyrea maritima*** beach spectaclepod	None	Threatened	G2	S1	1B.1
PDBRA1M114	***Lepidium virginicum var. robinsonii*** Robinson's pepper-grass	None	None	G5T3	S3	4.3
PDBRA270V0	***Nasturtium gambelii*** Gambel's water cress	Endangered	Threatened	G1	S1	1B.1
PDBRA2A020	***Sibara filifolia*** Santa Cruz Island winged-rockcress	Endangered	None	G1	S1	1B.1
PDBRA2Q070	***Thysanocarpus rigidus*** rigid fringepod	None	None	G1G2	S1S2	1B.2
PDCAC0D053	***Opuntia basilaris var. brachyclada*** short-joint beavertail	None	None	G5T3	S3	1B.2
PDCAC11010	***Bergerocactus emoryi*** golden-spined cereus	None	None	G2	S2	2B.2
PDCAM0F0B2	***Nemacladus secundiflorus var. robbinsii*** Robbins' nemacladus	None	None	G3T2T3	S2S3	1B.2
PDCAR040L0	***Arenaria paludicola*** marsh sandwort	Endangered	Endangered	G1	S1	1B.1
PDCAR0E011	***Loeflingia squarrosa var. artemisiarum*** sagebrush loeflingia	None	None	G5T2T3	S2	2B.2
PDCHE02010	***Aphanisma blitoides*** aphanisma	None	None	G3G4	S3	1B.2
PDCHE040E0	***Atriplex coulteri*** Coulter's saltbush	None	None	G2	S2	1B.2
PDCHE041C0	***Atriplex pacifica*** south coast saltscale	None	None	G3G4	S2	1B.2
PDCHE041D0	***Atriplex parishii*** Parish's brittlescale	None	None	G1G2	S1	1B.1
PDCHE041T1	***Atriplex serenana var. davidsonii*** Davidson's saltscale	None	None	G5T1	S1	1B.2
PDCHE091Z0	***Chenopodium littoreum*** coastal goosefoot	None	None	G2	S2	1B.2
PDCHE0P0D0	***Suaeda esteroa*** estuary seablite	None	None	G3	S2	1B.2
PDCIS02090	***Crocanthemum greenei*** island rush-rose	Threatened	None	G2	S2	1B.2
PDCON040A0	***Calystegia peirsonii*** Peirson's morning-glory	None	None	G4	S4	4.2
PDCON040P0	***Calystegia felix*** lucky morning-glory	None	None	GHQ	SH	3.1

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PDCPR030R3	***Lonicera subspicata var. subspicata*** Santa Barbara honeysuckle	None	None	G5T2	S2	1B.2
PDCRA04051	***Dudleya blochmaniae ssp. blochmaniae*** Blochman's dudleya	None	None	G2T2	S2	1B.1
PDCRA040A3	***Dudleya cymosa ssp. marcescens*** marcescent dudleya	Threatened	Rare	G5T2	S2	1B.2
PDCRA040A5	***Dudleya cymosa ssp. ovatifolia*** Santa Monica dudleya	Threatened	None	G5T1	S1	1B.1
PDCRA040A7	***Dudleya cymosa ssp. agourensis*** Agoura Hills dudleya	Threatened	None	G5T1	S2	1B.2
PDCRA040A8	***Dudleya cymosa ssp. crebrifolia*** San Gabriel River dudleya	None	None	G5T1	S1	1B.2
PDCRA040B0	***Dudleya densiflora*** San Gabriel Mountains dudleya	None	None	G2	S2	1B.1
PDCRA040H0	***Dudleya multicaulis*** many-stemmed dudleya	None	None	G2	S2	1B.2
PDCRA040S1	***Dudleya virens ssp. hassei*** Catalina Island dudleya	None	None	G3?T2?	S2?	1B.2
PDCRA040S2	***Dudleya virens ssp. insularis*** island green dudleya	None	None	G3?T3	S3	1B.2
PDCRA040S3	***Dudleya virens ssp. virens*** bright green dudleya	None	None	G3?T1	S1	1B.2
PDCRO02020	***Crossosoma californicum*** Catalina crossosoma	None	None	G2	S2	1B.2
PDCUS01111	***Cuscuta obtusiflora var. glandulosa*** Peruvian dodder	None	None	G5T4T5	SH	2B.2
PDERI04070	***Arctostaphylos catalinae*** Santa Catalina Island manzanita	None	None	G2?	S2?	1B.2
PDERI042P0	***Arctostaphylos glandulosa ssp. gabrielensis*** San Gabriel manzanita	None	None	G5T2	S2	1B.2
PDEUP0Q1B0	***Euphorbia misera*** cliff spurge	None	None	G5	S2	2B.2
PDFAB0F1G0	***Astragalus brauntonii*** Braunton's milk-vetch	Endangered	None	G2	S2	1B.1
PDFAB0F4T0	***Astragalus leucolobus*** Big Bear Valley woollypod	None	None	G2	S2	1B.2
PDFAB0F5X0	***Astragalus nevinii*** San Clemente Island milk-vetch	None	None	G3	S3	1B.2
PDFAB0F721	***Astragalus preussii var. laxiflorus*** Lancaster milk-vetch	None	None	G4T2	S1	1B.1
PDFAB0F7B1	***Astragalus pycnostachyus var. lanosissimus*** Ventura Marsh milk-vetch	Endangered	Endangered	G2T1	S1	1B.1

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PDFAB0F8R2	***Astragalus tener var. titi*** coastal dunes milk-vetch	Endangered	Endangered	G2T1	S1	1B.1
PDFAB0FB92	***Astragalus lentiginosus var. antonius*** San Antonio milk-vetch	None	None	G5T2	S2	1B.3
PDFAB2A041	***Acmispon argophyllus var. adsurgens*** San Clemente Island bird's-foot trefoil	None	Endangered	G5T1	S1	1B.1
PDFAB2A1G2	***Acmispon dendroideus var. traskiae*** San Clemente Island lotus	Threatened	Endangered	G4T2	S2	1B.1
PDFAB2B1T0	***Lupinus guadalupensis*** Guadalupe Island lupine	None	None	G3	S3	1B.2
PDFAB2B330	***Lupinus peirsonii*** Peirson's lupine	None	None	G2	S2	1B.3
PDFAB2X0H3	***Oxytropis oreophila var. oreophila*** rock-loving oxytrope	None	None	G5T4	S2	2B.3
PDFAG050D0	***Quercus dumosa*** Nuttall's scrub oak	None	None	G3	S3	1B.1
PDGER01070	***California macrophylla*** round-leaved filaree	None	None	G2	S2	1B.1
PDGRO020F3	***Ribes divaricatum var. parishii*** Parish's gooseberry	None	None	G4TH	SH	1A
PDGRO021P0	***Ribes viburnifolium*** Santa Catalina Island currant	None	None	G2?	S2?	1B.2
PDHYD0A0H0	***Nama stenocarpum*** mud nama	None	None	G4G5	S1S2	2B.2
PDHYD0C1G0	***Phacelia floribunda*** many-flowered phacelia	None	None	G2	S2	1B.2
PDHYD0C510	***Phacelia stellaris*** Brand's star phacelia	None	None	G1	S1	1B.1
PDLAM0V060	***Lepechinia rossii*** Ross' pitcher sage	None	None	G1	S1	1B.2
PDLAM180A3	***Monardella hypoleuca ssp. hypoleuca*** white-veined monardella	None	None	G4T2T3	S2S3	1B.3
PDLAM180D2	***Monardella linoides ssp. oblonga*** Tehachapi monardella	None	None	G5T2	S2	1B.3
PDLAM180E1	***Monardella macrantha ssp. hallii*** Hall's monardella	None	None	G5T3	S3	1B.3
PDLAM1U0A1	***Scutellaria bolanderi ssp. austromontana*** southern mountains skullcap	None	None	G4T2	S2	1B.2
PDMAL0N022	***Lavatera assurgentiflora ssp. glabra*** southern island mallow	None	None	G1T1	S1	1B.1
PDMAL0Q030	***Malacothamnus clementinus*** San Clemente Island bush-mallow	Endangered	Endangered	G2	S2	1B.1

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PDMAL0Q040	***Malacothamnus davidsonii*** Davidson's bush-mallow	None	None	G2	S2	1B.2
PDMAL110J0	***Sidalcea neomexicana*** Salt Spring checkerbloom	None	None	G4?	S2S3	2B.2
PDONA030M1	***Camissoniopsis guadalupensis ssp. clementina*** San Clemente Island evening-primrose	None	None	G3T3	S3	1B.2
PDONA05181	***Clarkia xantiana ssp. parviflora*** Kern Canyon clarkia	None	None	G4T3	S3	4.2
PDORO040A2	***Orobanche parishii ssp. brachyloba*** short-lobed broomrape	None	None	G4?T4	S3	4.2
PDORO040G2	***Orobanche valida ssp. valida*** Rock Creek broomrape	None	None	G3T2	S2	1B.2
PDPAP05020	***Canbya candida*** white pygmy-poppy	None	None	G3G4	S3S4	4.2
PDPAP08012	***Dendromecon harfordii var. rhamnoides*** south island bush-poppy	None	None	G4T1Q	S1	3.1
PDPGN040J1	***Chorizanthe parryi var. fernandina*** San Fernando Valley spineflower	Candidate	Endangered	G2T1	S1	1B.1
PDPGN040J2	***Chorizanthe parryi var. parryi*** Parry's spineflower	None	None	G3T3	S3	1B.1
PDPGN082A2	***Eriogonum giganteum var. formosum*** San Clemente Island buckwheat	None	None	G3T3	S3	1B.2
PDPGN083B1	***Eriogonum kennedyi var. alpigenum*** southern alpine buckwheat	None	None	G4T3	S3	1B.3
PDPGN083W5	***Eriogonum microthecum var. johnstonii*** Johnston's buckwheat	None	None	G5T2	S2	1B.3
PDPGN0G011	***Nemacaulis denudata var. denudata*** coast woolly-heads	None	None	G3G4T2	S2	1B.2
PDPGN0V010	***Dodecahema leptoceras*** slender-horned spineflower	Endangered	Endangered	G1	S1	1B.1
PDPLM030G0	***Eriastrum rosamondense*** Rosamond eriastrum	None	None	G1	S1	1B.1
PDPLM090D0	***Linanthus concinnus*** San Gabriel linanthus	None	None	G3	S3	1B.2
PDPLM09102	***Leptosiphon pygmaeus ssp. pygmaeus*** pygmy leptosiphon	None	None	G4T1	S1	1B.2
PDPLM0C080	***Navarretia fossalis*** spreading navarretia	Threatened	None	G1	S1	1B.1
PDPLM0C0L0	***Navarretia peninsularis*** Baja navarretia	None	None	G3?	S2	1B.2
PDPLM0C0Q0	***Navarretia prostrata*** prostrate vernal pool navarretia	None	None	G2	S2	1B.1

Element Code	Species	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
PDPLM0C0S0	***Navarretia setiloba*** Piute Mountains navarretia	None	None	G2	S2	1B.1
PDPOR04010	***Lewisia brachycalyx*** short-sepaled lewisia	None	None	G4G5	S2	2B.2
PDRAN0B1X2	***Delphinium variegatum ssp. thornei*** Thorne's royal larkspur	None	None	G4T2	S2	1B.1
PDRAN0B1X3	***Delphinium variegatum ssp. kinkiense*** San Clemente Island larkspur	Endangered	Endangered	G4T2	S2	1B.1
PDROS08030	***Cercocarpus traskiae*** Catalina Island mountain-mahogany	Endangered	Endangered	G1	S1	1B.1
PDROS0W045	***Horkelia cuneata var. puberula*** mesa horkelia	None	None	G4T1	S1	1B.1
PDROS12011	***Lyonothamnus floribundus ssp. aspleniifolius*** Santa Cruz Island ironwood	None	None	G3T3	S3	1B.2
PDROS12012	***Lyonothamnus floribundus ssp. floribundus*** Santa Catalina Island ironwood	None	None	G3T2	S2	1B.2
PDROS1B0S3	***Drymocallis cuneifolia var. ewanii*** Ewan's cinquefoil	None	None	G1T1	S1	1B.3
PDROS1B120	***Potentilla multijuga*** Ballona cinquefoil	None	None	GX	SX	1A
PDRUB0N0F1	***Galium catalinense ssp. acrispum*** San Clemente Island bedstraw	None	Endangered	G4T2	S2	1B.2
PDRUB0N0F2	***Galium catalinense ssp. catalinense*** Santa Catalina Island bedstraw	None	None	G4T2T3	S2S3	1B.2
PDRUB0N0V0	***Galium grande*** San Gabriel bedstraw	None	None	G2	S2	1B.2
PDSAX0M070	***Lithophragma maximum*** San Clemente Island woodland star	Endangered	Endangered	G1	S1	1B.1
PDSAX0P030	***Parnassia cirrata var. cirrata*** San Bernardino grass-of-Parnassus	None	None	G5T2	S2	1B.3
PDSCR0D140	***Castilleja gleasoni*** Mt. Gleason paintbrush	None	Rare	G2	S2	1B.2
PDSCR0D160	***Castilleja grisea*** San Clemente Island paintbrush	Threatened	Endangered	G3	S3	1B.3
PDSCR0J0C2	***Chloropyron maritimum ssp. maritimum*** salt marsh bird's-beak	Endangered	Endangered	G4?T1	S1	1B.2
PDSCR1B2P0	***Mimulus traskiae*** Santa Catalina Island monkeyflower	None	None	GX	SX	1A
PDSCR1S0D0	***Scrophularia villosa*** Santa Catalina figwort	None	None	G3	S3	1B.2
PDSCR2H010	***Gambelia speciosa*** showy island snapdragon	None	None	G3	S3	1B.2

Element Code	Species	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
PDSOL0G0N0	***Lycium brevipes var. hassei*** Santa Catalina Island desert-thorn	None	None	G1Q	S1	1B.1
PDSOL0Z280	***Solanum wallacei*** Wallace's nightshade	None	None	G2Q	S2	1B.1
PDVIO04431	***Viola pinetorum var. grisea*** grey-leaved violet	None	None	G4G5T3?	S3?	1B.3
PMAGA080E0	***Nolina cismontana*** chaparral nolina	None	None	G2	S2	1B.2
PMCYP039M0	***Carex occidentalis*** western sedge	None	None	G4	S2S3	2B.3
PMCYP04010	***Cladium californicum*** California saw-grass	None	None	G4	S2	2B.2
PMCYP0B0N0	***Fimbristylis thermalis*** hot springs fimbristylis	None	None	G4	S2	2B.2
PMLIL0C050	***Brodiaea filifolia*** thread-leaved brodiaea	Threatened	Endangered	G1	S1	1B.1
PMLIL0C080	***Brodiaea kinkiensis*** San Clemente Island brodiaea	None	None	G2	S2	1B.2
PMLIL0D096	***Calochortus clavatus var. gracilis*** slender mariposa-lily	None	None	G4T2T3	S2S3	1B.2
PMLIL0D122	***Calochortus palmeri var. palmeri*** Palmer's mariposa-lily	None	None	G3T3?	S3?	1B.2
PMLIL0D150	***Calochortus plummerae*** Plummer's mariposa-lily	None	None	G4	S4	4.2
PMLIL0D190	***Calochortus striatus*** alkali mariposa-lily	None	None	G2	S2	1B.2
PMLIL0D1J1	***Calochortus weedii var. intermedius*** intermediate mariposa-lily	None	None	G3G4T2	S2	1B.2
PMLIL0D1J2	***Calochortus fimbriatus*** late-flowered mariposa-lily	None	None	G3	S3	1B.2
PMLIL1A0J0	***Lilium parryi*** lemon lily	None	None	G3	S3	1B.2
PMLIL21020	***Triteleia clementina*** San Clemente Island triteleia	None	None	G2	S2	1B.2
PMPOA29010	***Dissanthelium californicum*** California dissanthelium	None	None	G1	S1	1B.2
PMPOA3D020	***Imperata brevifolia*** California satintail	None	None	G3	S3	2B.1
PMPOA48020	***Muhlenbergia appressa*** appressed muhly	None	None	G4	S3	2B.2
PMPOA480A0	***Muhlenbergia californica*** California muhly	None	None	G3	S3.3	4.3

Element Code	Species	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
PMPOA4G010	***Orcuttia californica*** California Orcutt grass	Endangered	Endangered	G1	S1	1B.1
PPOPH010L0	***Botrychium crenulatum*** scalloped moonwort	None	None	G3	S2	2B.2
PPTHE05192	***Thelypteris puberula var. sonorensis*** Sonoran maiden fern	None	None	G5T3	S2	2B.2

Record Count: 295

Appendix F

Supplemental Hydrology and Water Quality Data

ESA

APPENDIX F

Supplemental Hydrology and Water Quality Data

This appendix provides supplemental information describing the Enhanced Watershed Management Program (EWMP) Management Areas, the designated Beneficial Uses of the major water bodies within each EWMP Area, and applicable Total Maximum Daily Loads (TMDLs) for each EWMP Area and Permittee.

Land Use

Table F-1 describes land use in each of the EWMP Management Areas, based on the 2005 Southern California Area Governments Land Use Database. As previously described in Section 3.8, "Hydrology and Water Quality," each EWMP group falls into one of six categories:

- **Southern Coastal EWMP Areas** (Beach Cities, Santa Monica Bay Jurisdictions 2 + 3, Marina Del Rey, Ballona Creek), dominated by urbanized beach communities with high-density residential and commercial land uses.
- **Northern Coastal EWMP Areas** (Malibu Creek and Northern Santa Monica Bay), characterized by lower-density development along the coast and greater open space areas inland.
- **Upper San Gabriel and Rio Hondo/San Gabriel EWMP Areas**, characterized by higher-density development in the lower watershed areas and lower-density development and open space in the upper watersheds where the foothills to the San Gabriel Mountains begin.
- **Upper Los Angeles River EWMP Area,** which is primarily urbanized with high-density residential and commercial uses but with characteristics of the Upper San Gabriel in the farthest upper reaches near the foothills.
- **Dominguez Channel and Palos Verdes Peninsula EWMP Areas,** with high-density beach and inland communities and a relatively larger area of industrial land use.
- **Upper Santa Clara River EWMP Area**, which is predominantly open space.

TABLE F-1
LAND USE DISTRIBUTIONS WITHIN EWMP AREAS

	Land Use Distribution (%)[1]							
EWMP Area/ Subarea	**Multi-Family Residential**	**Single Family Residential**	**Other Urban**	**Commercial**	**Industrial**	**Transportation**	**Agricultural**	**Vacant/ Open Space/ Recreation**
Ballona Creek	13.7%	45.5%	6.0%	10.6%	4.0%	2.7%	0.0%	15.9%
Beach Cities	8.2%	51.4%	6.6%	13.7%	10.6%	3.5%	0.8%	2.4%
Dominguez Channel	14.2%	27.7%	15.9%	18.4%	15.7%	0.0%	0.3%	7.8%
Malibu	4.6%	8.7%	1.4%	1.6%	0.3%	1.7%	1.3%	79.6%
Marina del Rey	27.4%	16.9%	6.2%	19.1%	2.0%	21.1%	0.0%	7.5%
North SMB	0.3%	5.0%	0.3%	0.4%	0.1%	0.0%	0.8%	93.1%
Palos Verdes Peninsula	2.8%	55.8%	4.2%	1.6%	0.7%	1.2%	0.5%	30.2%
Rio Hondo/ San Gabriel River	7.0%	47.0%	3.0%	8.0%	7.0%	1.0%	3.0%	24.0%
SMB Juris 2+3	6.4%	27.3%	2.5%	3.9%	4.0%	7.7%	0.0%	47.1%
Upper LA River	5.3%	47.3%	5.0%	6.3%	5.5%	6.4%	0.8%	21.4%
Upper San Gabriel River	2.7%	42.9%	6.5%	4.6%	7.9%	5.6%	1.2%	25.1%
Upper Santa Clara River	5.1%	7.9%	1.6%	1.1%	2.5%	3.5%	2.1%	74.1%

1. Percentages do not total 100% due to small areas (<4%) of no data.

Surface Water Hydrology of EWMP Management Areas

The following sections describe major surface water hydrologic features in each EWMP Management Area.

Ballona Creek

The Ballona Creek watershed covers more than 81,000 acres, over 78,000 of which fall in the EWMP Area within the jurisdiction of Municipal Separate Storm Sewer System (MS4) Permittees. The Los Angeles County Flood Control District (LACFCD) owns and operates drainage infrastructure within incorporated and unincorporated areas in the watershed. Land use within the EWMP Area is primarily urbanized (82.5%), with most urbanized areas (59.2%) in multi- or single-family housing.

Ballona Creek and Estuary are collectively approximately 9.5 miles long and divided into three hydrologic units: Reach 1, which extends for 2 miles from Cochran Avenue to National

Boulevard (channelized); Reach 2, which extends for about 4 miles from National Boulevard to Centinela Avenue, where Ballona Estuary starts (channelized); and Ballona Estuary, which starts at Centinela Creek and extends for 3.5 miles to the Pacific Ocean (soft-bottom channel, tidally influenced). Major tributaries to Ballona Creek include Sepulveda Canyon Channel (Reach 2) and Centinela Creek (Ballona Estuary). Other water bodies in the watershed include the Del Rey Lagoon and the Ballona Wetlands, which are both connected to the Ballona Estuary through tide gates. The Ballona Wetlands, which are the site of a major multiagency restoration project, encompass approximately 626 acres (541 acres of wetlands and 85 acres of roads, parking lots, levees, and other structures). Approximately 460 acres of the Ballona Wetlands are located within the Ballona Creek watershed; the remaining portion is located in the Marina Del Rey watershed. The Ballona Wetlands are owned and/or managed by the California Department of Fish and Wildlife (CDFW) and the State Land Commission and, as such, are not subject to MS4 Permit or EWMP requirements.

Beach Cities

The Beach Cities EWMP Area covers over 20,000 acres divided into three watersheds: Santa Monica Bay (38.4% of the EWMP Area), Dominguez Channel (36.1%), and Machado Lake watershed (35.5%). This watershed is the most relatively urbanized of the EWMP areas as 93.9% of the watershed is urbanized. Significantly, almost a quarter of the EWMP Area is commercial and industrial lands.

The Dominguez Channel watershed within the Beach Cities EWMP includes drainage from the Torrance Carson Channel (Torrance Lateral). The Machado Lake watershed includes drainage from the Wilmington Drain, an LAFCD facility. Additional information about the Dominguez Channel and Machado Lake watersheds is provided below in the Dominguez Channel EWMP description. Beaches within the Beach Cities EWMP Area do not have any storm drain infrastructure that collects and discharges beach runoff directly to Santa Monica Bay and are therefore considered non-point sources, which are not subject to the MS4 Permit or EWMP requirements. Similarly, the Hermosa Beach and Manhattan Beach piers are not part of the MS4; they are non-point sources excluded from the MS4 Permit scope and therefore the EWMP.

Dominguez Channel

Dominguez Channel is a 15.7-mile-long waterway that drains 133 square miles of the Los Angeles Basin. The lower half of this watershed— approximately 37,600 acres—is subject to the Dominguez Channel EWMP. This EWMP Area is highly urbanized (91.9%), with over a third of the area in commercial and industrial uses.

The EWMP Area includes three receiving water bodies: Machado Lake, Dominguez Channel, and the Los Angeles Harbor. Machado Lake is a 40-acre freshwater lake/reservoir that impounds stormwater runoff from the Wilmington Drain, an LACFCD facility. Approximately 3,000 feet of the drain immediately upstream of Machado Lake is earthen-lined and vegetated; the remainder upstream is channelized. Immediately downstream of the lake is a 63-acre seasonal freshwater marsh. The portion of Dominguez Channel within the EWMP Area is composed of 3 miles of the lined channel between Imperial Highway near Interstate 105 to Vermont Avenue near Interstate 110, and 2.2 miles of the unlined tidal estuary channel downstream of Vermont Avenue. The

EWMP Area also includes 1.8 miles of the Torrance Carson Channel, or Torrance Lateral, which drains into the Dominguez Channel estuary. The estuary drains into the northeast side of the Consolidated Slip, the uppermost section of the tidal Los Angeles Harbor. The Los Angeles Inner Harbor within the EWMP Area covers about 3,000 acres and includes portions of both the Los Angeles and Long Beach Harbors. Other portions of the Los Angeles Harbor covered in the EWMP are the Fish Harbor (91 acres), and the inner and outer portions of Cabrillo Beach. Inner Cabrillo Beach (82 acres) on the north side of the peninsula (west of Fish Harbor) is considered to be a bay/harbor, while Outer Cabrillo Beach (~ 0.58 miles long) to the south is considered to be a coastal shoreline.

Malibu Creek

The Malibu Creek Watershed drains over 75,000 acres of the Santa Monica Mountains north of Los Angeles and is the largest contributing watershed to Santa Monica Bay. Over 42,000 acres of this watershed within Los Angeles County comprise the Malibu Creek EWMP Area. Unincorporated Los Angeles County lands account for 70% of the EWMP Area; this does not include federal lands within the Santa Monica Mountains National Recreation Area, state lands within Malibu Creek State Park, or lands managed by the Santa Monica Mountains Conservancy. Almost 80% of the EWMP Area is open space, with most development centered around the communities of Agoura Hills and Calabasas.

Major tributaries to Malibu Creek include Cold Creek, Las Virgenes Creek, Medea Creek, and Potrero Valley Creek. The creek terminates at the Pacific Ocean at Malibu Lagoon, which is currently the location of a multi-agency habitat and water quality enhancement project. The watershed is characterized by steep topography and densely vegetated ravines typical of undeveloped coastal mountains, which create many dangerous and inaccessible areas that cannot be safely monitored and are not suitable for water quality Best Management Practices (BMPs). In addition, the Monterey/Modelo formation outcrops in the watershed are natural sources of sulfate, phosphate, metals, and selenium, and are believed to contribute to the Malibu Creek Watershed water quality impairments. The development of the Malibu Creek EWMP is closely coordinated with that of the North Santa Monica Bay EWMP, which is responsible for lands to the west and east of the Malibu Creek Watershed Management Area.

Marina del Rey

Marina del Rey is the largest man-made small craft harbor in the world, and is a small contributing watershed to Santa Monica Bay. The Marina del Rey Harbor is open to the Santa Monica Bay through the main channel and shares a common breakwater with Ballona Creek. Of the 1400-acre EWMP Area, 92.7% is urbanized, with relatively high proportions of multifamily residential (27.4%) and commercial (19.1%) lands.

Four subwatersheds drain to the harbor: Subwatershed 1, composed primarily of unincorporated County lands immediately surrounding the main harbor; Subwatershed 2, which includes the Venice Canals and Ballona Lagoon that discharge into the main channel; Subwatershed 3, a small area north of the main harbor that drains into the harbor via the Boone Olive Pump Plant; and Subwatershed 4, which drains City of Los Angeles and Culver City lands into the 10-acre Oxford Basin, which is connected to the harbor via storm drains and tide gates. The 2004 Marina del Rey

Small Drain Survey completed for the Los Angeles County Department of Beaches and Harbors (LACDBH) identified approximately 724 small outfalls that discharge directly into harbor, the majority of which serve the individual parcels and small roads among the basins. LACDBH is responsible for approximately 700 of these outfalls associated with leased parcel sites, and the LACFCD is responsible for 20 outfalls and two storm drain inlets that flow into the Oxford Basin. No MS4 Permittee was identified for the remaining storm drains. A small section of the Ballona Wetlands drains into Subwatershed 1, but, as state lands, it is not subject to the MS4 Permit or EWMP process.

North Santa Monica Bay

The North Santa Monica Bay EWMP Area includes over 55,000 acres within Santa Monica Bay Jurisdictional Groups (JGs) 1 and 4, and the portion of 9 within the City of Malibu's borders. It does not include federal lands within the Santa Monica Mountains National Recreation Area, state lands within Malibu Creek State Park, or lands managed by the Santa Monica Mountains Conservancy. Similar to the Malibu Creek EWMP Area, most of the watershed is undeveloped open space—93.1%, more than any other EWMP Area. Most development is single-family housing within the incorporated boundaries of the City of Malibu. Like the Malibu Creek EWMP Area, the North Santa Monica Bay EWMP Area is characterized by steep topography and densely vegetated ravines typical of undeveloped coastal mountains.

The North Santa Monica Bay EWMP Area includes portions of 6 watersheds, 18 subwatersheds, and 28 coastal streams that all drain directly to Santa Monica Bay and are thus subject to the provisions of the California Ocean Plan (SWRCB, 2012). The Ocean Plan regulates waste discharges to protect the quality of ocean waters for use and enjoyment by the general public. In particular, the Ocean Plan designates Areas of Special Biological Significance (ASBS), which are areas requiring special protection of species or biological communities to the extent that maintenance of natural water quality is ensured. The area from Laguna Point to Latigo Point offshore of a portion of the North Santa Monica Bay EWMP Area is designated as ASBS 24. North Santa Monica Bay EWMP agencies requested and received an exemption from the Ocean Plan (SWRCB Resolution No. 2012-0012) that establishes criteria for allowable discharge of stormwater and nonpoint source pollution to Santa Monica Bay.

Palos Verdes Peninsula

The Palos Verdes Peninsula is situated in the southwestern portion of Los Angeles County atop the Palos Verdes Hills, which are bounded to the north by the City of Torrance, to the east by the City of Los Angeles, and to the south and west by the Pacific Ocean. The EWMP Area covers over 14,000 acres of incorporated, unincorporated (Los Angeles County), and LACFCD lands throughout the peninsula (see Figure 3.8-1); it does not include the City of Rolling Hills, which is participating in the peninsula's Coordinated Integrated Monitoring Program (CIMP). Most of the watershed's land use is distributed between single family housing (55.8%) and open space (30.2%), and the area is particularly known for its equestrian and golf facilities.

The EWMP Area is divided into two watersheds: (1) the Santa Monica Bay Watershed and (2) the Greater Dominguez Channel Watershed Management Area, which is further subdivided into two subwatersheds, the Los Angeles Harbor Subwatershed and the Machado Lake Subwatershed (previously described in detail under the Dominguez Channel EWMP). A drainage divide dissects the Peninsula from the northeast to the southwest with the westerly portion (63% of the EWMP Area) draining into Santa Monica Bay and the easterly portion draining into Machado Lake (22%) and the Los Angeles Harbor (15%) subwatersheds. Water drains from the peninsula to receiving waters through a combination of vegetated open channels and storm drains.

Rio Hondo/San Gabriel River

The Rio Hondo/San Gabriel River EWMP Area includes over 26,000 acres of land within the eastern portion of the Los Angeles River watershed (tributary to Rio Hondo) (38% of the EWMP Area) and the upper portion of the urban San Gabriel River watershed (62%). The EWMP Area does not include federal lands that are part of Angeles National Forest. Approximately 73% of the EWMP Area is urbanized, with single-family housing comprising 47%. The remaining quarter of the area is undeveloped open space, mostly along lower slopes of the San Gabriel Mountains. Both Rio Hondo and the San Gabriel River are heavily urbanized, channelized, and managed systems.

Rio Hondo is a tributary of the Los Angeles River, which receives drainage from the Rio Hondo/San Gabriel River MS4 Permittees via several smaller tributaries: Arcadia Wash, Little Santa Anita Wash, Monrovia Canyon Wash, and Sawpit Wash. Prior to draining to the Rio Hondo, the Santa Anita and Sawpit Washes drain to Peck Road Water Conservation Park (a.k.a. Peck Road Lake), which then drains to the Rio Hondo. Peck Road Lake is owned by the LACFCD and maintained by the Los Angeles County Department of Parks and Recreation.

Reach 5 of the San Gabriel River receives drainage from Little Dalton Wash, Big Dalton Wash, and San Dimas Wash. About 4 miles below the mouth of the San Gabriel Canyon is the Santa Fe Dam and Reservoir, which is operated and maintained by the LACFCD through an easement with the U.S. Army Corps of Engineers (USACE). Both the Rio Hondo and San Gabriel River flow into the Whittier Narrows Reservoir upstream and may merge behind the reservoir during large storm events. Flows from the upper watershed are directed to spreading grounds located in and adjacent to the Rio Hondo and San Gabriel Rivers.

Santa Monica Bay Jurisdictions 2 + 3

The EWMP Area for Santa Monica Bay Jurisdictions 2 + 3 includes over 25,000 acres of land north and northwest of the Marina del Rey EWMP Area and East of the North Santa Monica Bay EWMP Area. Approximately half of the area is composed of mostly undeveloped lands within the Santa Monica Mountains; the other half includes much more urban areas in the cities of Los Angeles, Santa Monica, and El Segundo. The EWMP Area does not include state lands within Topanga State Park or those managed by the Santa Monica Mountains Conservancy, federal lands within the Santa Monica Mountains National Recreation Area, or Chevron lands at their facility in El Segundo.

Subwatersheds within the Santa Monica Bay EWMP Group Area include the mostly open space Castle Rock, Pulga Canyon, Temescal Canyon, and Santa Monica Canyon Subwatersheds characterized by steep topography and densely vegetated ravines typical of undeveloped coastal mountains. Other subwatersheds include the more urbanized Dockweiler and Santa Monica subwatersheds, which are dominated by residential, commercial, and industrial uses.

Upper Los Angeles River

The area considered in the Upper Los Angeles River EWMP covers approximately 479 square miles (over 308,000 acres), which is more than half of the total area of the entire Los Angeles River watershed. A little over 75% of the watershed is urbanized, with slightly more than half of the watershed comprising multi- and single-family residential housing. The watershed includes multiple facilities owned and operated by LACFCD as well as multiple major transportation corridors.

The Los Angeles River is approximately 55 miles long, and five of six reaches lie within the Upper Los Angeles River EWMP Area. The natural hydrology of the Los Angeles River watershed has been significantly altered by urbanization, channelization, and the construction of dams and flood control reservoirs. The river and many of its tributaries are lined with concrete for most or all of their length. Soft-bottom segments of the river occur where groundwater upwelling prevents armoring of the river bottom. The river is segmented into six reaches by the Basin Plan as follows:

- Reach 6 begins at the headwaters of the Los Angeles River (the confluence of Arroyo Calabasas and Bell Creek) and extends to Balboa Boulevard.
- Reach 5 runs from Balboa Boulevard through the Sepulveda Basin.
- Reach 4 runs from Sepulveda Dam to Riverside Drive.
- Reach 3 runs from Riverside Drive to Figueroa Street.
- Reach 2 runs from Figueroa Street to Carson Street.
- Reach 1 runs from Carson Street to the estuary.

Reach 1 is outside the boundaries of the Upper Los Angeles River EWMP but is a receiving water body for the entire EWMP Area. Major tributaries to the Upper Los Angeles River include Aliso Canyon Creek, Bell Creek, Bull Creek, Tujunga Wash, Burbank Western Channel, Arroyo Seco, Rio Hondo, and Compton Creek. Other water bodies covered in the EWMP include Echo Park Lake, Legg Lake, and Lake Calabasas. The Los Angeles River is the focus of a proposed multi-agency restoration effort that aims to improve habitat, water quality, flood management, and recreational/transportation amenities along much of the length of the river. USACE recently approved $1 billion in funding to restore 11 miles of the river from downtown through Elysian Park; this first phase would restore 719 acres of habitat and restore the river’s confluence with Verdugo Wash.

Upper San Gabriel River

The Upper San Gabriel River EWMP Area includes almost 68,000 ac of land that are not covered within the Rio Hondo/San Gabriel River EWMP Area described above. The EWMP Area does not include state lands or federal lands that are part of Angeles National Forest. Similar to the Upper Los Angeles River watershed, approximately three quarters of the Upper San Gabriel River EWMP Area is urbanized, with approximately half in multi- and single-family housing. More than half of the area is unincorporated lands within the jurisdiction of Los Angeles County.

As previously mentioned, the San Gabriel River is a heavily managed system, with abundant channelization, dams, and other flood management infrastructure.

Water bodies within the EWMP area include Thompson Wash, Little Dalton Wash, Big Dalton Wash, San Dimas Creek, Walnut Creek Wash, Puente Creek, San Jose Creek Reaches 1 and 2, San Gabriel River Reaches 2 through 5, and the North Fork of Coyote Creek. Receiving waters downstream of the EWMP area include Reach 1 of the San Gabriel River, Coyote Creek, and the San Gabriel Estuary. Additionally, there are unnamed tributaries draining unincorporated County areas that discharge into Coyote Creek and Puddingstone Reservoir.

Upper Santa Clara River

The Upper Santa Clara EWMP Area includes over 121,400 ac of lands within unincorporated Los Angeles County and the City of Santa Clarita. Roughly three quarters of the watershed is undeveloped open space bounded by the San Gabriel and Santa Susana Mountains; the remaining quarter includes the urbanized portions of the City of Santa Clarita and its environs. The EWMP Area does not include the majority of the upper river's watershed located within state and federal lands, nor the downstream watershed within Ventura County.

The Santa Clara River is one of the last primarily "natural" rivers in Southern California, with relatively few dams/reservoirs in its watershed (Pyramid Lake and Castaic Lake are notable exceptions, though neither are regulated through this EWMP). Though much of the river is bounded by flood control levees, no portions of it are channelized into concrete structures like more urban rivers. In years of significant rainfall, ephemeral springs and year-round flows exist in some tributaries and natural upstream areas. The portion of the river downstream within Ventura County is a target for enhancement by the California Coastal Conservancy and other agencies; therefore, actions in the upper watershed that affect flows downstream must be carefully considered.

Beneficial Uses

Table F-2 on the following page summarizes the beneficial uses for major hydrologic features within each of the 12 EWMP Management Areas. The TMDLs described in Table F-3 are meant to maintain or improve these beneficial uses.

Total Maximum Daily Loads

Table F-3 on page 13 summarizes the relevant TMDLs for each Permittee within each EWMP Area. Some TMDLs, such as those for Santa Monica Bay, are applicable to multiple EWMP Areas.

Ballona Wetlands	E	E											E		E		E	E	E	
Del Rey Lagoon	E	E							E	E			E		E		E^{e}	E^{f}	E^{f}	
allona Creek Reach 2	$P^{s,au}$	E	Y^{av}	P*							P				E					
allona Creek Reach 1	$P^{s,au}$	E	Y^{av}	P*							P				E					
ch Cities																				
Santa Monica Bay arshore + Offshore	E	E			E				E	E				E	E	E	E	E	E	E
Manhattan Beach	E	E							E	E				E	E				P	E
Hermosa Beach	E	E							E	E				E	E				E^{as}	E
King Harbor	E	E			E				E	E				E	E		E			
Redondo Beach	E	E			E				E	E				E	E		E	E	E^{as}	E
Torrance Beach	E	E			E				E	E				E	E			E	E^{as}	E
ominguez Channel	P*	E	E	P							P				P		E			
Torrance Lateral	P*	E	E	P							P				P		E			
minguez Channel																				
ominguez Channel (lined)	P	E	Y^{av}								P				P		E			
ominguez Channel Estuary (unlined)	E	E							P	E			E	E	E		E	E	E	
Torrance Lateral	P*	E		P							P				P		E			
Inner Harbor	P	E																		
Public Beach Areas	E	E																		
ibu Creek																				
Malibu Lagoon	E	E								E			E	E	E		E^{e}	E^{f}	E^{f}	
Malibu Creek	E	E		P*							E	E			E		E	E	E	
Cold Creek	E	E		P*								P			E		E		P	
Las Virgenes Creek	E^{m}	E		P*							E	P			E		E	P	P	
Century Reservoir	E	E		P*							E				E					
Malibou Lake	E	E		P*						E	E				E		E			
dea Creek Reach 1	I^{m}	I		P*				I			I				E		E			
dea Creek Reach 2	E^{m}	E		I*				I			E				E					
ndero Creek Reach 1	I	I		P*							I				E					
ndero Creek Reach 2	I	I		P*							I				E					
nfo Creek Reach 1	I^{m}	I		P*							I				E					
nfo Creek Reach 2	I^{m}	I		P*				I			I				E		E			
Westlake Lake	E	E		P*						E	E				E					
otrero Valley Creek	I	I		P*				I			P				E					
ake Eleanor Creek	I	I		P*				I			I				E					
Lake Eleanor	E	E		P*				E			E				E		E			
Las Virgenes Vestlake) Reservoir	$P^{k,v}$	E		E	E	E	E				P				E					
idden Valley Creek	I	I		I*				I			I				E					
Lake Sherwood	E	E		P*				E		E	E				E					
ina del Rey																				
Harbor	E	E							E	E				E	E					E
ublic Beach Access	E	E							E	E				E	E		E			
All Other Areas	P	E							E	E				E	E		E			E
Entrance Channel	E	E							E	E				E	E		E			E
th Santa Monica Coastal ersheds																				

ma Canyon Creek	E	E		E							E	E			E		E	P	P	
Ramirez Canyon Creek	I	I		I*							I				E				P	
Escondido Canyon Creek	I	I		I*							I				E		E			
tigo Canyon Creek	I	I		I*							I				E		E			
Puerco Canyon Creek	I	I		I*							I				E					
Solstice Canyon Creek	E	E		E*							E				E			P	P	
rral Canyon Creek	I	I		I*							I				E					
Carbon Canyon Creek	I	I		P*							I				E					
Las Flores Canyon Creek	I	I		P*							I				E					
edra Gorda Canyon Creek	I	I		P*							I				E					
ena Canyon Creek	I	I		P*							I	E			E					
una Canyon Creek	I	I		P*							I				E					
Topanga Canyon Creek	I	I		P*							E	E			E			P	I	
os Verdes insula																				
os Angeles Coastal					E				E											
Santa Monica Bay Nearshore	E	E			E				E	E					E	E	E[e]	E[f]	E[f]	E
Machado Lake	E	E		P*							E				E		E			
Inner LA Harbor	E	E			E				E	E							E[e]			P
Fish Harbor	E	E			E				E	E							E			P
Outer LA Harbor	E	E							E	E							E			P
Hondo/San riel River																				
Arcadia Wash	P	I		P*				I			P				P					
Little Santa Anita Canyon Creek				P*				I			I				E					
Santa Anita Wash	E[1],P[2]	E		P*				E[1],I[2]			E[1],P[2]				E[1],P[2]		E			
Monrovia Canyon Wash	I	I		I				I			I				E					
Sawpit Wash	I	I		I				I			I				E					
Rio Honda Reach 3	I	E		P*				I			P				I		E			
ck Road Park Lake[4]	P[3]	E		P*				I			P				I					
San Gabriel River Reach 5	E	E		E	E	E	E	E			E	E			E					
Little Dalton Wash	P[3]	I		P*				I			P				P					
Big Dalton Wash	P[3]	I		P*				I			P				P					
San Dimas Wash	I[3]	I		P*				E[1],I[2]			I				E		E[2]			
Santa Fe Dam Park Lake	P	I		P*				I			I				E					
ta Monica Bay sdictions 2+3																				
Santa Monica Bay - Nearshore Zone^	E	E			E				E	E				E	E	E[an]	E[e]	E[f]	E[f]	E[ar]
La Pulga Canyon[a]					E				E	E				E	E	E[an]	E[e]	E[f]	E[f]	E[ar]
Temescal Canyon[a]					E				E	E				E	E	E[an]	E[e]	E[f]	E[f]	E[ar]
Santa Monica Canyon Channel	P[3]	I		P*							P				P					
stic Canyon Creek	I	I		P*							I				E					
Sullivan Canyon																				

Dry Canyon Creek	I	I		P*				I			I				E					
McCoy Creek	I	I		P*				I			I				E					
Bell Creek	I^{m}	I	Y^{av}	P*				I			I				E					
Aliso Canyon Wash	I^{m}	I	Y^{av}	P*				I			I				E					
Bull Creek	I^{m}	I		P*				I			I				E					
A River Reach 4+5	E	E	Y^{av}	P*	P			E			E				E					
Pacoima Wash	P^{m}	E		P*				E			E				E		E			
Tujunga Wash	P^{m}	I	Y^{av}	P*				I			P	P			P					
LA River Reach 3	E	E	Y^{av}	P*	P			E			E				E					
Burbank Western Channel	P^{m}	I	Y^{av}	P*							P				P					
Verdugo Wash	P^{m}	I	Y^{av}	P*				I			P				P					
Arroyo Seco	I^{m}	I		P*							P				P					
LA River Reach 2	E^{s}	E	Y^{av}	P*	P			E			E				P					
o Honda Reach 2 + 3	I^{m}	E	Y^{av}	P*				I			P				I					
Rio Honda Reach 1	P^{m}	E	Y^{av}	P*				I			P				I					
Compton Creek	E^{s}	E		P*				E			E				E					
LA River Reach 1	E^{s}	E	Y^{av}	P*	P	P		E			E			E	E		E	P	P	P^{s}
Echo Park Lake	P	E		P*							P				E					
Legg Lake	E	E		P*				E			E				E					
per San Gabriel er[5]																				
Thompson Wash	I^{m}	I	Y^{av}	P*				I			I				E					
Little Dalton Wash	P^{m}	I		P*				I			P				P					
Big Dalton Wash	P^{m}	I	Y^{av}	P*				I			P				P					
San Dimas Wash (Upper)	I^{m}	I		P*				E			I				E					
San Dimas Wash (Lower)	I^{m}	I	Y^{av}	P*				I			I				E					
Walnut Creek Wash	I^{m}	I		P*				I			I				E					
Puente Creek	P	I		P*				I			P				P					
Upper San Gabriel Reach 5 (Santa Fe Dam to Huntington Dr.)	I^{m}	I	Y^{av}	P*				I			I				E					
Upper San Gabriel each 5 (Huntington Dr. to Van Tassel Cyn)	E	E		E	E	E	E	E			E	E			E		E			
Upper San Gabriel each 5 (Van Tassel yn to SG Reservoir)	E	E		E	E	E	E	E			E	E			E					
San Gabriel River Reach 3 + 4	I^{m}	I	Y^{av}	P*				I			I				E					
San Jose Creek Reach 1 + 2	P^{m}	I	Y^{av}	P*				I			I				E					
San Gabriel River Reach 2	E^{m}	E	Y^{av}	P*	P	P		I			I				E		E			
San Gabriel River Reach 1	E^{m}	E	Y^{av}	P*							P				P		E			
Coyote Creek	P^{m}	I	Y^{av}	P*	P	P					P				P		E			
San Gabriel River Estuary	E	E			E				E	E			E	E	E		E^{e}	E^{f}	E^{f}	P
Puddingstone Reservoir	E	E		E*			E	E			E	E			E		E			
per Santa Clara er[5]																				

Pyramid Lake	E	E		E	E	E	E	E			E	E			E		E			

xisting beneficial use

otential beneficial use action would require a detailed analysis of the area.

ermittent beneficial use

and I: shall be protected as required.

sterisked MUN designations are designated under SB 88-63 and RB 89-03. Some designations may be considered for exemption at a later date.

Vaterbodies are listed multiple times if they cross hydrologic area or subarea boundaries. Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.

Vaterbodies designated as WET may have wetlands habitat associated with only a portion of the waterbody. Any regulatory action would require a detailed analysis of the area.

oastal waterbodies which are also listed in inland Surface Waters Tables (2-1) or in Wetlands Table (2-4).

ne or more rare species utilizes all ocean, bays, estuaries, and coastal wetlands for foraging and/or nesting.

quatic organisms utilize all bays, esturaries, lagoons, and coastal wetlands, to a certain extent, for spawning and early development. This may include migration into areas which are heavily influenced
nwater inputs.

ccess prevented by Los Angeles County Department of Public Works in concrete-channelized areas.

reas of Special Biological Significance: along coast from Latigo Point to Laguna Point, Big Sycamore Canyon and Abalone Cove Ecological Reserves, and Point Fermin Marine Life Refuge.

reas exhibiting large shellfish populations include Malibu, Point Dume, Point Fermin, White Point and Zuma Beach.

Most frequently used grunion spawning beaches. Other beaches may be used as well.

The REC-1 use designation does not apply to recreational activities associated with the swimmable goal as expressed in the Federal Clean Water Act section 101(a)(2) and regulated under the REC-
e Basin Plan, or the associated bacteriological objectives set to protect those activities. However, water quality objectives set to protect other REC-1uses associated with the fishable goal as expresse
Federal Clean Water Act section 1010(a)(2) shall remain in effect for waters where the (au) footnote appears.

The High Flow Suspension only applies to water contact recreational activities associated with the swimmable goal as expressed in the federal Clean Water Act section 101(a)(2) and regulated under
C-1 use, noncontact water recreation involving incidental water contact regulated under the REC-2 use, and the associated bacteriological objectives set to protect those activities. Water quality object
o protect (1) other recreational uses associated with the fishable goal as expressed in the federal Clean Water Act section 101(a)(2) and regulated under the REC-1 use and (2) other REC-2 uses (e.
s involving the aesthetic aspects of water) shall remain in effect at all times for waters where the (av) footnote appears.

nly applies to upper portion of the corresponding water body.

nly applies to lower portion of the corresponding water body.

ccess prohibited by Los Angeles County Department of Public Works

eneficial uses were not identified in the Basin Plan for Peck Road Park Lake. Therefore the downstream segment's uses (Rio Hondo Reach 1) apply based on Regional Board input (USEPA, 2012b).

nly major water bodies listed here; for complete list see Basin Plan.

RELEVANT TMDLS FOR EWMP PERMITTEES

RB-AR9116

	LARWQCB Resolution #	Rio Honda/San Gabriel EWMP									SMB EWMP					Upper LA River EWMP																	Upper San		
		Arcadia	Azusa	Bradbury	Duarte	Monrovia	Sierra Madre	*Los Angeles*	*LA County*	*LAFCD*	*El Segundo*	Santa Monica	*Los Angeles*	*LA County*	*LAFCD*	Alhambra	Burbank	*Calabasas*	Glendale	*Hidden Hills*	La Canada Flintridge	*Los Angeles*	Montebello	Monterey Park	Pasadena	Rosemead	San Gabriel	San Marino	South Pasadena	Temple City	*LA County*	*LAFCD*	Baldwin Park	Covina	Glendora
sh	2004-023																																		
m, nc, Bs, Hs	2005-008, 2013-010																																		
ls: m, inc	2007-015, 2013-010																																		
t & eg	N/A (USEPA TMDL)																																		
da tal m, *cus*	2006-011, 2012-008																																		
sh	2010-010										X	X	X	X	X																				
Bs	N/A (USEPA TMDL)										X	X	X	X	X																				
Dry er)	2002-004, -022 (amended by R12-007);										X	X	X	X	X																				
er, Hs, m, ury	R11-008							X	X	X												X									X	X			
sh	2007-006																																		
nd rus	2008-006																																		
DT, ne, rin	R10-008																																		
rm, rm, *cus*	2004-011																																		

RELEVANT TMDLS FOR EWMP PERMITTEES

	LARWQCB Resolution #	Rio Honda/San Gabriel EWMP									SMB EWMP					Upper LA River EWMP																	Upper San		
		Arcadia	Azusa	Bradbury	Duarte	Monrovia	Sierra Madre	*Los Angeles*	*LA County*	*LAFCD*	*El Segundo*	Santa Monica	*Los Angeles*	*LA County*	*LAFCD*	Alhambra	Burbank	*Calabasas*	Glendale	*Hidden Hills*	La Canada Flintridge	*Los Angeles*	Montebello	Monterey Park	Pasadena	Rosemead	San Gabriel	San Marino	South Pasadena	Temple City	*LA County*	*LAFCD*	Baldwin Park	Covina	Glendora
sh	2008-007																																		
nd rus	N/A (USEPA TMDL)																																		
rm, rm, *coli*	R12-009																																		
ts: rus m. ts)	N/A (USEPA TMDL)																																		
rm, rm, *cus*	2003-012																																		
er, ne, DE	2005-012 (amended by R14-004)																																		
en	2003-009 (amended by R12-010)	X		X	X	X	X	X	X	X						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
sh	2007-012	X		X	X	X	X	X	X	X						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
nc, um	2007-014 (amended by R10-003)	X		X	X	X	X	X	X	X						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
coli	R10-007	X		X	X	X	X	X	X	X						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
ke	N/A (USEPA TMDL)	X		X	X	X	X	X	X	X												X									X	X			
ke																						X									X	X			
sh																															X	X			
sas																						X									X	X			
ke																						X									X	X			
oir																																			
ke																																			

RB-AR 9117

RELEVANT TMDLS FOR EWMP PERMITTEES

	LARWQCB Resolution #	Rio Honda/San Gabriel EWMP									SMB EWMP					Upper LA River EWMP																	Upper San		
		Arcadia	Azusa	Bradbury	Duarte	Monrovia	Sierra Madre	*Los Angeles*	*LA County*	*LAFCD*	*El Segundo*	Santa Monica	*Los Angeles*	*LA County*	*LAFCD*	Alhambra	Burbank	*Calabasas*	Glendale	*Hidden Hills*	La Canada Flintridge	*Los Angeles*	Montebello	Monterey Park	Pasadena	Rosemead	San Gabriel	San Marino	South Pasadena	Temple City	*LA County*	*LAFCD*	Baldwin Park	Covina	Glendora
nc, um	2006-014 (amended by R13-004)	X	X	X	X	X			X	X																							X	X	X
en	2003-011																																		
de	2008-012 (amended by R14-010)																																		
coli	R10-006																																		
sh	2007-009																																		

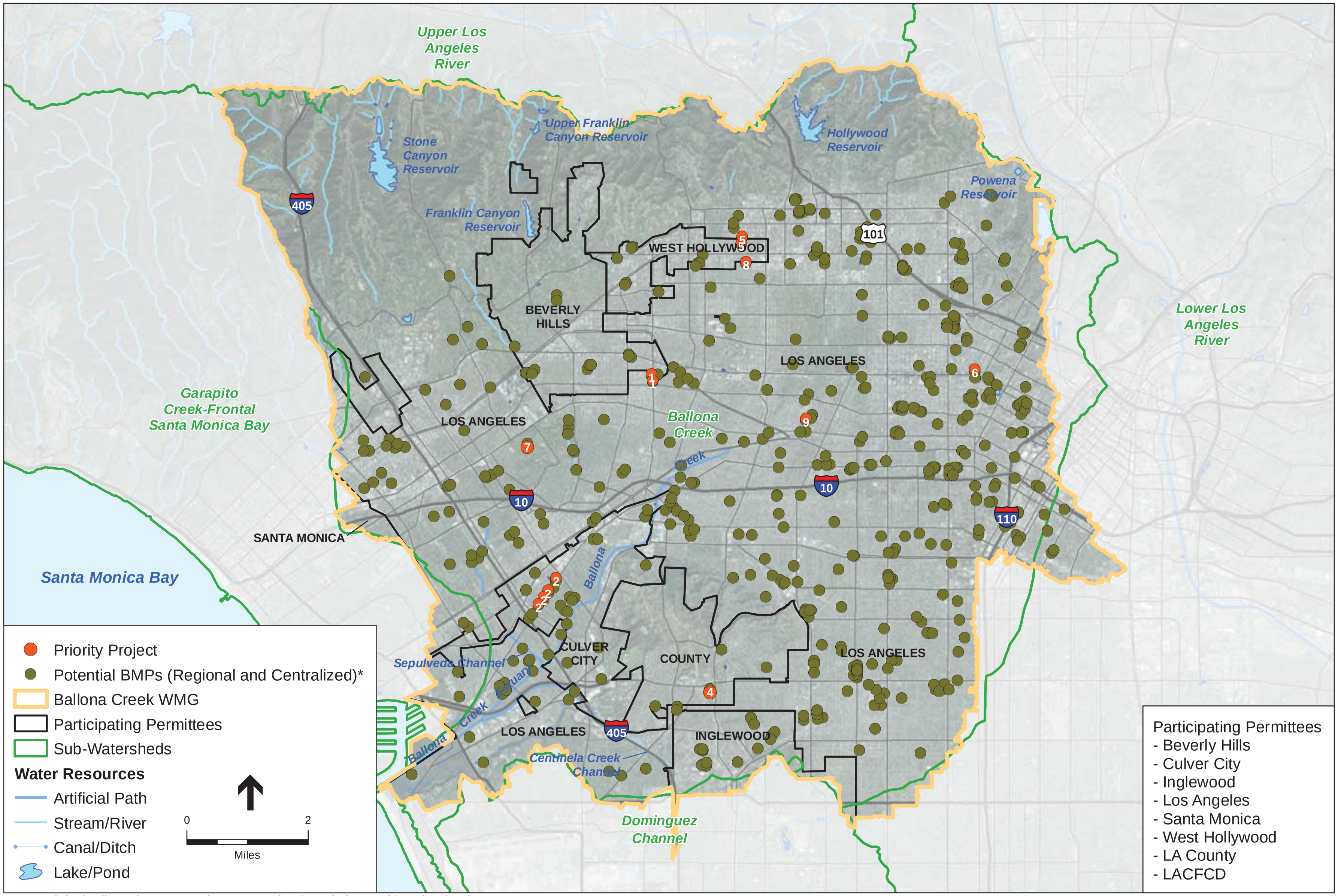
EWMP areas.
cable to Permittees outside the EWMP Process.

RBAR 9118

Appendix G

EWMP Proposed BMP and Priority Project Data

ESA



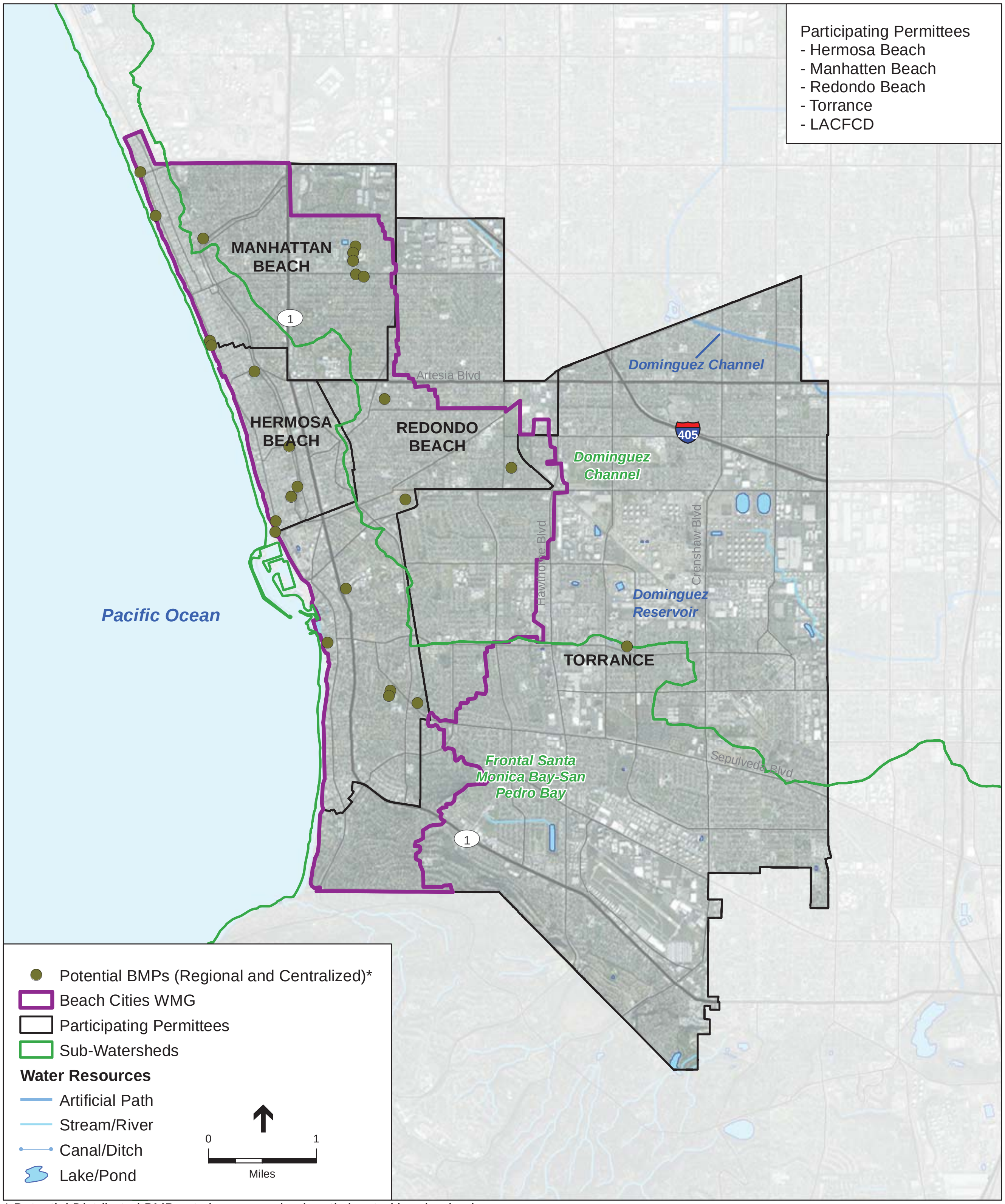
* Potential Distributed BMP not shown - predominantly located in urbanized areas

SOURCE: ESRI; National Hydrology Dataset.

LA County PEIR EWMP . 140474

Figure A
Ballona Creek
Watershed Management Group

RB-AR 9120

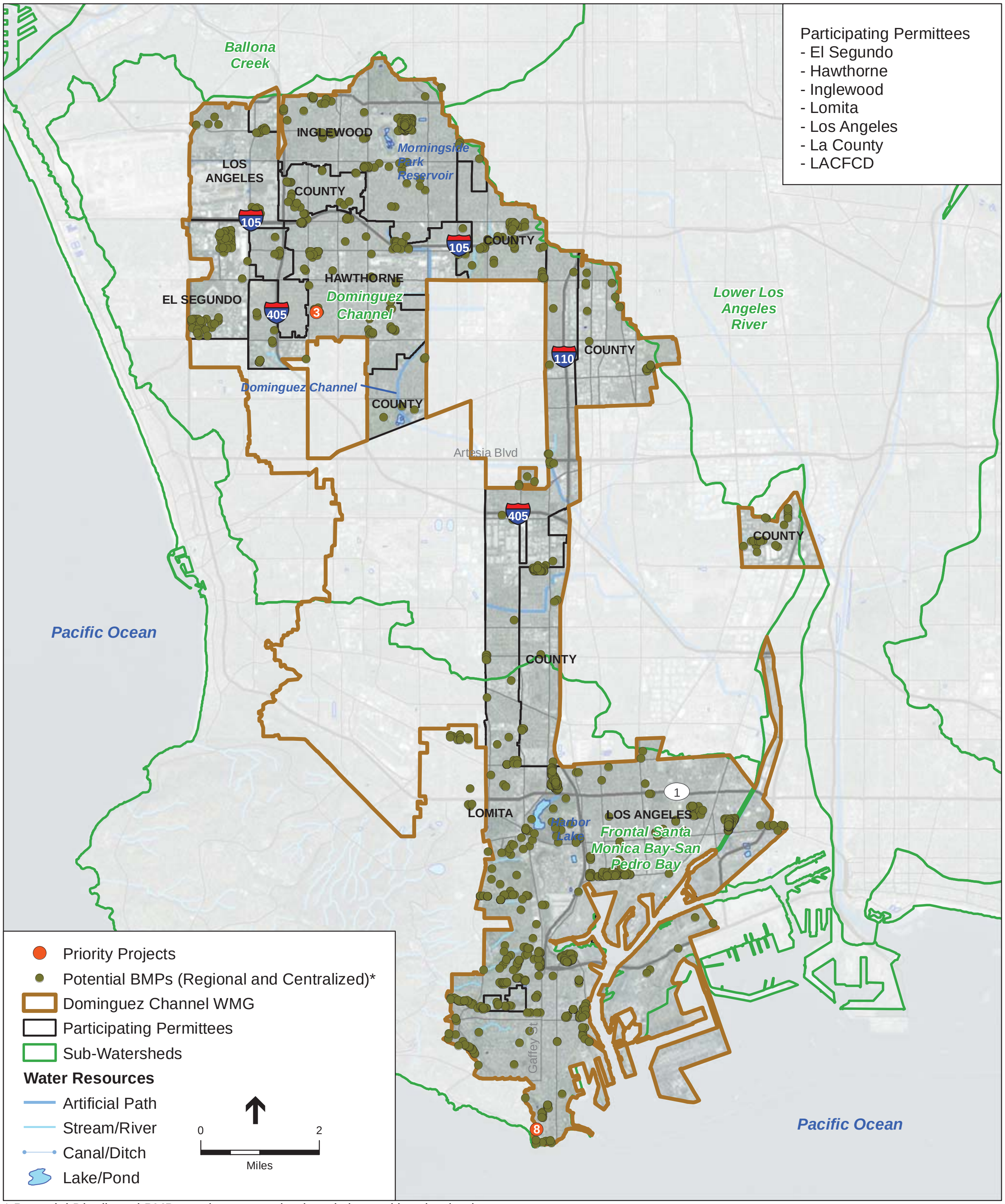


** Potential Distributed BMP not shown - predominantly located in urbanized areas*
** Prioirty Projects have yet to be determined*

SOURCE: ESRI; National Hydrology Dataset.

LA County PEIR EWMP . 140474

Figure B
Beach Cities Watershed Management Group



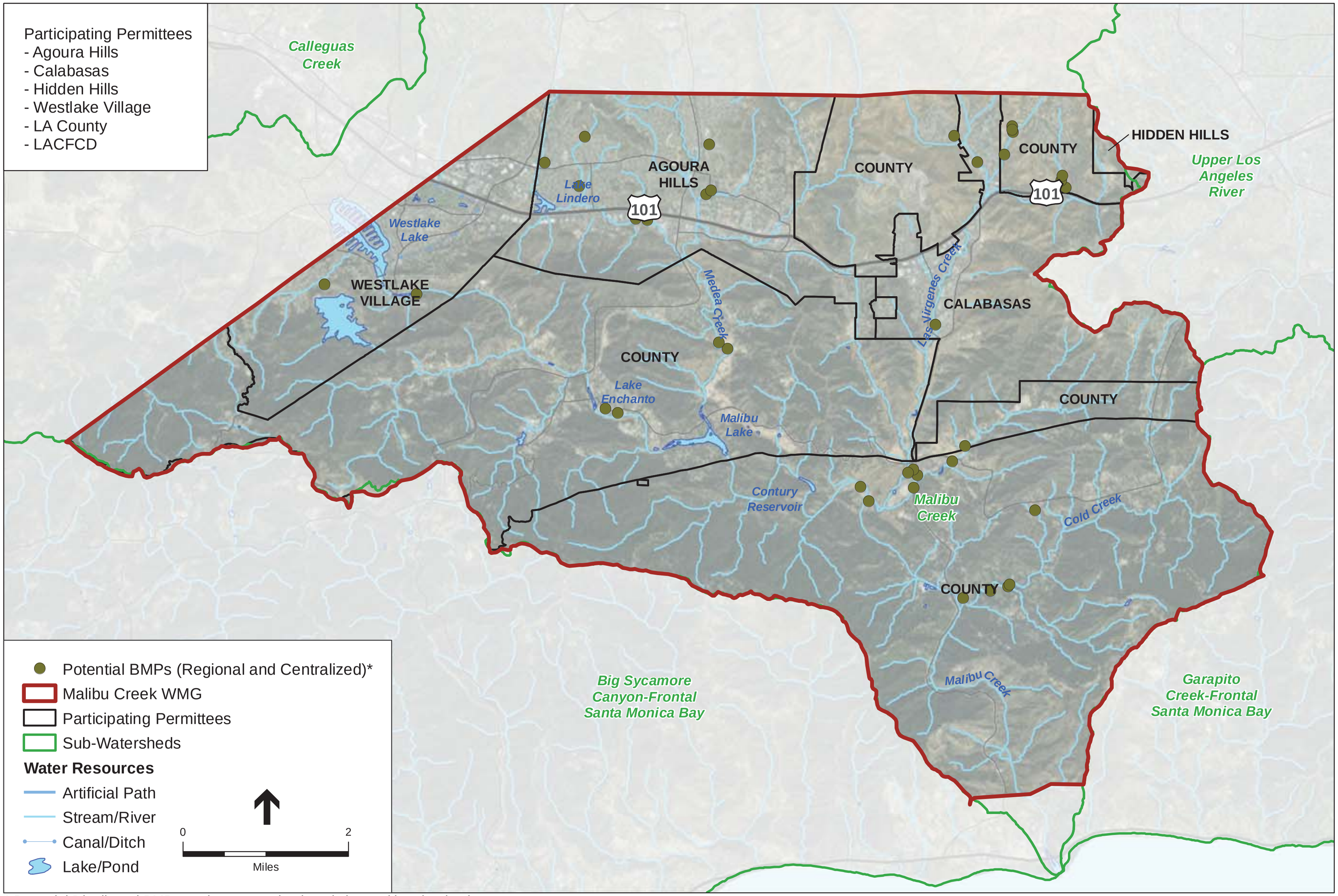
* Potential Distributed BMP not shown - predominantly located in urbanized areas

SOURCE: ESRI; National Hydrology Dataset.

LA County PEIR EWMP . 140474

Figure C

Dominguez Channel Watershed Management Group



* Potential Distributed BMP not shown - predominantly located in urbanized areas

* Prioirty Projects have yet to be determined

SOURCE: ESRI; National Hydrology Dataset.

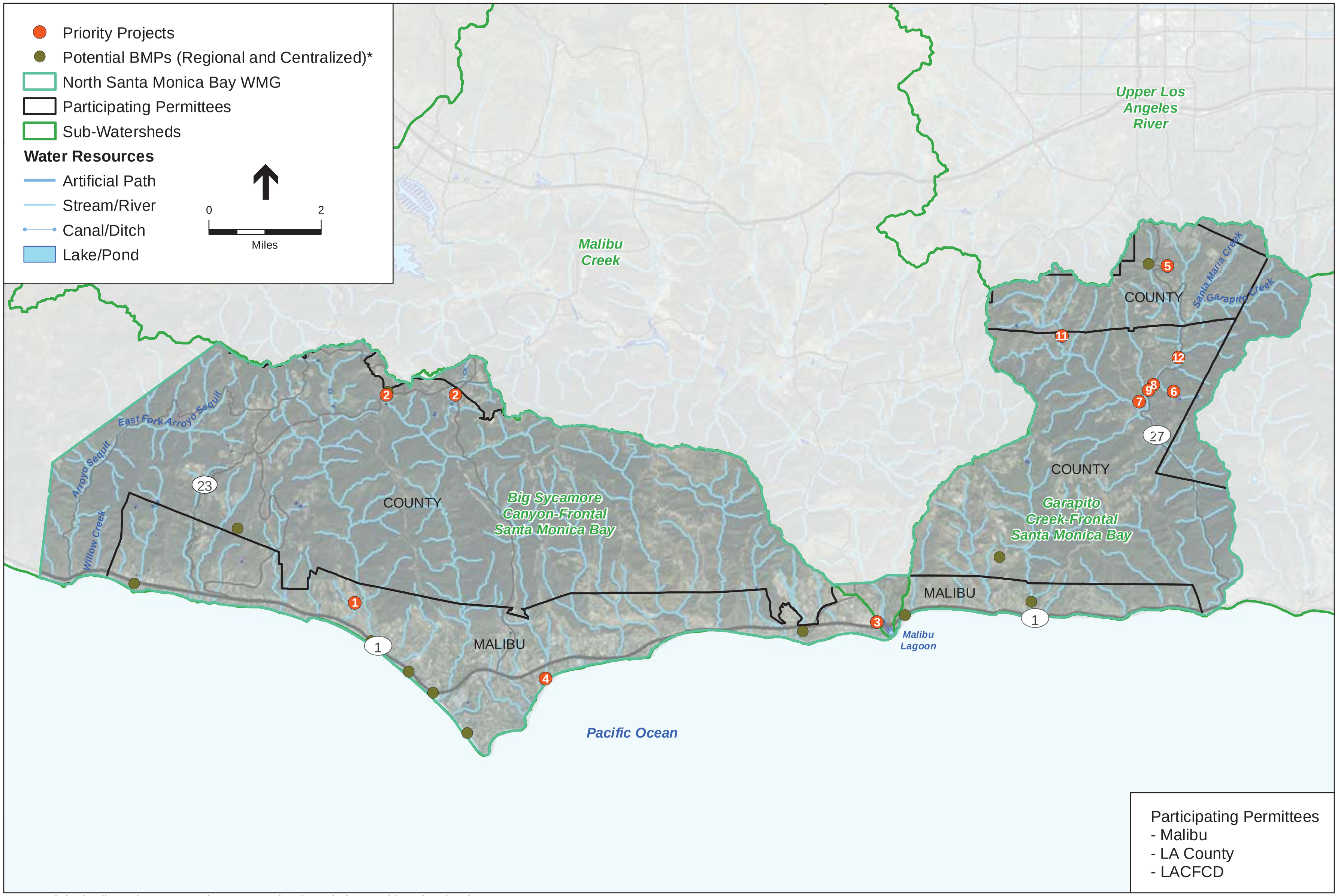
LA County PEIR EWMP . 140474

Figure D
Malibu Creek
Watershed Management Group

SOURCE: ESRI; National Hydrology Dataset.

LA County PEIR EWMP . 140474

Figure E
Marina del Rey
Watershed Management Group



* Potential Distributed BMP not shown - predominantly located in urbanized areas

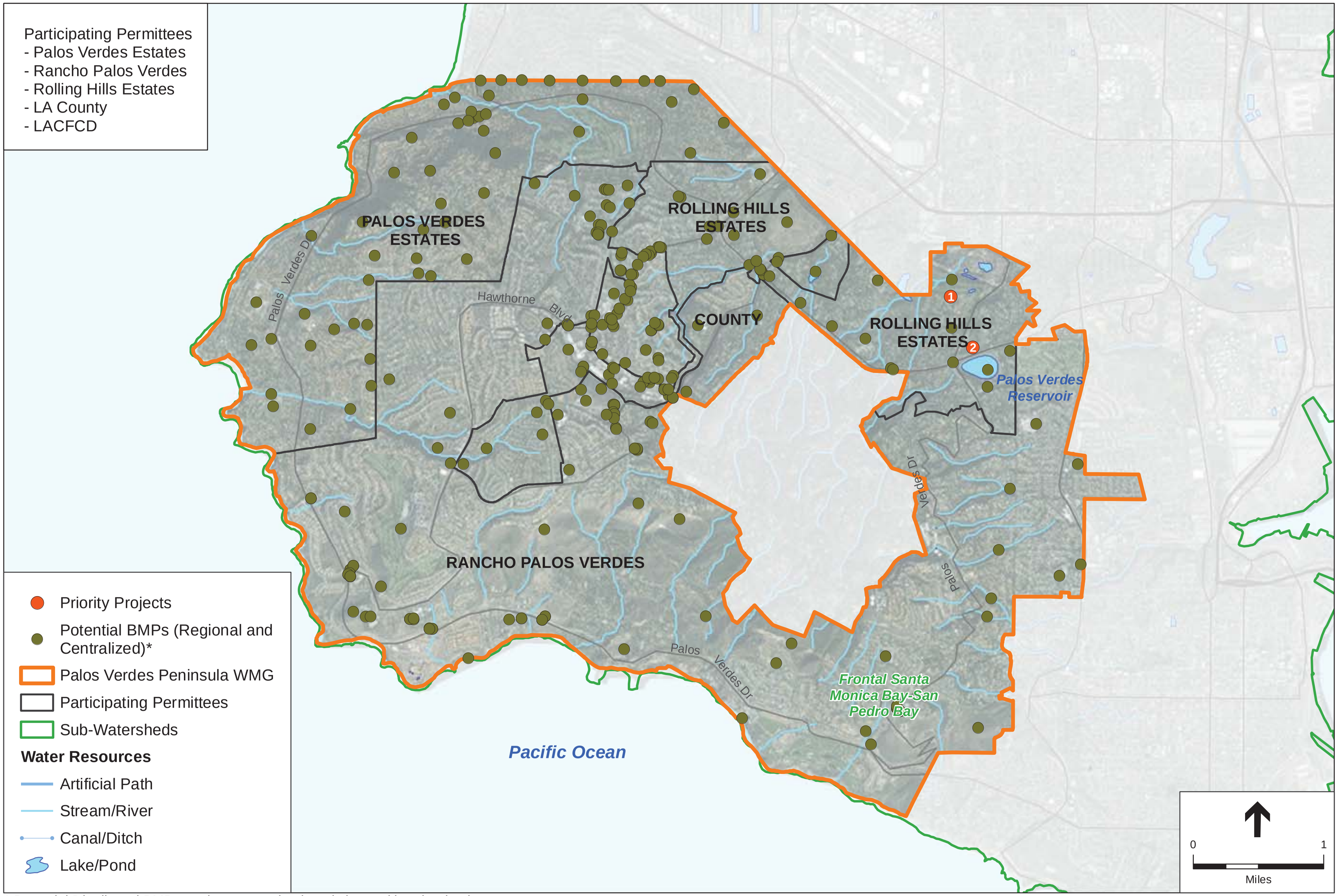
SOURCE: ESRI; National Hydrology Dataset.

LA County PEIR EWMP . 140474

Figure F

North Santa Monica Bay Coastal Watersheds

RB-AR 9125



* Potential Distributed BMP not shown - predominantly located in urbanized areas

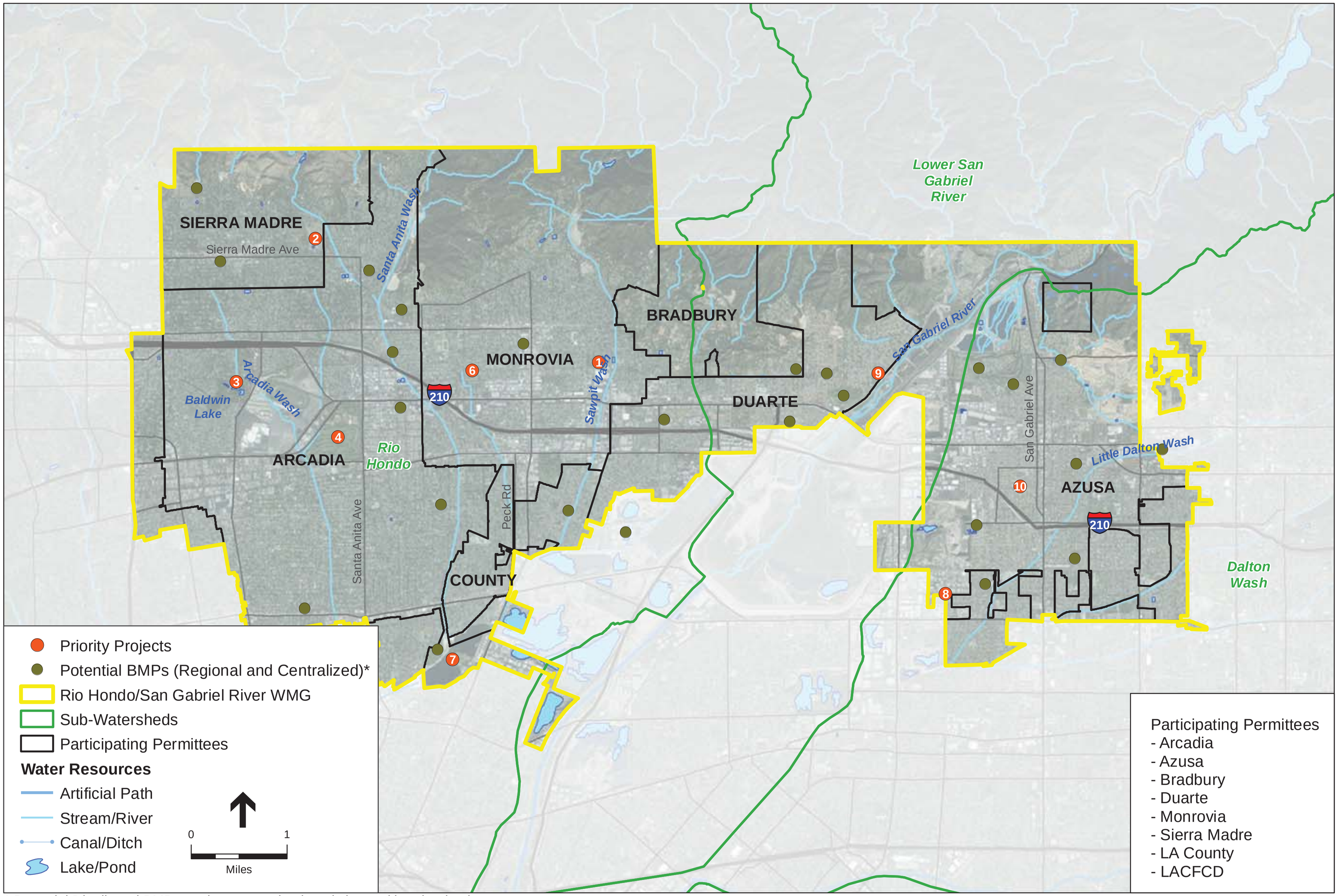
SOURCE: ESRI; National Hydrology Dataset.

LA County PEIR EWMP . 140474

Figure G

Palos Verdes Peninsula

Watershed Management Group



* Potential Distributed BMP not shown - predominantly located in urbanized areas

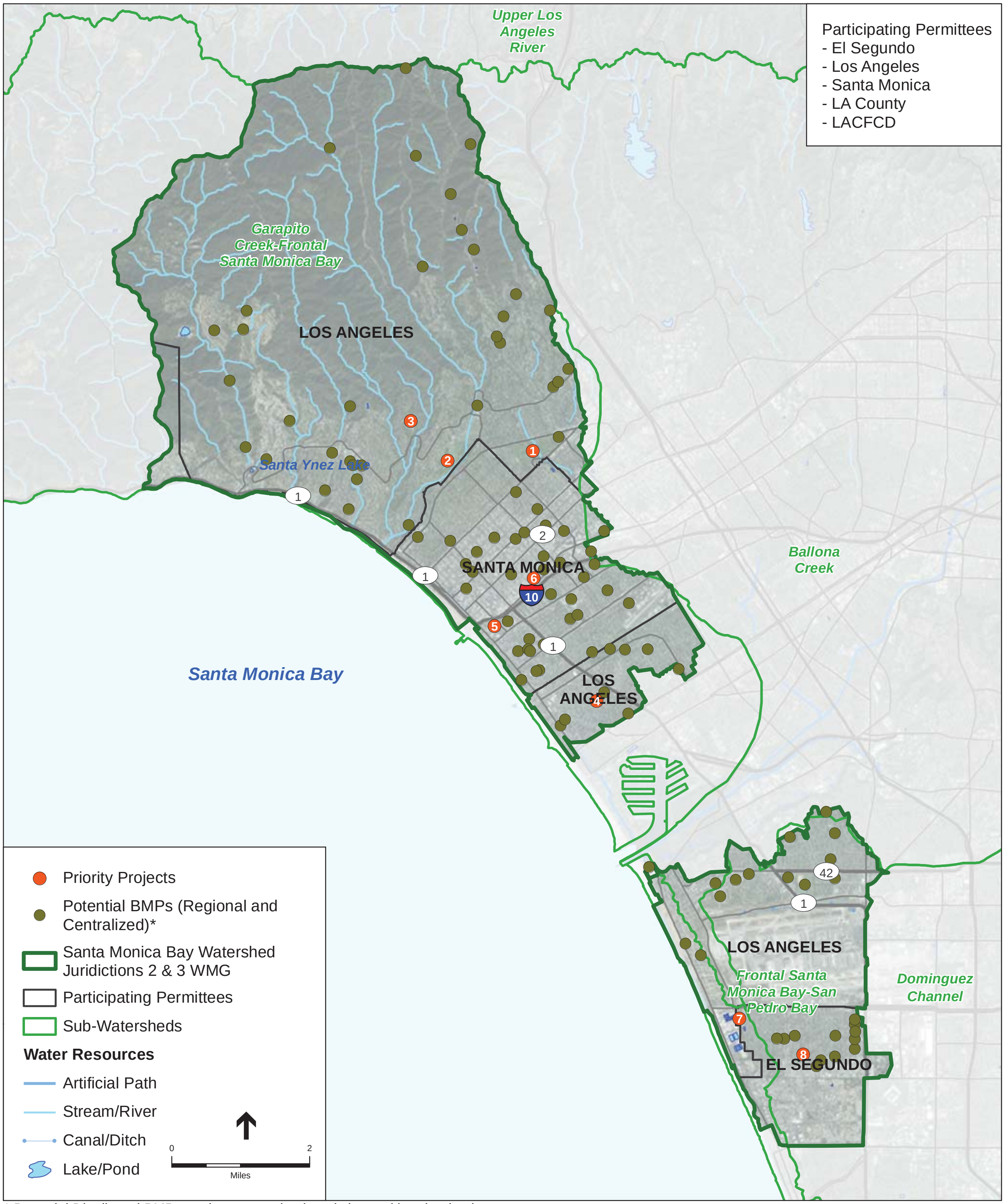
SOURCE: ESRI; National Hydrology Dataset.

LA County PEIR EWMP . 140474

Figure H

Rio Hondo / San Gabriel River Watershed Management Group

RB-AR 9127



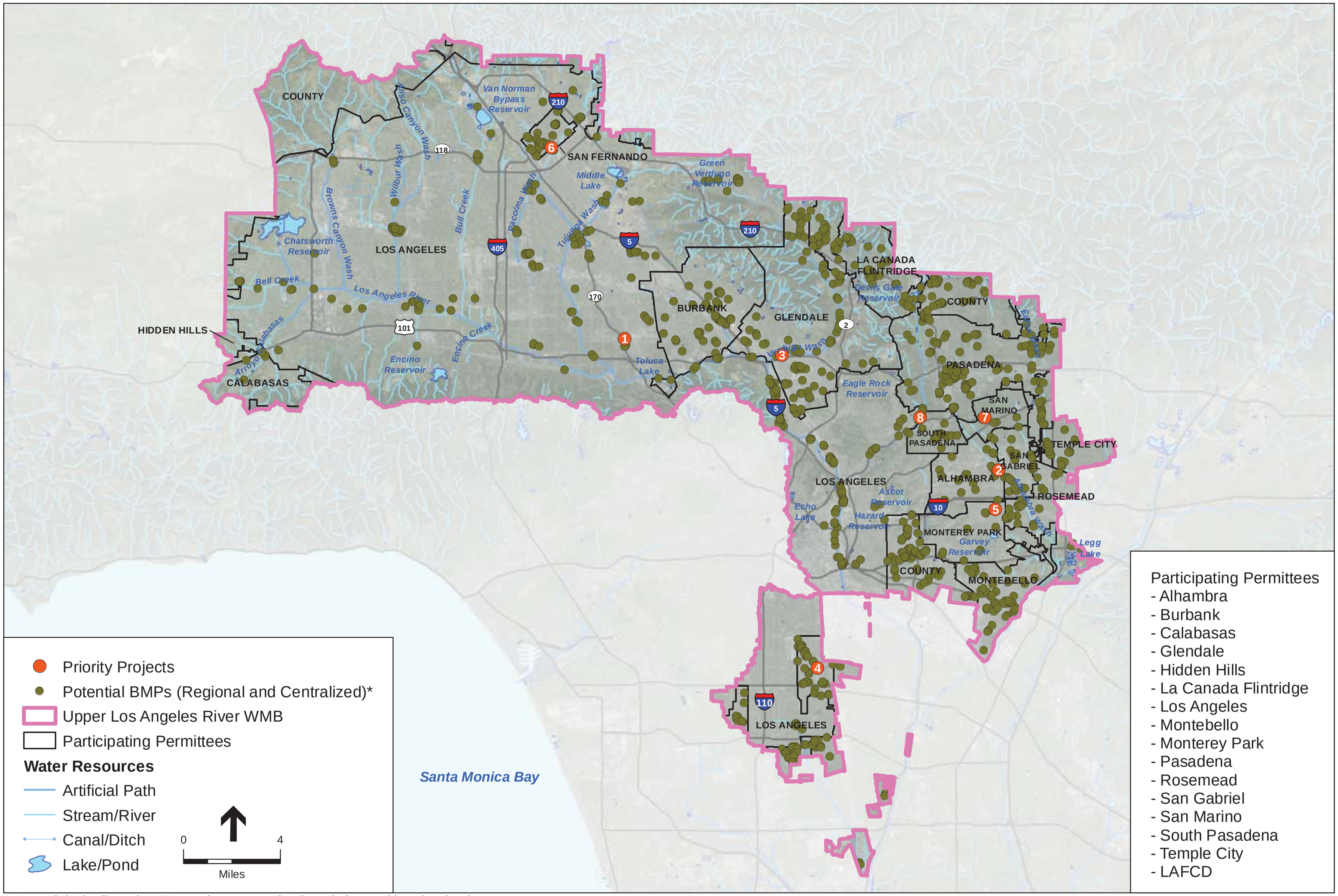
* Potential Distributed BMP not shown - predominantly located in urbanized areas

SOURCE: ESRI; National Hydrology Dataset.

LA County PEIR EWMP . 140474

Figure I

Santa Monica Bay Watershed Jurisdictions 2 and 3 Watershed Management Groups



* Potential Distributed BMP not shown - predominantly located in urbanized areas

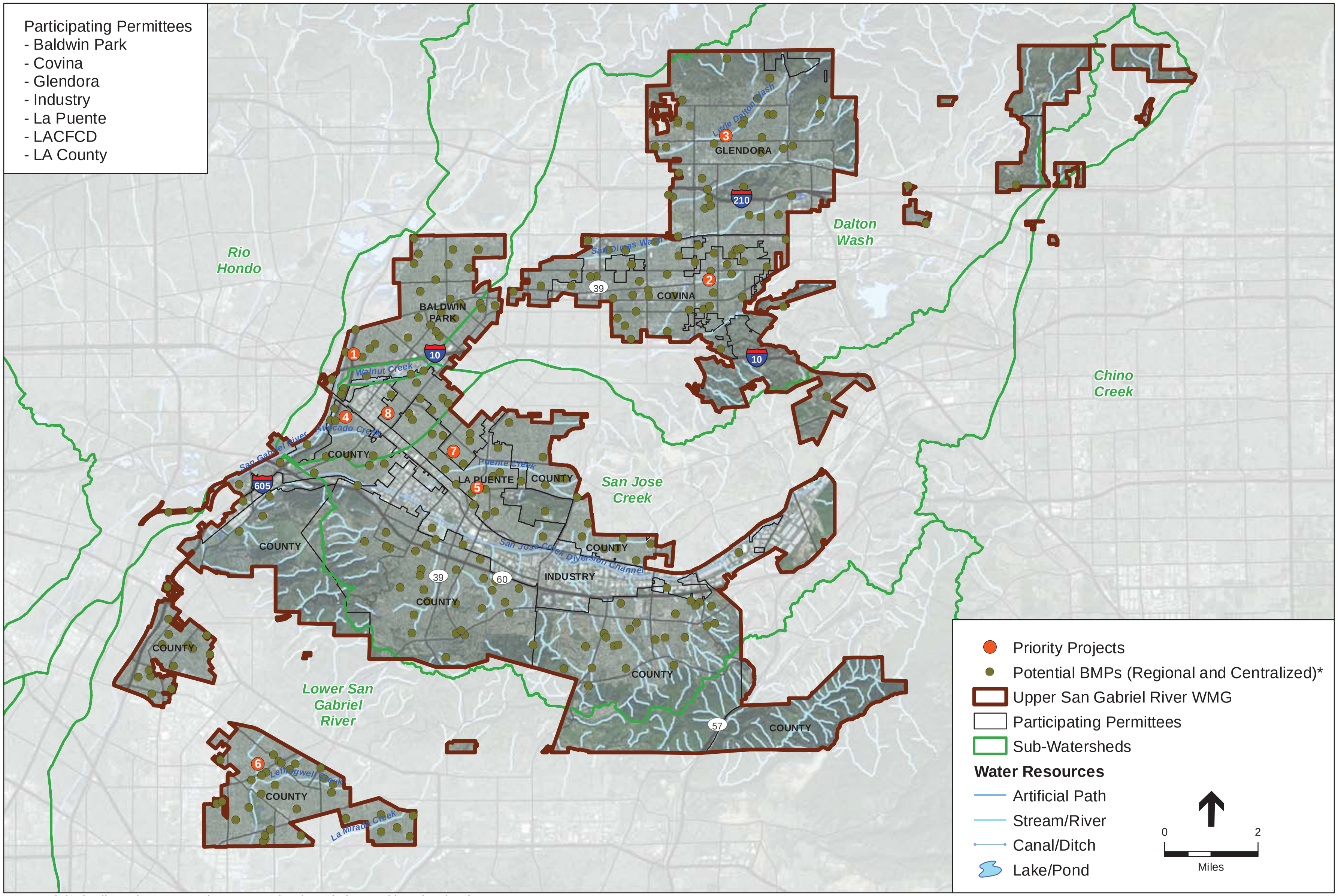
SOURCE: ESRI; National Hydrology Dataset.

LA County PEIR EWMP . 140474

Figure J

Upper Los Angeles River
Watershed Management Group

RB-AR 9129

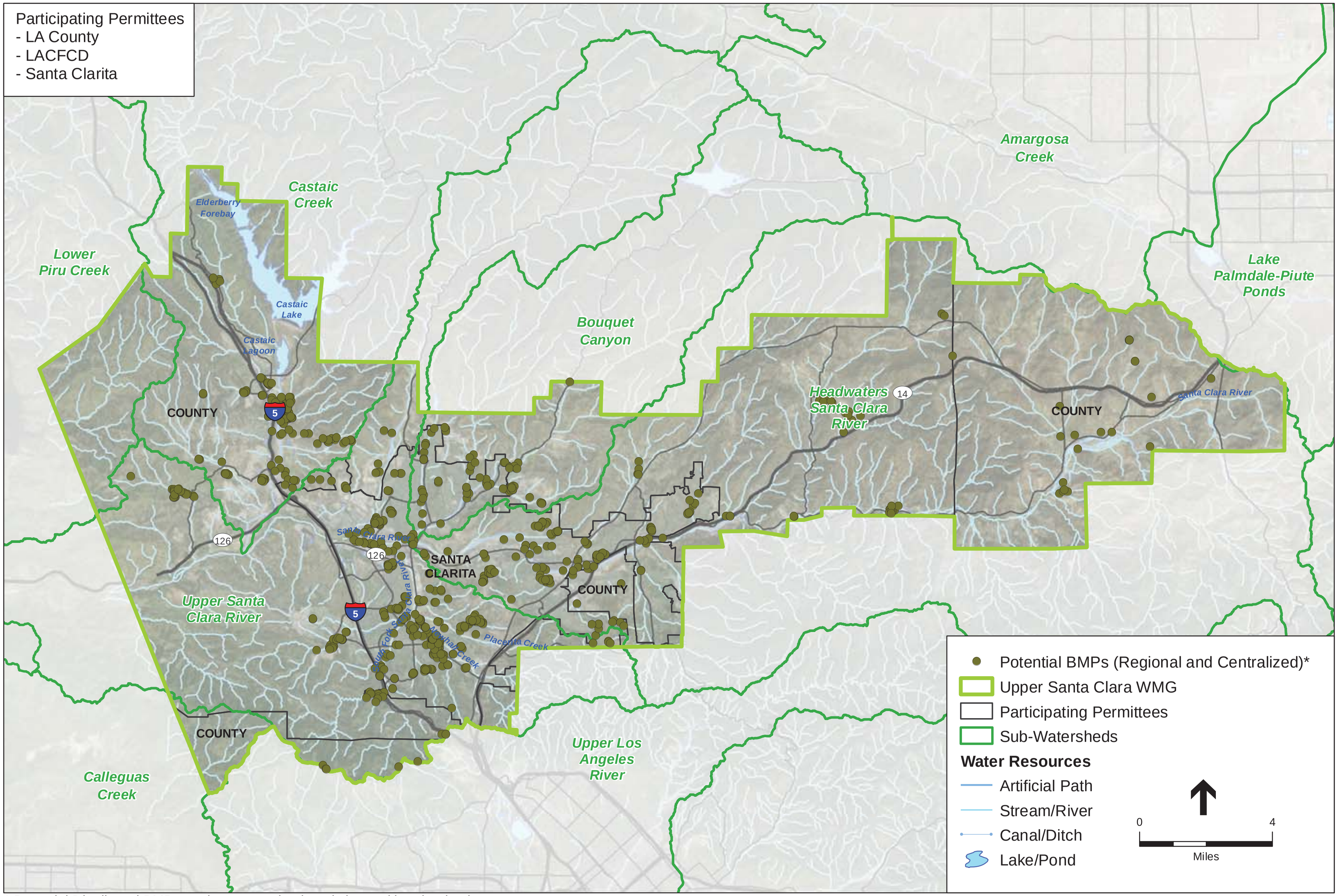


* Potential Distributed BMP not shown - predominantly located in urbanized areas

SOURCE: ESRI; National Hydrology Dataset.

LA County PEIR EWMP . 140474

Figure K
Upper San Gabriel River
Watershed Management Groups



* Potential Distributed BMP not shown - predominantly located in urbanized areas
* Prioirty Projects have yet to be determined

SOURCE: ESRI; National Hydrology Dataset.

LA County PEIR EWMP . 140474

Figure L

Upper Santa Clara River Watershed
Watershed Management Group

RB-AR 9131

Priority Projects			
EWMP Group	**Approximate Project Location**	**Figure Number and Title**	**ID Number**
Ballona Creek			
La Cienega Park – Multi-Use Detention Basin	8400 Gregory way, Bev Hills, CA 90211	Figure A, Ballona Creek Watershed Management Group	1
Culver Blvd Median	Culver Blvd between Sepulveda and Overland	Figure A, Ballona Creek Watershed Management Group	2
Edward Vincent – Subsurface flow wetland with equalization storage		Figure A, Ballona Creek Watershed Management Group	3
Ladera Park	6027 Ladera Park Ave, Los Angeles, CA 90056	Figure A, Ballona Creek Watershed Management Group	4
Plummer Park	7377 Santa Monica Blvd, West Hollywood, CA 90046	Figure A, Ballona Creek Watershed Management Group	5
Lafayette Park	Los Angeles, CA 90005	Figure A, Ballona Creek Watershed Management Group	6
Rancho Park Golf Course	10460 W Pico Blvd, Los Angeles, CA 90064	Figure A, Ballona Creek Watershed Management Group	7
Poinsettta Recreation Center	7341 Willoughby Avenue, Los Angeles, CA 90046	Figure A, Ballona Creek Watershed Management Group	8
Queen Anne Recreation Center	1240 West Blvd, Los Angeles, CA 90019	Figure A, Ballona Creek Watershed Management Group	9
Beach Cities Watershed Management Group			
Not yet determined		Figure B, Beach Cities Watershed Management Group	
Dominguez Channel Watershed Management Area Group			
Darcy Park – Infiltration		Figure C, Dominguez Channel Watershed Management Group	1
El Segundo Project – Infiltration		Figure C, Dominguez Channel Watershed Management Group	2
Ramona Park – Capture and Reuse	4662 West 136th Street Hawthorne, CA 90250	Figure C, Dominguez Channel Watershed Management Group	3
Jim Thorpe – Infiltration		Figure C, Dominguez Channel Watershed Management Group	4
Chester Washington – Infiltration		Figure C, Dominguez Channel Watershed Management Group	5
Helen Keller – Infiltration		Figure C, Dominguez Channel Watershed Management Group	6
Harbor City/Wilmington Drain – Capture and Reuse		Figure C, Dominguez Channel Watershed Management Group	7
Averill Park – Infiltration	1300 South Dodson Avenue San Pedro, CA 90732	Figure C, Dominguez Channel Watershed Management Group	8
Malibu Creek Watershed			
Not yet determined		Figure D, Malibu Creek Watershed Management Group	
Marina del Rey			
Area 1 – Green Streets	Venice Blvd	Figure E, Marina del Rey Watershed Management Group	1

Priority Projects			
EWMP Group	**Approximate Project Location**	**Figure Number and Title**	**ID Number**
Area 2 – Green Streets	Venice Blvd	Figure E, Marina del Rey Watershed Management Group	2
North Santa Monica Bay Coastal Watersheds			
Trancas – Infiltration	33332 Pacific Coast Highway Malibu, CA 90265	Figure F, North Santa Monica Bay Coastal Watersheds	1
Zuma 1, 2, 3 – Infiltration	Encinal Canyon Rd	Figure F, North Santa Monica Bay Coastal Watersheds	2
Malibu Legacy Park Pump Station Improvements – Treatment Plant Pump Upgrades	Cross Creek Rd and PCH	Figure F, North Santa Monica Bay Coastal Watersheds	3
Paradise Cove 1 – Infiltration	Paradise Cove Rd and PCH	Figure F, North Santa Monica Bay Coastal Watersheds	4
J1/4 Topanga –1,3 – Infiltration	East of Topanga Canyon RD	Figure F, North Santa Monica Bay Coastal Watersheds	5
J1/4 Topanga –2 – Infiltration	East of Summit Trail	Figure F, North Santa Monica Bay Coastal Watersheds	6
J1/4 Topanga –4 – Infiltration	North of Topanga School Rd	Figure F, North Santa Monica Bay Coastal Watersheds	7
J1/4 Topanga –5 – Infiltration	East of Topanga Canyon RD	Figure F, North Santa Monica Bay Coastal Watersheds	8
J1/4 Topanga –6 – Infiltration	West of Topanga Canyon Rd	Figure F, North Santa Monica Bay Coastal Watersheds	9
J1/4 Topanga –7 – Infiltration	East of Summit Trail	Figure F, North Santa Monica Bay Coastal Watersheds	10
J1/4 Topanga –8 – Infiltration	East of Valley Drive	Figure F, North Santa Monica Bay Coastal Watersheds	11
J1/4 Topanga –9 – Infiltration	East of Topanga Canyon RD	Figure F, North Santa Monica Bay Coastal Watersheds	12
J1/4 Topanga –10 – Infiltration	Between Topanga Canyon Rd and Fernwood Pacific Drive	Figure F, North Santa Monica Bay Coastal Watersheds	13
Palos Verdes Peninsula EWMP Agencies			
Chandler Quarry Project – Infiltration	Club View Lane	Figure G, Palos Verdes Peninsula Watershed Management Group	1
Casaba Estates (Butcher Ranch) – Bioretention	Palos Verdes Drive	Figure G, Palos Verdes Peninsula Watershed Management Group	2
Rio Hondo/San Gabriel River Water Quality Group			
Recreation Park	Lemon Avenue and Mountain Avenue	Figure H, Rio Hondo/San Gabriel River Watershed Management Group	1
Sierra Vista Park	Sierra Madre Boulevard and Rancho Road	Figure H, Rio Hondo/San Gabriel River Watershed Management Group	2

Priority Projects			
EWMP Group	**Approximate Project Location**	**Figure Number and Title**	**ID Number**
Arboretum of Los Angeles County	Baldwin Avenue and Colorado Street	Figure H, Rio Hondo/San Gabriel River Watershed Management Group	3
Santa Anita Golf Course	Huntington Drive and Santa Anita Avenue	Figure H, Rio Hondo/San Gabriel River Watershed Management Group	4
Royal Oaks Trail (LAR)	Los Angeles River	Figure H, Rio Hondo/San Gabriel River Watershed Management Group	5
L. Garcia Park	Olive Avenue and Mayflower Avenue	Figure H, Rio Hondo/San Gabriel River Watershed Management Group	6
Peck Road Park Lake	Peck Road and Rio Hondo Parkway	Figure H, Rio Hondo/San Gabriel River Watershed Management Group	7
LADWP Easement	From Irwindale to Lake Ellen south of Arrow Hwy	Figure H, Rio Hondo/San Gabriel River Watershed Management Group	8
Encanto Park	Encanto Pkwy, Duarte, CA 91010	Figure H, Rio Hondo/San Gabriel River Watershed Management Group	9
Memorial Park (Azusa)	3rd Street and N Orange Ave	Figure H, Rio Hondo/San Gabriel River Watershed Management Group	10
Royal Oaks Trail (SGR)	San Gabriel River	Figure H, Rio Hondo/San Gabriel River Watershed Management Group	11
Santa Monica Bay Watershed, Jurisdictions 2 & 3			
Brentwood Golf Course	590 South Burlingame Avenue Los Angeles, CA 90049	Figure I, Santa Monica Bay Watershed Jurisdictions 2 and 3 Watershed Management Groups	1
Riviera Country Club	1250 Capri Drive Pacific Palisades, CA 90272	Figure I, Santa Monica Bay Watershed Jurisdictions 2 and 3 Watershed Management Groups	2
Rustic Canyon Recreation Center	Latimer Rd Santa Monica, CA 90402	Figure I, Santa Monica Bay Watershed Jurisdictions 2 and 3 Watershed Management Groups	3
Oakwood Park	767 California St Venice, CA 90291	Figure I, Santa Monica Bay Watershed Jurisdictions 2 and 3 Watershed Management Groups	4
Santa Monica Civic Auditorium and Courthouse	1725 Main St Santa Monica, CA 90401-3274	Figure I, Santa Monica Bay Watershed Jurisdictions 2 and 3 Watershed Management Groups	5
Memorial Park	1401 Olympic Boulevard Santa Monica, CA 90404	Figure I, Santa Monica Bay Watershed Jurisdictions 2 and 3 Watershed Management Groups	6

Priority Projects			
EWMP Group	**Approximate Project Location**	**Figure Number and Title**	**ID Number**
LADWP easement for potential Northwest Infiltration basins	South of Imperial Hwy	Figure I, Santa Monica Bay Watershed Jurisdictions 2 and 3 Watershed Management Groups	7
Recreation Park	401 Sheldon Street El Segundo, CA 90245	Figure I, Santa Monica Bay Watershed Jurisdictions 2 and 3 Watershed Management Groups	8
Upper Los Angeles River Watershed			
North Holly Park Project	11430 Chandler Boulevard North Hollywood, CA 91601	Figure J, Upper Los Angeles River Watershed Management Group	1
Alhambra Golf Course	630 South Almansor Street Alhambra, CA 91801	Figure J, Upper Los Angeles River Watershed Management Group	2
Fremont Park	600 Hahn Avenue Glendale, CA 91203	Figure J, Upper Los Angeles River Watershed Management Group	3
Roosevelt Park	7600 Graham Avenue Los Angeles, CA 90001	Figure J, Upper Los Angeles River Watershed Management Group	4
Sierra Vista Park	311 North Rural Drive Monterey Park, CA 91755	Figure J, Upper Los Angeles River Watershed Management Group	5
208 Park Ave	208 Park Ave, San Fernando, CA 91340	Figure J, Upper Los Angeles River Watershed Management Group	6
Lacy Park – Infiltration/Retention Basin	1485 Virginia Road San Marino, CA 91108	Figure J, Upper Los Angeles River Watershed Management Group	7
Lower Arroyo Park	South Pasadena, CA 91030	Figure J, Upper Los Angeles River Watershed Management Group	8
Upper San Gabriel River			
Barnes Park	3251 Patritti Avenue Baldwin Park, CA 91706	Figure K, Upper San Gabriel River Watershed Management Groups	1
Kahler Russell Park	735 North Glendora Avenue Covina, CA 91724	Figure K, Upper San Gabriel River Watershed Management Groups	2
Finkbiner Park	Glendora, CA 91741	Figure K, Upper San Gabriel River Watershed Management Groups	3
San Angelo Park	245 San Angelo Avenue Bassett, CA 91746	Figure K, Upper San Gabriel River Watershed Management Groups	4
La Puente Park	501 Glendora Avenue La Puente, CA 91744	Figure K, Upper San Gabriel River Watershed Management Groups	5
Adventure Park	10130 South Gunn Avenue Whittier, CA 90605	Figure K, Upper San Gabriel River Watershed Management Groups	6
Allen J Martin Park	14830 East Giordano Street La Puente, CA 91744	Figure K, Upper San Gabriel River Watershed Management Groups	7
Bassett Park	510 Vineland Avenue La Puente, CA 91746	Figure K, Upper San Gabriel River Watershed Management Groups	8
Upper Santa Clara River Watershed			

Priority Projects			
EWMP Group	**Approximate Project Location**	**Figure Number and Title**	**ID Number**
Not yet determined		Figure L, Upper Santa Clara River Watershed Management Group	

Region	Apn	Jurisdiction/City	Land Use Type	Address	Figure Number and Title
Dominguez	7448028904	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442020900	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	6079003906	Los Angeles County	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	6079003047	Los Angeles County	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7445018052	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439016900	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439015900	Los Angeles	Senior High Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7446021904	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7446021905	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7446021901	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7446021903	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7446021902	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7456022907	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7456022906	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7467003002	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7467003004	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7467003001	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7467003005	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7467003003	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7467003900	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7467003006	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7447010013	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7447010015	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7447010014	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7344007034	Torrance	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7447010016	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7447010017	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7410006035	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7410006900	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7410006034	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7345006901	Torrance	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7349029901	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7462025900	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7452006001	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7452006016	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7452006007	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7375020900	Lomita	Junior Or Intermediate High Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7452006004	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7452006017	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7452006002	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7452006009	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7452006011	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7452007012	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7452006015	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7452006006	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7452006003	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7452006005	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7452006008	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7452006010	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7351033031	Los Angeles	Colleges And Universities		2-15, Dominguez Channel Watershed Management Group
Dominguez	7410020018	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7458024918	Los Angeles	Senior High Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7553012022	Lomita	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7553012900	Lomita	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7553012023	Lomita	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7452034003	San Pedro	Senior High Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7452034031	Los Angeles	Senior High Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7452034032	Los Angeles	Senior High Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7452034036	Los Angeles County	Senior High Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7452034035	Los Angeles	Senior High Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7452034028	San Pedro	Senior High Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7452034033	Los Angeles	Senior High Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7454001001	Los Angeles	Senior High Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7454001003	Los Angeles	Senior High Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7454001006	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7454001900	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	6139003002	Compton	Senior High Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	6139003031	Los Angeles County	Senior High Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	6139003029	Compton	Senior High Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	6139003028	Compton	Senior High Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	6139003030	Compton	Senior High Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	6130015901	Los Angeles County	Junior Or Intermediate High Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	6130015900	Los Angeles County	Junior Or Intermediate High Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	6137004057	Compton	Senior High Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	6137004056	Gardena lif	Senior High Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4011026022	Inglewood	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4023039902	Inglewood	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4023039903	Inglewood	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4023039904	Inglewood	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4023039905	Inglewood	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4023039907	Inglewood	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4023039030	Inglewood	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4023039906	Inglewood	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4024021026	Inglewood	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4024021023	Inglewood	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4024021025	Inglewood	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4033013900	Inglewood	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4033013906	Inglewood	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4021037900	Inglewood	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4038029014	Inglewood	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4038029004	Lennox	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4038029006	Inglewood	Elementary Schools		2-15, Dominguez Channel Watershed Management Group

Region	Apn	Jurisdiction/City	Land Use Type	Address	Figure Number and Title
Dominguez	4038029007	Inglewood	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4038029005	Inglewood	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4038029020	Inglewood	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4022002900	Inglewood	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4039020900	Los Angeles County	Junior Or Intermediate High Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4039021900	Los Angeles County	Junior Or Intermediate High Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4039023901	Los Angeles County	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4039022901	Los Angeles County	Junior Or Intermediate High Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4039026900	Los Angeles County	Junior Or Intermediate High Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4030033903	Inglewood	Senior High Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4030033901	Inglewood	Senior High Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4030033902	Inglewood	Junior Or Intermediate High Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4030033904	Inglewood	Senior High Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4034014801	Inglewood	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4034014802	Inglewood	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4057005900	Hawthorne	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4035002900	Inglewood	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4035004032	Inglewood	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4035008902	Los Angeles County	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4020009902	Inglewood	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4020009010	Inglewood	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4020009005	Inglewood	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4020009006	Inglewood	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4020009004	Inglewood	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4036007901	Lennox	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4020016900	Inglewood	Senior High Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4036007902	Inglewood	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4020025900	Inglewood	Senior High Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4020026900	Inglewood	Senior High Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	6057014016	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	6057014017	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4128002902	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4128002901	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4126016015	Inglewood	Colleges And Universities		2-15, Dominguez Channel Watershed Management Group
Dominguez	4126016009	Inglewood	Colleges And Universities		2-15, Dominguez Channel Watershed Management Group
Dominguez	4126016018	Inglewood	Colleges And Universities		2-15, Dominguez Channel Watershed Management Group
Dominguez	4126016011	Inglewood	Colleges And Universities		2-15, Dominguez Channel Watershed Management Group
Dominguez	4126016010	Inglewood	Colleges And Universities		2-15, Dominguez Channel Watershed Management Group
Dominguez	6079002917	Los Angeles County	Colleges And Universities		2-15, Dominguez Channel Watershed Management Group
Dominguez	6079002918	Los Angeles County	Colleges And Universities		2-15, Dominguez Channel Watershed Management Group
Dominguez	4074027906	Los Angeles County	Colleges And Universities		2-15, Dominguez Channel Watershed Management Group
Dominguez	6079002272	Los Angeles County	Colleges And Universities		2-15, Dominguez Channel Watershed Management Group
Dominguez	6079002271	Los Angeles County	Colleges And Universities		2-15, Dominguez Channel Watershed Management Group
Dominguez	4023039029	Inglewood	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4126016025	Inglewood	Colleges And Universities		2-15, Dominguez Channel Watershed Management Group
Dominguez	4128002900	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4128002015	Los Angeles	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4126016016	Inglewood	Colleges And Universities		2-15, Dominguez Channel Watershed Management Group
Dominguez	4126016014	Inglewood	Colleges And Universities		2-15, Dominguez Channel Watershed Management Group
Dominguez	4126016017	Inglewood	Colleges And Universities		2-15, Dominguez Channel Watershed Management Group
Dominguez	4039023900	Los Angeles County	Junior Or Intermediate High Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4039009902	Los Angeles County	Junior Or Intermediate High Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	4038029906	Los Angeles County	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7345006900	Torrance	Elementary Schools		2-15, Dominguez Channel Watershed Management Group
Dominguez	7414002904	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7414002903	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428026914	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428026927	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428028940	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428026907	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428028945	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428028947	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428028939	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428028941	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428028963	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428028942	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428028958	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428028960	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029920	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029931	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428028925	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group

Region	Apn	Jurisdiction/City	Land Use Type	Address	Figure Number and Title
Dominguez	7428028927	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428028935	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428028969	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029907	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428026926	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428028930	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428028953	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428028970	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029923	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428028961	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029902	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428028962	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029908	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428028924	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428028938	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428026908	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428026928	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428028965	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029909	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029917	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029934	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428028929	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428028952	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428028934	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029904	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428028951	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428028971	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029924	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029926	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428028931	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029901	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029903	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428028968	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428028966	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428028933	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428028954	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428028972	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029918	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428028928	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428028936	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029921	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029932	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428028926	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428028946	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428028959	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029919	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029930	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group

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Dominguez	7428028937	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428028967	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428028964	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029910	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029935	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029933	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029900	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029922	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428028922	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029943	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029945	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428030901	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029939	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029944	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428030902	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029937	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029946	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428030905	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029938	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029942	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428030900	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029941	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029940	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029947	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428035914	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428035923	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428035922	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428035913	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428035915	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428035916	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029936	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7429013918	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7429013919	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7425023910	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7425032900	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030904	El Segundo	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4145021900	Hawthorne	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4048004916	Hawthorne	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4055008900	Hawthorne	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4041016902	Hawthorne	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4055021900	Hawthorne	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4057031907	Los Angeles County	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4057031908	Los Angeles County	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4057032900	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4043002904	Hawthorne	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	6089021901	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4051020903	Hawthorne	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group

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Dominguez	4051017901	Hawthorne	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4051020900	Hawthorne	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4051020901	Hawthorne	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	6089029903	Los Angeles County	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	6089028905	Los Angeles County	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	6089028908	Los Angeles County	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	6089029901	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	6089029902	Los Angeles County	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4051031900	Hawthorne	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4051030901	Hawthorne	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428035932	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428035931	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428035942	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428035943	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428035930	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7429016901	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029951	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029952	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029948	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029950	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428035928	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428035939	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428035941	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428035929	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428035940	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428035945	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029953	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428035934	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7429013923	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7429016904	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7429013922	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428035933	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428035944	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428029949	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030901	El Segundo	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030902	El Segundo	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428035926	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7429013920	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428035938	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7429013921	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428035937	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428035925	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428035936	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030900	El Segundo	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428035927	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428035924	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428035935	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group

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Dominguez	6121018900	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	6121018902	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4074027908	Los Angeles County	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030903	El Segundo	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	6121015900	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	6121015901	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4145020904	Hawthorne	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4145030900	Hawthorne	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	6121018904	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	6119025900	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4048004903	Hawthorne	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7440031910	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7440030911	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7440031911	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7440030919	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7440030910	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7440031905	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7440030917	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7440030920	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7440030918	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7440034907	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7440040906	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7440034906	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7440030921	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442001907	Palos Verdes Est	Open Space Public, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442001910	Los Angeles	Open Space Public, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442001911	Los Angeles	Open Space Public, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442001919	Los Angeles	Open Space Public, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442001915	Los Angeles	Open Space Public, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442001914	Los Angeles	Open Space Public, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412024902	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442001913	Los Angeles	Open Space Public, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412026912	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4074027907	Los Angeles County	Open Space Public, Developed Regional Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448033914	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448033910	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448033917	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448033921	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448033901	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448034914	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448034921	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448033923	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448034915	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448033908	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448034901	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448035901	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448035913	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448033911	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448033915	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448034906	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448034909	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group

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Dominguez	7448035918	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448034900	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448035900	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
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Dominguez	7448035921	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448033912	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448034908	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448034910	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448033900	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448033909	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448034911	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448035929	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448033906	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448034917	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448035924	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448033907	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448034913	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448034922	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448033919	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448034902	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448034912	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448034923	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448035930	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448033916	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448033918	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448034905	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448035915	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448034926	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448034920	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448035931	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448033903	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448033905	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448034916	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448034918	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448035925	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448034925	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448034927	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448034919	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448035908	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448035926	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448035935	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448036905	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448036906	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448036907	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448036908	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448036900	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448036922	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group

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Dominguez	7448036911	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448036916	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448036903	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448036904	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448036921	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448036926	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448036923	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448036919	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448036915	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448036924	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7446001900	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7454022900	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417001901	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417001904	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417001906	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417001902	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442023901	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417001903	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7446001903	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417001908	Wilmington	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417001911	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417001910	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417001912	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417001909	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417001914	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417001915	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417001913	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417001905	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417001907	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033901	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033902	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417008900	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417009903	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033900	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417009901	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033905	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417008901	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417009900	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417009902	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033904	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417009904	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417008906	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417009916	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417009907	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417009910	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417009917	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417009915	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group

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Dominguez	7417009906	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417009908	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417009912	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417009913	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417009914	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417009909	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417009911	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417009918	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033903	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417009905	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7456011900	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7446013900	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7446015900	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7446014900	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417018901	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7409020900	Los Angeles County	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417018917	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417019914	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417019911	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417019918	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417019909	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417019920	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417018908	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417019923	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417019908	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417019921	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417019922	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417018919	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417019916	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417018915	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417018909	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417018910	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417019907	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417019925	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417018911	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417019924	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417019910	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417019912	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417018903	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417018900	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417018918	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417019913	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417018916	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417019915	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417018906	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417018913	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417018904	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group

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Dominguez	7417019927	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417019917	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417019919	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417019928	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417018907	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417018912	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417018905	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417018914	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417019906	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7559034900	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417018902	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7446019901	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7559035901	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417020900	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417021900	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7447003901	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455010903	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455010902	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412010903	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412011900	Harbor City	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412012901	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412012900	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412012902	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412012903	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412014900	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412015900	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7467010900	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7467011900	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7560023900	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439027906	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439027904	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439027905	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439027902	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439027903	Lomita	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7447029900	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7467031900	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7467030901	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7467032900	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7467030902	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413021906	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413021904	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413021924	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413021914	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413021931	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413021932	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413021916	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413021907	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group

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Dominguez	7413021908	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413021912	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413021902	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413021922	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413021925	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413021915	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413021917	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413021926	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413021911	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413021929	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413021919	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413021921	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413021930	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413021928	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413021905	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413021910	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413021903	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413021918	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413021909	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413021923	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413021913	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413021920	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413021927	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455025900	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448006900	Los Angeles	Open Space Public, Other Open Space And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448007900	Los Angeles	Open Space Public, Other Open Space And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448004900	Los Angeles	Open Space Public, Other Open Space And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413021934	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413021935	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413021936	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413021933	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7372008902	Lomita	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413023900	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7372008905	Lomita	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413024901	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413024900	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413024906	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413024904	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413024902	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413024903	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413024905	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413024916	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413024915	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413024913	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413024914	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413024917	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413024909	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group

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Dominguez	7413024920	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413024908	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413024919	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413024911	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413024918	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413024910	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413024921	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413024922	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413024912	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7418035905	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7418035904	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7469018903	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7418036901	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413024907	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7418035906	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7418036905	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7418036900	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7418036907	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7418035907	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7418036902	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7418036906	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7469017900	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7350016900	Los Angeles County	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7469030901	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7469030900	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7440002915	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7440005909	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7560028900	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7561025902	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7561025900	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7562008901	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	6132018900	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4021015901	Inglewood	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4010023900	Inglewood	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4034005912	Inglewood	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4034005907	Inglewood	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4034005905	Inglewood	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4018021902	Inglewood	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4032002913	Inglewood	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4032001900	Inglewood	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4032001908	Inglewood	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4032001901	Inglewood	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4032003915	Inglewood	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4032001905	Inglewood	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4032001904	Inglewood	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4032001902	Inglewood	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	6057010903	Los Angeles	Open Space Public, Developed Regional Parks And Recreation		2-15, Dominguez Channel Watershed Management Group

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Dominguez	4129037913	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4129037916	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4129037910	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4129037902	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4129037912	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4129037911	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4129037915	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4129037906	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4129037907	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4129037909	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4129037914	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4129037908	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4123018927	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	6079002903	Los Angeles County	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7440012902	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7440020910	Los Angeles	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4034005908	Inglewood	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4032001907	Inglewood	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4034005900	Inglewood	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4034005906	Inglewood	Open Space Public, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4123018926	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4123018928	Los Angeles	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4018024905	Inglewood	Open Space Public, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7428013016	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7423016009	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7423017001	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7423016011	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7423016010	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7423017002	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7423016018	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7423016015	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7423017023	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7423023005	Wilmington	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7423023006	Los Angeles	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138012809	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138015803	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7423028044	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138012810	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7423028045	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7423028046	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7425011025	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7425023804	Los Angeles	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7425031008	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7425031002	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7425031005	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7425031001	Wilmington	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7425031004	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7425031007	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7425031006	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7425031003	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149011228	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149011223	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149011225	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149011224	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149011229	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149011227	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149011221	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149011222	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149011226	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149011231	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030058	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030059	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030062	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030009	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030010	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030060	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149011236	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030014	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149013076	Hawthorne	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030011	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030023	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030061	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group

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Dominguez	4138030063	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149011234	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030012	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030064	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030066	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149011235	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149013069	Hawthorne	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149011233	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149018011	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149018012	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149018032	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149018025	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149018003	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030085	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149018016	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149018030	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030073	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030076	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030094	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149018015	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030072	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149018013	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149018031	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030074	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030075	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030093	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149018004	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149018027	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030068	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149011230	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149018006	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149018023	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030081	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149018007	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149018024	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030082	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149018001	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149018026	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149018002	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030070	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149018008	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149018021	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149018009	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149018018	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149018029	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030077	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030079	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149018014	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149018019	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030080	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030087	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149018017	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149018028	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030078	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149018010	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030071	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030069	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030083	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149018020	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030086	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149018005	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149018022	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030084	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4149011232	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030065	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030067	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4143007017	Hawthorne	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4143007022	Hawthorne	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4143007018	Hawthorne	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4143007021	Hawthorne	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4143007019	Hawthorne	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4143007016	Hawthorne	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7422008011	Los Angeles	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4048004055	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4048004054	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4048004056	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4048004050	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4048004049	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4055006017	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4055008013	Hawthorne	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4055021012	Hawthorne	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4141016076	Hawthorne	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4141016088	Hawthorne	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4141016074	Hawthorne	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4141015064	Hawthorne	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4141016087	Hawthorne	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4141016077	Hawthorne	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4141016086	Hawthorne	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4141016075	Hawthorne	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4141016079	Hawthorne	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4141016078	Hawthorne	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4141016080	Hawthorne	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4057031034	Los Angeles County	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4057031035	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4057031037	Los Angeles County	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group

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Dominguez	4051020028	Hawthorne	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4051017007	Hawthorne	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	6089029037	Los Angeles	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4071018018	Gardena	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4071018019	Gardena	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4051031003	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4051030010	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4051030011	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4051031004	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4051032800	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4051031007	Hawthorne	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	6129001035	Los Angeles County	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	6079002029	Los Angeles County	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7425011803	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	6079002028	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7425011805	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138012004	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138015007	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138015008	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030028	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030035	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030047	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030044	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030025	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030057	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030043	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030045	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030034	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030054	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030056	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030046	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030026	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030092	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030042	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030055	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4143007015	Hawthorne	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4057032801	Los Angeles County	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030049	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030051	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030039	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030040	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030037	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030050	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030052	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030038	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030041	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030048	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4143007020	Hawthorne	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030024	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030015	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030036	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030053	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030022	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4140016163	Los Angeles	Open Space Private, Other Open Space And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138030013	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	6079002064	Los Angeles County	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4055006019	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4048004043	Hawthorne	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4048004053	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4057031039	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4048004058	Hawthorne	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4048004051	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4048004052	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028121	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028117	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028129	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028146	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028118	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028143	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028157	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028131	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028127	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028136	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028122	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028124	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028123	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028125	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028120	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028145	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028116	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028130	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028134	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028128	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028135	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028139	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028156	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028119	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028126	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028140	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028142	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028155	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028132	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028149	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028138	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028133	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group

Region	Apn	Jurisdiction/City	Land Use Type	Address	Figure Number and Title
Dominguez	7442028147	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028144	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028153	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028154	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028148	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028150	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028137	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028152	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028158	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442001023	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442001033	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028151	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028141	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442001009	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442001024	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442001010	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442001007	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442001022	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442004018	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442005008	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442005023	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442005016	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442005017	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442005001	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442004017	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442005009	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442004016	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442005022	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412022009	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412022008	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412026021	Los Angeles	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4055006018	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442009018	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442009019	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033003	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033008	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033005	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033030	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033004	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033013	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033019	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033021	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033034	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033026	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033035	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033010	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033015	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033017	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033012	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033031	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033025	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033006	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033036	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033033	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033002	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033009	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033027	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033014	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033022	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033007	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033018	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033032	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033024	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033020	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033011	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033028	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033029	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033016	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033023	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033040	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033049	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033051	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033046	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033047	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033048	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033052	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033039	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033043	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033050	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033038	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033042	San Pedro	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033044	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033045	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033053	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033055	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033041	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033066	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030143	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030150	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033062	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033063	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030146	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030147	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033058	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030142	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group

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Dominguez	7442033064	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030144	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030145	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033070	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033061	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033057	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033068	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030152	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033069	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030153	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033060	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033065	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033067	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030149	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030151	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030168	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033054	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030172	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030179	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030196	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030197	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030148	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030177	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030184	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
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Dominguez	7442030160	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030192	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030165	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030190	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030201	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030154	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030186	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030203	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030163	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030180	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030194	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030198	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033059	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030166	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030173	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030202	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030162	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030181	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030195	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030175	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030182	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030193	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030200	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030161	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030164	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030178	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030183	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030169	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030171	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030188	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030157	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030170	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030187	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030189	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030159	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030191	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030174	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030176	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030158	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030167	San Pedro	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030199	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033037	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033075	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033072	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033084	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033091	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033095	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033101	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030185	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033090	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033092	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033099	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033074	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033076	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033056	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033080	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033081	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033094	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033103	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033079	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033077	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033078	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033096	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033097	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033093	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033100	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033102	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033087	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033089	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033082	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group

Region	Apn	Jurisdiction/City	Land Use Type	Address	Figure Number and Title
Dominguez	7442033073	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033088	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033085	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033104	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033083	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033098	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442030155	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448036021	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033071	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033120	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033122	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033115	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033119	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033109	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033127	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033116	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033114	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033126	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033107	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033118	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033132	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033113	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033130	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033131	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033121	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033124	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033112	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033117	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033108	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033110	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033125	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033123	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033129	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033106	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033086	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033111	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033128	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7445012048	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442033105	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7460004015	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7449014023	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417003043	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417003045	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7446006014	San Pedro	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7446005001	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417003046	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417003044	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7449014020	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7449014028	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7449014033	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7449014027	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7449014029	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7449014037	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417003042	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7449014030	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7449014032	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028004	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7449014035	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7449014034	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7449014026	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028005	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7449014031	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7449014025	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7449014036	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028003	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7449014038	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417003048	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417003049	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033050	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033043	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033044	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033048	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033047	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033042	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033045	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033046	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033053	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033064	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033055	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033081	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028010	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033049	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028007	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033058	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033078	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028017	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033059	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033077	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028014	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033061	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033075	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028015	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033067	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033051	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033066	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group

Region	Apn	Jurisdiction/City	Land Use Type	Address	Figure Number and Title
Dominguez	7413033060	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033076	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028016	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7449014024	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033073	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028009	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028011	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033070	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028018	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028020	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028012	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028019	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033062	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028028	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033063	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028027	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033056	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028034	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028036	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033057	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033071	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033079	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028037	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028025	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028038	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028042	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033069	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028008	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028040	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033080	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028022	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028041	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028021	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028046	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028045	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028030	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028048	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028031	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028049	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033074	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028035	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033068	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028013	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028050	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028026	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028044	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028043	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028052	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033054	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033065	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028024	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028039	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028032	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028033	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028047	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028029	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028054	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028053	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028051	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417003047	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028056	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7456011800	Los Angeles	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413033052	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028006	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7456012800	Los Angeles	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7456012024	Los Angeles	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028023	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028055	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7446014021	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7446015001	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7446017003	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7446015007	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7446017004	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7446017006	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028058	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028064	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028060	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028071	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028066	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028070	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7445018053	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028067	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028068	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028059	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028061	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028063	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028062	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028069	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028065	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028073	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028076	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028079	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028084	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028078	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028081	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group

Region	Apn	Jurisdiction/City	Land Use Type	Address	Figure Number and Title
Dominguez	7442028077	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028085	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028083	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028088	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028087	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028080	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028074	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028086	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028082	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028075	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7446018004	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7446018005	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7446017005	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7446017009	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028057	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028072	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7446017008	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028090	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028092	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028094	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028097	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028105	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028095	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028104	San Pedro	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028096	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028091	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028101	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028093	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028102	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028100	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028099	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7447001031	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028098	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028103	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7447001032	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7446019021	Los Angeles	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7447001030	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7447001029	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028107	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028112	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028111	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028114	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028109	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028113	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028115	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028089	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028106	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028110	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7417021023	Los Angeles	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7447003001	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7442028108	Los Angeles	Open Space Private, Vant Area		2-15, Dominguez Channel Watershed Management Group
Dominguez	7447003024	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455010001	Los Angeles	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455010006	Los Angeles	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7447009001	Los Angeles	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7447009003	Los Angeles	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7374014038	Lomita	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7374014036	Lomita	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7374014032	Lomita	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412011006	Los Angeles	Open Space Private, Developed Regional Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7374014044	Lomita	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7374014042	Lomita	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412009007	Wilmington	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7374014045	Lomita	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7374014043	Lomita	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7374014049	Lomita	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7374014037	Lomita	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7374014039	Lomita	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412014007	Los Angeles	Open Space Private, Developed Regional Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412014026	Los Angeles	Open Space Private, Developed Regional Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412014012	Los Angeles	Open Space Private, Developed Regional Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412014019	Los Angeles	Open Space Private, Developed Regional Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412014022	Los Angeles	Open Space Private, Developed Regional Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412014014	Los Angeles	Open Space Private, Developed Regional Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412014015	Los Angeles	Open Space Private, Developed Regional Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412014017	Los Angeles	Open Space Private, Developed Regional Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412016003	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412014023	Los Angeles	Open Space Private, Developed Regional Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412014008	Los Angeles	Open Space Private, Developed Regional Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412014009	Los Angeles	Open Space Private, Developed Regional Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412016006	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412014005	Los Angeles	Open Space Private, Developed Regional Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412014021	Los Angeles	Open Space Private, Developed Regional Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412014018	Los Angeles	Open Space Private, Developed Regional Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412014020	Los Angeles	Open Space Private, Developed Regional Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412016005	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412014024	Los Angeles	Open Space Private, Developed Regional Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412014011	Los Angeles	Open Space Private, Developed Regional Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412016009	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412014016	Los Angeles	Open Space Private, Developed Regional Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412016002	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412016004	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412014004	Los Angeles	Open Space Private, Developed Regional Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412016001	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412014010	Los Angeles	Open Space Private, Developed Regional Parks And Recreation		2-15, Dominguez Channel Watershed Management Group

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Dominguez	7412015003	Los Angeles	Open Space Private, Developed Regional Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412014025	Los Angeles	Open Space Private, Developed Regional Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412016010	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412016011	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412016012	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412014013	Los Angeles	Open Space Private, Developed Regional Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7374014041	Lomita	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7412012001	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7467010010	Los Angeles	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7467010023	Los Angeles	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7467011019	Los Angeles	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7467011007	Los Angeles	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7467011023	Los Angeles	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7467010011	Los Angeles	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7467010003	Los Angeles	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7467011020	Los Angeles	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7467011022	Los Angeles	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7467011024	Los Angeles	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7467011008	Los Angeles	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439026166	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439026168	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439026154	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439026173	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439026153	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439026170	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439026163	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439026157	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439026155	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439026172	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439026165	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439026151	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439026176	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439026160	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439026162	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439026175	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439026177	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439026167	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439026178	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439026159	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439026149	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439026174	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439026161	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439026164	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439026158	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439026169	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439026156	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439026171	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439026150	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439026152	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439026180	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7447020030	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7447018018	Los Angeles	Open Space Private, Other Open Space And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7447020029	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7447020032	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7447020028	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7447018017	Los Angeles	Open Space Private, Other Open Space And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7447020009	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439026183	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439026185	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439026184	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439026186	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
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Dominguez	7439026182	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455021042	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455021043	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455021039	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455021046	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455021060	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455021061	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455021038	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455021040	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455021045	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455021047	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455021051	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455021066	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455021041	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455021058	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455021056	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
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Dominguez	7455021053	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455021057	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455021064	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455021062	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455021044	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455021037	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455021055	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455021059	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455021063	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455021065	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455021067	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455021052	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455021050	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455021054	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7439026181	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group

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Dominguez	7455021071	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455021082	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455021070	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455021077	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455021076	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455021073	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455021080	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455021072	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455021079	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
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Dominguez	7455021136	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448004012	Los Angeles	Open Space Private, Other Open Space And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413021037	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448004011	Los Angeles	Open Space Private, Other Open Space And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448005008	Los Angeles	Open Space Private, Other Open Space And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448007003	Los Angeles	Open Space Private, Other Open Space And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448007005	Los Angeles	Open Space Private, Other Open Space And Recreation		2-15, Dominguez Channel Watershed Management Group

Region	Apn	Jurisdiction/City	Land Use Type	Address	Figure Number and Title
Dominguez	7448005002	San Pedro	Open Space Private, Other Open Space And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448007002	Los Angeles	Open Space Private, Other Open Space And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448005007	Los Angeles	Open Space Private, Other Open Space And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448007001	Los Angeles	Open Space Private, Other Open Space And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448004017	Los Angeles	Open Space Private, Other Open Space And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448007004	Los Angeles	Open Space Private, Other Open Space And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448004015	Los Angeles	Open Space Private, Other Open Space And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448005005	Los Angeles	Open Space Private, Other Open Space And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448005006	Los Angeles	Open Space Private, Other Open Space And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448007006	Los Angeles	Open Space Private, Other Open Space And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448005003	Los Angeles	Open Space Private, Other Open Space And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448005004	Los Angeles	Open Space Private, Other Open Space And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7448004013	Los Angeles	Open Space Private, Other Open Space And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7350007020	Torrance	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7350007018	Los Angeles County	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7350007017	Torrance	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7350007019	Torrance	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7350007016	Torrance	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7350007045	Torrance	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
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Dominguez	7413024066	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413024062	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413024089	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7413024085	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
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Dominguez	7413024067	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
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Dominguez	7350015043	Los Angeles County	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7350015053	Torrance	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7350016015	Torrance	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
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Dominguez	7350016005	Torrance	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
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Dominguez	7350016026	Torrance	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7350016041	Los Angeles County	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7350016037	Torrance	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7347001002	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7350016016	Torrance	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7350016029	Los Angeles County	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group

Region	Apn	Jurisdiction/City	Land Use Type	Address	Figure Number and Title
Dominguez	7350016033	Los Angeles County	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7350015055	Torrance	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7350016012	Torrance	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7350016034	Torrance	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7350015045	Torrance	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7350015049	Los Angeles County	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7350016031	Torrance	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7350015058	Torrance	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7350016003	Torrance	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7350016028	Torrance	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7350016035	Los Angeles County	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7350016030	Torrance	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7350015050	Torrance	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7350015059	Los Angeles County	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7347001033	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7347001035	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7350015054	Torrance	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7347001034	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
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Dominguez	7350017038	Torrance	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7350017040	Torrance	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
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Dominguez	7350017039	Torrance	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7350017036	Torrance	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7350018002	Torrance	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7350018003	Torrance	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7350017035	Torrance	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
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Dominguez	7350018006	Torrance	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7351002033	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7409009003	Los Angeles County	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7409009002	Los Angeles County	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7409009020	Los Angeles County	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7409009001	Los Angeles County	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7409009005	Los Angeles County	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7409009006	Los Angeles County	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7409009004	Los Angeles County	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7452024011	San Pedro	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7452025018	Los Angeles County	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7452032001	Los Angeles County	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7452032016	Los Angeles County	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7452032008	Los Angeles County	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7347018054	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7452033012	San Pedro	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7452033031	Los Angeles County	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7560026035	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7560026038	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7560028001	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7559022005	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7559022013	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7559022008	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7559022001	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7559022017	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7559022019	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7559022011	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7559023005	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7559022014	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7559022004	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7559022006	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7559022012	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7559023003	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7559023010	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7559023002	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7559023009	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7559022016	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7559023014	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7559023006	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7559023007	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7559023013	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7559022021	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7559023011	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7559022009	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7559022020	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7559022007	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7559023004	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7559022015	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7559023001	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7559023008	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7559028036	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7559022018	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7559023012	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7562012008	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7562012011	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7562012013	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7562012015	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7562012009	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7562012007	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7562012012	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7562012014	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7562012010	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7562012001	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group

Region	Apn	Jurisdiction/City	Land Use Type	Address	Figure Number and Title
Dominguez	7562012006	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7562012003	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7562012004	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7562012005	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7562026008	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	6132001003	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	6132007001	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021007	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021005	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021006	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021008	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021015	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021016	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021012	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021023	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021010	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021022	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021013	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021024	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021027	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021011	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021014	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021021	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021017	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021019	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021018	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021020	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021009	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
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Dominguez	4025021048	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021057	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021047	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021054	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021049	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021050	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021052	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021053	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021051	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021074	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021070	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
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Dominguez	4025021065	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021072	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021064	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021061	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021095	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021062	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021073	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
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Dominguez	4025021063	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021060	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021068	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021101	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021119	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021120	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022005	Inglewood	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022001	Inglewood	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022013	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022017	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022007	Inglewood	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022014	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022008	Inglewood	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022015	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022011	Inglewood	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022012	Inglewood	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022010	Inglewood	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022016	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022019	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022003	Inglewood	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022020	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022009	Inglewood	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022018	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022006	Inglewood	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022025	Inglewood	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022034	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022022	Inglewood	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022033	Inglewood	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022029	Inglewood	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022030	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022023	Inglewood	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025021058	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022024	Inglewood	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022031	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022035	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022028	Inglewood	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022032	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022026	Inglewood	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022027	Inglewood	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022002	Inglewood	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022004	Inglewood	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022037	Inglewood	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022042	Inglewood	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023002	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group

Region	Apn	Jurisdiction/City	Land Use Type	Address	Figure Number and Title
Dominguez	4025023009	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023010	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023019	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022021	Inglewood	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023020	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023003	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023021	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022046	Inglewood	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023015	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023005	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023007	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023022	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022040	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022045	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
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Dominguez	4025023004	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023008	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023023	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022043	Inglewood	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023014	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022044	Inglewood	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023013	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023017	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023012	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022039	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023011	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023018	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023001	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023006	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023030	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023031	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023058	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023075	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023034	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023063	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023070	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023029	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023032	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024001	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023027	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023062	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
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Dominguez	4025023068	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023079	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024005	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023033	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023076	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024006	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
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Dominguez	4025023080	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023056	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024008	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023025	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023028	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023071	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023026	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023035	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023060	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024007	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022036	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023059	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024016	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024025	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024019	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024010	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024027	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024012	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024023	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024020	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024022	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024013	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024015	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024014	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025022038	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024024	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024026	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024017	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024021	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024018	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025023024	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024031	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024040	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024035	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024036	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024030	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024037	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024034	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024041	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024011	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024032	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024039	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024061	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024038	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024063	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024070	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group

Region	Apn	Jurisdiction/City	Land Use Type	Address	Figure Number and Title
Dominguez	4025024072	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024095	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024097	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024029	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024065	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024045	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024042	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025025012	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025025015	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024069	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024062	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025025014	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024071	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024096	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024075	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024094	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025025011	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025025013	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024067	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025025037	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024033	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024066	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024102	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025025036	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024073	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025025003	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025025039	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024068	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024100	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025025001	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025025038	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025025046	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024099	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4024009004	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024064	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025025048	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025025009	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025025041	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024074	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025025010	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025025044	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025025002	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025025045	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025025047	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025025007	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025025040	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025025042	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4024009003	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025024028	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025025065	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025025067	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4024009030	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025025066	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025025063	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025025069	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025025070	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025025071	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4025025043	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4030001011	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4030001013	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4030001012	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4030002057	Inglewood	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4039014028	Los Angeles County	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4039014026	Lennox	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4039014030	Los Angeles County	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4018024038	Inglewood	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	7318010041	Los Angeles County	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7318009126	Los Angeles County	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7318011071	Dominguez	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7318011073	Dominguez	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7318011809	Los Angeles County	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7318019035	rson	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7318019010	Rancho Dominguez	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7318019044	Rancho Dominguel	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7318010027	Rancho Dominguez	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7318020007	Dominguez	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7318019046	Los Angeles County	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7318020009	Dominguez	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7318020008	rson	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7318019043	Compton	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7318020011	rson	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7318020014	Dominguez	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7318020013	Dominguez	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7318023046	Los Angeles County	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7318023044	Los Angeles County	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	6079002081	Los Angeles County	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	7440012805	Los Angeles	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138015044	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138015049	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138015039	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138015040	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138015046	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138015054	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138015041	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138015038	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group

Region	Apn	Jurisdiction/City	Land Use Type	Address	Figure Number and Title
Dominguez	4138015053	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138015047	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138015048	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138015051	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138015050	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138015055	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138015052	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4018024007	Inglewood	Open Space Private, Developed Lol Parks And Recreation		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138015059	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138015043	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138015800	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138015058	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138015060	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138015037	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138015006	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138015033	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138015005	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138015012	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138015014	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138015042	El Segundo	Open Space Private, Vant Undifferentiated		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138003900	El Segundo	Open Space Private, Government Offices		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138002905	El Segundo	Open Space Private, Base Government Offices		2-15, Dominguez Channel Watershed Management Group
Dominguez	4035026906	Hawthorne	Open Space Private, Government Offices		2-15, Dominguez Channel Watershed Management Group
Dominguez	4035026904	Hawthorne	Open Space Private, Government Offices		2-15, Dominguez Channel Watershed Management Group
Dominguez	4057032908	Hawthorne	Open Space Private, Other Public Facilities		2-15, Dominguez Channel Watershed Management Group
Dominguez	4138002904	El Segundo	Open Space Private, Base Government Offices		2-15, Dominguez Channel Watershed Management Group
Dominguez	4035026905	Hawthorne	Open Space Private, Government Offices		2-15, Dominguez Channel Watershed Management Group
Dominguez	4049016900	Hawthorne	Open Space Private, Other Public Facilities		2-15, Dominguez Channel Watershed Management Group
Dominguez	4057032906	Hawthorne	Open Space Private, Other Public Facilities		2-15, Dominguez Channel Watershed Management Group
Dominguez	4035026907	Hawthorne	Open Space Private, Government Offices		2-15, Dominguez Channel Watershed Management Group
Dominguez	4035026908	Hawthorne	Open Space Private, Government Offices		2-15, Dominguez Channel Watershed Management Group
Dominguez	4041015901	Hawthorne	Open Space Private, Government Offices		2-15, Dominguez Channel Watershed Management Group
Dominguez	4049009904	Hawthorne	Open Space Private, Other Public Facilities		2-15, Dominguez Channel Watershed Management Group
Dominguez	7451015901	Los Angeles	Open Space Private, Government Offices		2-15, Dominguez Channel Watershed Management Group
Dominguez	7451020902	Los Angeles	Open Space Private, Government Offices		2-15, Dominguez Channel Watershed Management Group
Dominguez	7451020900	Los Angeles	Open Space Private, Government Offices		2-15, Dominguez Channel Watershed Management Group
Dominguez	7451020901	Los Angeles	Open Space Private, Government Offices		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455025909	Los Angeles	Open Space Private, Government Offices		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455025910	Los Angeles	Open Space Private, Government Offices		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455025901	Los Angeles	Open Space Private, Government Offices		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455025911	Los Angeles	Open Space Private, Government Offices		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455025907	Los Angeles	Open Space Private, Government Offices		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455025908	Los Angeles	Open Space Private, Government Offices		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455025906	Los Angeles	Open Space Private, Government Offices		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455025905	Los Angeles	Open Space Private, Government Offices		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455025904	Los Angeles	Open Space Private, Government Offices		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455026939	Los Angeles	Open Space Private, Government Offices		2-15, Dominguez Channel Watershed Management Group
Dominguez	7455026900	Los Angeles	Open Space Private, Government Offices		2-15, Dominguez Channel Watershed Management Group
Dominguez	7374001902	Inglewood	Open Space Private, Government Offices		2-15, Dominguez Channel Watershed Management Group
Dominguez	7374001904	Lomita	Open Space Private, Government Offices		2-15, Dominguez Channel Watershed Management Group
Dominguez	7374001908	Lomita	Open Space Private, Government Offices		2-15, Dominguez Channel Watershed Management Group
Dominguez	6132014902	Los Angeles County	Open Space Private, Government Offices		2-15, Dominguez Channel Watershed Management Group
Dominguez	6132016903	Los Angeles	Open Space Private, Government Offices		2-15, Dominguez Channel Watershed Management Group
Dominguez	6130003900	Los Angeles	Open Space Private, Other Public Facilities		2-15, Dominguez Channel Watershed Management Group
Dominguez	6079005901	Los Angeles	Open Space Private, Government Offices		2-15, Dominguez Channel Watershed Management Group
Dominguez	6079004901	Los Angeles	Open Space Private, Government Offices		2-15, Dominguez Channel Watershed Management Group
Dominguez	6079004903	Los Angeles County	Open Space Private, Government Offices		2-15, Dominguez Channel Watershed Management Group
Dominguez	6079006904	Los Angeles	Open Space Private, Government Offices		2-15, Dominguez Channel Watershed Management Group
Dominguez	6079004902	Los Angeles	Open Space Private, Government Offices		2-15, Dominguez Channel Watershed Management Group
Dominguez	4124002916	Los Angeles	Open Space Private, Other Public Facilities		2-15, Dominguez Channel Watershed Management Group
Dominguez	7440022913	Los Angeles	Open Space Private, Government Offices		2-15, Dominguez Channel Watershed Management Group
Dominguez	7440027917	Los Angeles	Open Space Private, Government Offices		2-15, Dominguez Channel Watershed Management Group

Region	Apn	Jurisdiction/City	Land Use Type	Address	Figure Number and Title
				Beach Cities Ewmp	
Beach Cities	Na	Hermosa Beach		1315 Valley Dr., Hermosa Beach	2-7, Beach Cities Watershed Management Group
Beach Cities	Na	Hermosa Beach		425 Valley Dr., Hermosa Beach	2-7, Beach Cities Watershed Management Group
Beach Cities	Na	Manhattan Beach		1998 N Valley Dr., Manhattan Beach	2-7, Beach Cities Watershed Management Group
Beach Cities	Na	Manhattan Beach		Manhattan Beach	2-7, Beach Cities Watershed Management Group
Beach Cities	Na	Manhattan Beach		1701 N Herrin Ave., Manhattan Beach	2-7, Beach Cities Watershed Management Group
Beach Cities	Na	Redondo Beach		801 mino Real, Redondo Beach	2-7, Beach Cities Watershed Management Group
Beach Cities	Na	Redondo Beach		2723 Alvord Ln., Redondo Beach	2-7, Beach Cities Watershed Management Group
Beach Cities	Na	Redondo Beach		190 Flagler Ln., Redondo Beach	2-7, Beach Cities Watershed Management Group
Beach Cities	Na	Redondo Beach		1 Sea Hawk Way, Redondo Beach	2-7, Beach Cities Watershed Management Group
Beach Cities	Na	Redondo Beach		309 Esplanade, Redondo Beach	2-7, Beach Cities Watershed Management Group
Beach Cities	Na	Torrance		3141 Torrance Blvd., Torrance	2-7, Beach Cities Watershed Management Group
Beach Cities	Na	Herondo And The Strand		Herondo And The Strand	2-7, Beach Cities Watershed Management Group
Beach Cities	Na	Hermosa Beach		425 Valley Drive, Hermosa Beach	2-7, Beach Cities Watershed Management Group
Beach Cities	Na	Hermosa Beach		526 Gould Ave., Hermosa Beach	2-7, Beach Cities Watershed Management Group
Beach Cities	Na	The Strand		28Th St And The Strand	2-7, Beach Cities Watershed Management Group
Beach Cities	Na	The Strand		Strand And 44Th 32Nd St (6 Outfalls)	2-7, Beach Cities Watershed Management Group
Beach Cities	Na	The Strand		Strand And 2Nd 18Th St (9 Outfalls)	2-7, Beach Cities Watershed Management Group
Beach Cities	Na	The Strand		Strand And 1St 35Th St (2 Outfalls)	2-7, Beach Cities Watershed Management Group
Beach Cities	Na	Redondo Beach		801 mino Real, Redondo Beach	2-7, Beach Cities Watershed Management Group
Beach Cities	Na	Redondo Beach		1801 Rockefeller Lane, Redondo Beach	2-7, Beach Cities Watershed Management Group
Beach Cities	Na	Torrance		1119 Barbara St., Torrance	2-7, Beach Cities Watershed Management Group
Beach Cities	Na	Manhattan Beach		Manhattan Beach	2-7, Beach Cities Watershed Management Group
Beach Cities	Na	Manhattan Beach		1701 N Herrin Ave., Manhattan Beach	2-7, Beach Cities Watershed Management Group
Beach Cities	Na	Manhattan Beach		1701 N Herrin Ave., Manhattan Beach	2-7, Beach Cities Watershed Management Group
Beach Cities	Na	Hermosa Beach		Hermosa Ave From Herondo To 2Nd St, Hermos	2-7, Beach Cities Watershed Management Group

Region	Apn	Jurisdiction/City	Land Use Type	Address	Figure Number and Title
				Palos Verdes Peninsula Ewmp	
Palos Verdes	Na		Open Space And Recreation	Peppertree Trail	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	Ocean Terrace Drive	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	Forrestal Drive	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	1805 West 9Th Street	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	Kings Harbor Drive	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	Palos Verdes Drive East	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	30940 Hawthorne Boulevard	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	7040 Vφa Del Mar	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	32200 Valor Pl	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	Indian Peak Road	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	29301 Hawthorne Boulevard	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	717 Vφa La Cuesta	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	Malaga nyon Trail	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	nada Trail	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	Palos Verdes Drive East	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	4903 Browndeer Ln	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	1 Peppertree Dr	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	Palos Verdes Drive East	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	1700 Westmont Drive	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	4100 Maritime Rd	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	Nike Trail	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	2 Park Place	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	28013 Seashell Way	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	6500 Seacove Drive	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Edutional Use	30840 Hawthorne Blvd	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Edutional Use	30800 Palos Verdes Drive East	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Edutional Use	28014 S Montereina Dr	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Edutional Use	28915 Northbay Rd	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Edutional Use	3050030698 Rue De La Pierre	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Edutional Use	2760827660 Flaming Arrow Dr	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Edutional Use	6956 Purple Ridge Dr	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Edutional Use	32623358 Crest Rd	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Edutional Use	1946 W Crestwood St	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Edutional Use	54005598 Diversey Dr	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Government Institution	30940 Hawthorne Boulevard	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Golf Course/Country Club	7000 Los Verdes Drive	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Commercial Use	642 Silver Spur Rd	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Commercial Use	5739 Crestridge Rd	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Commercial Use	5837 Crest Rd	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Commercial Use	5741 Crestridge Rd	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	970 Paseo La Cresta	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	Del Sol Fire Rd	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	1304 Vφa Zumaya	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	Batting ge Trail	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	2100 Rosita Pl	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	1729 Vφa Arriba	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	1525 Vφa Coronel	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	Valmonte South Trai	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	15011599 Vφa Martinez	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	1536 Vφa Leon	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	113199 Vφa pay	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	1822 Paseo Del Sol	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	15001598 Lower Paseo La Cresta	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	1274 Vφa Coronel	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	Vφa Nivel	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	556558 Paseo Del Mar	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	13011399 Vφa Fernandez	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	4025 Vφa Solano	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	Pio Pico Hillside Trail	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	796804 Vφa Del Monte	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	1516 Paseo La Cresta	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	1408 Chelsea Rd	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	La Selva Path	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	Torrance Utility Rd	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	17011799 Lower Paseo La Cresta	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	Colusa Path	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	Torrance Utility Rd	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	Telephone Pole Trail	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	1016 Vφa Ventana	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	2008 Vφa Fernandez	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	Torrance Utility Rd	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	Torrance Utility Rd	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	Torrance Utility Rd	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	2216 Vφa Anapa	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	300 Palos Verdes Dr W	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	Upper La Costa Fire Station Trail	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	14011499 Plaza Francisco	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	Torrance Utility Rd	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	63 Malaga Cove Plaza	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	14131499 Vφa Andres	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	278288 Palos Verdes Dr W	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	Vφa Corta	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	22142216 Thorley Pl	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Edutional Institution	1800 Palos Verdes Dr W	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Edutional Institution	301359 Vφa Almar	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Edutional Institution	520 Paseo Lunado	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Edutional Institution	12011299 Vφa Nogales	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Edutional Institution	3801 Vφa La Selva	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Edutional Institution	600 Cloyden Rd	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Edutional Institution	Vφa mpesina	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Other Commercial	361399 Tejon Pl	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Golf Course/Country Club	30003298 Paseo Del mpo	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Commercial Use	135 Coronel Plaza	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Commercial Use	23402398 Vφa Alones	2-9, Palos Verdes Peninsula Watershed Management Group

Region	Apn	Jurisdiction/City	Land Use Type	Address	Figure Number and Title
Palos Verdes	Na		Commercial Use	14401444 Vφa Coronel	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	26201 Crenshaw Blvd	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	2300 Bridle Trail	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	31 Peartree Ln	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	27575 Indian Peak Rd	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	Highridge Trail	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	501 Indian Peak Rd	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	2604026474 Hawthorne Blvd	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	4700 Palos Verdes Dr N	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	4400 Palos Verdes Dr N	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	Highridge Rd	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	Crenshaw Boulevard	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Edutional Use	Phillip'S nyon Trail	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Edutional Use	27118 Silver Spur Road	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Edutional Use	Summer Morning'S Spur Trail	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Edutional Use	26944 Rolling Hills Rd	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Edutional Use	Bridle Trail	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Government Institution	4045 Palos Verdes Dr N	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Golf Course/	27000 Palos Verdes Drive East	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Commercial Use	627 Deep Valley Dr	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Open Space And Recreation	26300 Crenshaw Boulevard	2-9, Palos Verdes Peninsula Watershed Management Group
Palos Verdes	Na		Edutional Use	26800 South Ademy Drive	2-9, Palos Verdes Peninsula Watershed Management Group

Region	Apn	Jurisdiction/City	Land Use Type	Address	Figure Number and Title
				Rio Hondo/San Gabriel River Ewmp	
Rio Hondo			Northside Park/School	12Th Street And Orange Avenue	2-13, Rio Hondo/San Gabriel River Watershed Management Group
Rio Hondo			Zates Park	1St Street And Virginia Avenue	2-13, Rio Hondo/San Gabriel River Watershed Management Group
Rio Hondo			Bonita Park	2Nd Avenue And Bonita Street	2-13, Rio Hondo/San Gabriel River Watershed Management Group
Rio Hondo			Eisenhower Park	2Nd Avenue And Haven Avenue	2-13, Rio Hondo/San Gabriel River Watershed Management Group
Rio Hondo			Memorial Park (Azusa)	3Rd Street And N Orange Ave	2-13, Rio Hondo/San Gabriel River Watershed Management Group
Rio Hondo			Slauson Park	5Th Street And Pasadena Ave	2-13, Rio Hondo/San Gabriel River Watershed Management Group
Rio Hondo			Arboretum Of Lac	Baldwin Avenue And Colorado Street	2-13, Rio Hondo/San Gabriel River Watershed Management Group
Rio Hondo			mino Grove Park/School	mino Grove Avenue And 6Th Avenue	2-13, Rio Hondo/San Gabriel River Watershed Management Group
Rio Hondo			Gordon Sports Park/School	Central Avenue And Mt. Olive Drive	2-13, Rio Hondo/San Gabriel River Watershed Management Group
Rio Hondo			Citrus Community College	Citrus Avenue And Foothill Boulevard	2-13, Rio Hondo/San Gabriel River Watershed Management Group
Rio Hondo			Utility Easement	From Irwindale To Lake Ellen South Of Arrow Hw	2-13, Rio Hondo/San Gabriel River Watershed Management Group
Rio Hondo			Gladstone Park	Gladstone Street And Pasadena Avenue	2-13, Rio Hondo/San Gabriel River Watershed Management Group
Rio Hondo			Duarte Park	Huntington Drive And Highland Avenue	2-13, Rio Hondo/San Gabriel River Watershed Management Group
Rio Hondo			Santa Anita Golf Course	Huntington Drive And Santa Anita Avenue	2-13, Rio Hondo/San Gabriel River Watershed Management Group
Rio Hondo			Valleydale Park	Lark Ellen Avenue And Gladstone Street	2-13, Rio Hondo/San Gabriel River Watershed Management Group
Rio Hondo			Rancho Duarte Golf Course	Las Lomas Road And Hacienda Drive	2-13, Rio Hondo/San Gabriel River Watershed Management Group
Rio Hondo			Longley Way Elementary	Las Tunas Drive And Longley Way	2-13, Rio Hondo/San Gabriel River Watershed Management Group
Rio Hondo			Recreation Park	Lemon Avenue And Mountain Avenue	2-13, Rio Hondo/San Gabriel River Watershed Management Group
Rio Hondo			Memorial Park	Mariposa Avenue And Sierra Madre Boulevard	2-13, Rio Hondo/San Gabriel River Watershed Management Group
Rio Hondo			Pamela Park	Maydee Street And Goodall Avenue	2-13, Rio Hondo/San Gabriel River Watershed Management Group
Rio Hondo			Spreading Grounds	Meridian Street And Tifal Avenue	2-13, Rio Hondo/San Gabriel River Watershed Management Group
Rio Hondo			Bailey nyon Park	Oak Crest Drive And rter Avenue	2-13, Rio Hondo/San Gabriel River Watershed Management Group
Rio Hondo			L Garcia Park	Olive Avenue And Mayflower Avenue	2-13, Rio Hondo/San Gabriel River Watershed Management Group
Rio Hondo			Library Park	Palm Avenue And Myrtle Avenue	2-13, Rio Hondo/San Gabriel River Watershed Management Group
Rio Hondo			Peck Road Park	Peck Road And Rio Hondo Parkway	2-13, Rio Hondo/San Gabriel River Watershed Management Group
Rio Hondo			Royal Oaks Park	Royal Oaks Drive And Vineyard Ave	2-13, Rio Hondo/San Gabriel River Watershed Management Group
Rio Hondo			Highland Oaks Elementary	Santa Anita Avenue And Virginia Drive	2-13, Rio Hondo/San Gabriel River Watershed Management Group
Rio Hondo			Pioneer Park	Sierra Madre Avenue And Dalton Avenue	2-13, Rio Hondo/San Gabriel River Watershed Management Group
Rio Hondo			Azusa Greens Country Club	Sierra Madre Avenue And Todd Avenue	2-13, Rio Hondo/San Gabriel River Watershed Management Group
Rio Hondo			Sierra Vista Park/School	Sierra Madre Boulevard And Rancho Road	2-13, Rio Hondo/San Gabriel River Watershed Management Group
Rio Hondo			Foothills Middle School	Symore Avenue And Oakhaven Road	2-13, Rio Hondo/San Gabriel River Watershed Management Group
Rio Hondo			Ardia Golf Course	Wildflower Road And Mapletree Avenue	2-13, Rio Hondo/San Gabriel River Watershed Management Group
Rio Hondo			Royal Oaks Elementary	Royal Oaks Drive And Mt. Olive Drive	2-13, Rio Hondo/San Gabriel River Watershed Management Group

Region	Apn	Jurisdiction/City	Land Use Type	Address	Figure Number and Title
				Upper Los Angeles River Ewmp	
Ular	6086031918	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	6086031910	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	6148015903	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6148016901	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6149021930	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6149022926	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6149028914	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6056010901	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	8590009903	Temple City			2-14, Upper Los Angeles River Watershed Management Group
Ular	5311001900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5319026903	South Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5324003900	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5324015900	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5377019900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5409012902	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5409013914	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5410006900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5447001901	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5447017902	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5715005900	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5754031901	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5754028904	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	2360011900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5666016901	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5702006902	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5814002901	La nada Flintridge			2-14, Upper Los Angeles River Watershed Management Group
Ular	5814001900	La nada Flintridge			2-14, Upper Los Angeles River Watershed Management Group
Ular	2026004900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2148029901	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2210018900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2210018905	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2350011908	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2356033900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2627020902	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2031008904	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2210018903	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2210018904	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2215001912	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2248008901	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2248009901	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2513008900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2513008901	San Fernando			2-14, Upper Los Angeles River Watershed Management Group
Ular	2516030905	San Fernando			2-14, Upper Los Angeles River Watershed Management Group
Ular	2516031902	San Fernando			2-14, Upper Los Angeles River Watershed Management Group
Ular	2519001903	San Fernando			2-14, Upper Los Angeles River Watershed Management Group
Ular	2519011900	San Fernando			2-14, Upper Los Angeles River Watershed Management Group
Ular	2520010900	San Fernando			2-14, Upper Los Angeles River Watershed Management Group
Ular	2521016900	San Fernando			2-14, Upper Los Angeles River Watershed Management Group
Ular	2612015900	San Fernando			2-14, Upper Los Angeles River Watershed Management Group
Ular	2612015905	San Fernando			2-14, Upper Los Angeles River Watershed Management Group
Ular	2613009903	San Fernando			2-14, Upper Los Angeles River Watershed Management Group
Ular	2521031901	San Fernando			2-14, Upper Los Angeles River Watershed Management Group
Ular	2521031902	San Fernando			2-14, Upper Los Angeles River Watershed Management Group
Ular	2521034904	San Fernando			2-14, Upper Los Angeles River Watershed Management Group
Ular	2522001901	San Fernando			2-14, Upper Los Angeles River Watershed Management Group
Ular	2522011900	San Fernando			2-14, Upper Los Angeles River Watershed Management Group
Ular	2522004904	San Fernando			2-14, Upper Los Angeles River Watershed Management Group
Ular	2522006900	San Fernando			2-14, Upper Los Angeles River Watershed Management Group
Ular	2522001902	San Fernando			2-14, Upper Los Angeles River Watershed Management Group
Ular	2613006900	San Fernando			2-14, Upper Los Angeles River Watershed Management Group
Ular	2613003900	San Fernando			2-14, Upper Los Angeles River Watershed Management Group
Ular	2706001905	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2762038900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2644001900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2644001901	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2653006910	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2653007900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2653006900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2653007904	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2653006913	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2784003905	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2784003901	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2784003907	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2634016901	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2634031900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5813017903	La nada Flintridge			2-14, Upper Los Angeles River Watershed Management Group
Ular	5813017900	La nada Flintridge			2-14, Upper Los Angeles River Watershed Management Group
Ular	5813018900	La nada Flintridge			2-14, Upper Los Angeles River Watershed Management Group
Ular	5813021900	La nada Flintridge			2-14, Upper Los Angeles River Watershed Management Group
Ular	5814004900	La nada Flintridge			2-14, Upper Los Angeles River Watershed Management Group
Ular	5815001900	La nada Flintridge			2-14, Upper Los Angeles River Watershed Management Group
Ular	2210018902	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2210018909	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2210018901	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2210018910	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2210018907	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2308012900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2024023900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2024023901	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5821020901	La nada Flintridge			2-14, Upper Los Angeles River Watershed Management Group
Ular	2331024900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2331030900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2341024904	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2181015900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group

Region	Apn	Jurisdiction/City	Land Use Type	Address	Figure Number and Title
Ular	2124017901	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2124022900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5711004903	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5711004900	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5711004904	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5727010900	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5727014902	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5705013900	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5705023901	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	2074024900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5713029901	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5713008904	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5720004900	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5722002903	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5722010915	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5722002901	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5722002902	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5722028904	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5723004908	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5723004910	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5722036926	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5723018906	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5723020902	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5723018903	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5723021901	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5723018910	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5723018900	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5723004906	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5723021905	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5645028900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5752022902	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5746005900	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5746025907	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5662004900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5666011900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	2364008900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5641003900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5642015903	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5642016900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5642017901	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5637007900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5734021900	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5734028900	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5734028901	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5734028904	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5734028902	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5734020903	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5734021901	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5734021902	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5734020900	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5748024900	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5722027912	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5722027910	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5722030904	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5722027911	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5723017913	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5330014900	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5330014901	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5735033903	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5715013900	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5715014900	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5716017900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5716019902	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5640036902	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5640007900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5640031914	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5640031912	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5640031908	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5640042902	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5640031916	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5640042907	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5640031918	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5641019902	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5641019901	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5377003900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5493007900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5492034902	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5492034901	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5493006903	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5315002901	South Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5319027907	South Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5320006901	South Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5320005902	South Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5320024901	South Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5321003900	South Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5328020901	San Marino			2-14, Upper Los Angeles River Watershed Management Group
Ular	5328020903	San Marino			2-14, Upper Los Angeles River Watershed Management Group
Ular	5335029900	San Gabriel			2-14, Upper Los Angeles River Watershed Management Group
Ular	5376006908	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5376010900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5376011900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5716021904	South Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	8587024901	Temple City			2-14, Upper Los Angeles River Watershed Management Group
Ular	8587024900	Temple City			2-14, Upper Los Angeles River Watershed Management Group
Ular	5334025900	San Marino			2-14, Upper Los Angeles River Watershed Management Group

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Ular	5333035903	San Gabriel			2-14, Upper Los Angeles River Watershed Management Group
Ular	5366026900	San Gabriel			2-14, Upper Los Angeles River Watershed Management Group
Ular	5435036900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5381009900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5381036901	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5381036903	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5381036902	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5435039900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5381021900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5381019900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5385010901	Temple City			2-14, Upper Los Angeles River Watershed Management Group
Ular	8588026903	Temple City			2-14, Upper Los Angeles River Watershed Management Group
Ular	8588026902	Temple City			2-14, Upper Los Angeles River Watershed Management Group
Ular	8588026901	Temple City			2-14, Upper Los Angeles River Watershed Management Group
Ular	8590010900	Temple City			2-14, Upper Los Angeles River Watershed Management Group
Ular	5313012901	South Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5314026938	South Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5319030904	South Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5319030907	South Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5319030905	South Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5319029901	South Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5387007903	Temple City			2-14, Upper Los Angeles River Watershed Management Group
Ular	5442029900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5311002901	South Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5467008901	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5336017900	Alhambra			2-14, Upper Los Angeles River Watershed Management Group
Ular	5346005901	Alhambra			2-14, Upper Los Angeles River Watershed Management Group
Ular	5346005902	Alhambra			2-14, Upper Los Angeles River Watershed Management Group
Ular	5387034901	San Gabriel			2-14, Upper Los Angeles River Watershed Management Group
Ular	5387034900	San Gabriel			2-14, Upper Los Angeles River Watershed Management Group
Ular	5445006901	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5361002903	San Gabriel			2-14, Upper Los Angeles River Watershed Management Group
Ular	5362012900	San Gabriel			2-14, Upper Los Angeles River Watershed Management Group
Ular	5362018900	San Gabriel			2-14, Upper Los Angeles River Watershed Management Group
Ular	5367027900	San Gabriel			2-14, Upper Los Angeles River Watershed Management Group
Ular	5373020901	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5373022901	San Gabriel			2-14, Upper Los Angeles River Watershed Management Group
Ular	5373026900	San Gabriel			2-14, Upper Los Angeles River Watershed Management Group
Ular	8590030901	Temple City			2-14, Upper Los Angeles River Watershed Management Group
Ular	8590031910	Temple City			2-14, Upper Los Angeles River Watershed Management Group
Ular	5388024902	Temple City			2-14, Upper Los Angeles River Watershed Management Group
Ular	5388024905	Temple City			2-14, Upper Los Angeles River Watershed Management Group
Ular	5388024903	Temple City			2-14, Upper Los Angeles River Watershed Management Group
Ular	8592018903	Rosemead			2-14, Upper Los Angeles River Watershed Management Group
Ular	5343001906	Alhambra			2-14, Upper Los Angeles River Watershed Management Group
Ular	5343001907	Alhambra			2-14, Upper Los Angeles River Watershed Management Group
Ular	5343026901	Alhambra			2-14, Upper Los Angeles River Watershed Management Group
Ular	5343026902	Alhambra			2-14, Upper Los Angeles River Watershed Management Group
Ular	5356009900	Alhambra			2-14, Upper Los Angeles River Watershed Management Group
Ular	5291008900	Alhambra			2-14, Upper Los Angeles River Watershed Management Group
Ular	5223028907	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5357005900	Alhambra			2-14, Upper Los Angeles River Watershed Management Group
Ular	5372019900	Rosemead			2-14, Upper Los Angeles River Watershed Management Group
Ular	5360010901	San Gabriel			2-14, Upper Los Angeles River Watershed Management Group
Ular	5360010902	San Gabriel			2-14, Upper Los Angeles River Watershed Management Group
Ular	5360018900	San Gabriel			2-14, Upper Los Angeles River Watershed Management Group
Ular	5211021900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5370006901	San Gabriel			2-14, Upper Los Angeles River Watershed Management Group
Ular	5370005900	San Gabriel			2-14, Upper Los Angeles River Watershed Management Group
Ular	5447005900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5447017901	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5360032900	San Gabriel			2-14, Upper Los Angeles River Watershed Management Group
Ular	5360029902	San Gabriel			2-14, Upper Los Angeles River Watershed Management Group
Ular	5447027901	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5447020901	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5447027906	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5447027908	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5447026900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5447027907	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5288002900	Rosemead			2-14, Upper Los Angeles River Watershed Management Group
Ular	5409012903	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5409023934	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5224034900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5283020908	Rosemead			2-14, Upper Los Angeles River Watershed Management Group
Ular	5283032903	Rosemead			2-14, Upper Los Angeles River Watershed Management Group
Ular	8117006900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6021016900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6021016901	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6024001902	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6025032917	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6047015901	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6028005901	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6028030904	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6028031900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6028031903	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6028031901	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6044008905	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6044008904	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6026030902	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6026026900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6026024913	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6026025902	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6044021906	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6045019905	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6045019902	La County			2-14, Upper Los Angeles River Watershed Management Group

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Ular	6060011904	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6060009909	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6060013900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6076003901	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6076001902	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6076003904	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6070006900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	6149014907	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6149014903	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6149014904	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6149014909	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6149014900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6149028900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6149028902	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6150014900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6152002901	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6086022904	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6086031914	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6086031909	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6086031911	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6086031915	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6086031907	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6086031917	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6086031908	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6086037901	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6086037903	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6086037907	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6086037902	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6086037900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6134033900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6180017922	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6180015903	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	7306019901	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	7306019902	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	2124018906	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2770013901	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2516028902	San Fernando			2-14, Upper Los Angeles River Watershed Management Group
Ular	2516030908	San Fernando			2-14, Upper Los Angeles River Watershed Management Group
Ular	2516030903	San Fernando			2-14, Upper Los Angeles River Watershed Management Group
Ular	2516030909	San Fernando			2-14, Upper Los Angeles River Watershed Management Group
Ular	2519026901	San Fernando			2-14, Upper Los Angeles River Watershed Management Group
Ular	2613008900	San Fernando			2-14, Upper Los Angeles River Watershed Management Group
Ular	6021008901	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5223030924	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5332025900	San Marino			2-14, Upper Los Angeles River Watershed Management Group
Ular	5347029907	Alhambra			2-14, Upper Los Angeles River Watershed Management Group
Ular	5347031903	San Gabriel			2-14, Upper Los Angeles River Watershed Management Group
Ular	5347028905	Alhambra			2-14, Upper Los Angeles River Watershed Management Group
Ular	5360002900	San Gabriel			2-14, Upper Los Angeles River Watershed Management Group
Ular	5360012901	San Gabriel			2-14, Upper Los Angeles River Watershed Management Group
Ular	5361002902	San Gabriel			2-14, Upper Los Angeles River Watershed Management Group
Ular	5361002904	San Gabriel			2-14, Upper Los Angeles River Watershed Management Group
Ular	5364024903	San Gabriel			2-14, Upper Los Angeles River Watershed Management Group
Ular	5370016902	San Gabriel			2-14, Upper Los Angeles River Watershed Management Group
Ular	5372012900	Rosemead			2-14, Upper Los Angeles River Watershed Management Group
Ular	5376012901	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5387032924	Temple City			2-14, Upper Los Angeles River Watershed Management Group
Ular	5387030917	Temple City			2-14, Upper Los Angeles River Watershed Management Group
Ular	5389001903	Rosemead			2-14, Upper Los Angeles River Watershed Management Group
Ular	5389001904	Rosemead			2-14, Upper Los Angeles River Watershed Management Group
Ular	5389001901	Rosemead			2-14, Upper Los Angeles River Watershed Management Group
Ular	5389001902	Rosemead			2-14, Upper Los Angeles River Watershed Management Group
Ular	5390001900	Rosemead			2-14, Upper Los Angeles River Watershed Management Group
Ular	5390002900	Rosemead			2-14, Upper Los Angeles River Watershed Management Group
Ular	5435038902	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5435039903	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5442031901	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5442031902	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5457001901	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5457001902	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5637006900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5675013901	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5675028900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5696008928	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5189010922	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5189010924	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5225019916	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5233027921	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5233026931	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5234008900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5234015904	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5234015905	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5237023907	Monterey Park			2-14, Upper Los Angeles River Watershed Management Group
Ular	5238009900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5238008905	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5287013901	Rosemead			2-14, Upper Los Angeles River Watershed Management Group
Ular	5287014900	Rosemead			2-14, Upper Los Angeles River Watershed Management Group
Ular	5287022900	Rosemead			2-14, Upper Los Angeles River Watershed Management Group
Ular	5171025901	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5171025902	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2460032902	Burbank			2-14, Upper Los Angeles River Watershed Management Group
Ular	2538015900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5607010900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5607012901	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5615014902	Glendale			2-14, Upper Los Angeles River Watershed Management Group

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Ular	5622015900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5628016900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5628027900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5635006900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5635020900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5636006900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5636016901	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5644013902	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5644013914	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5646025900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5650004907	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5650004905	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5650036901	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	2681011902	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5293013901	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	6343022901	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	6344023902	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	6344014900	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	6346027901	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	6348010900	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	6349019905	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	6351020900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6353001900	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	2485027900	Burbank			2-14, Upper Los Angeles River Watershed Management Group
Ular	5434039901	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5593018903	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2353001904	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
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Ular	2449035904	Burbank			2-14, Upper Los Angeles River Watershed Management Group
Ular	2451009902	Burbank			2-14, Upper Los Angeles River Watershed Management Group
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Ular	2557027909	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2559017900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5601017903	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5602009901	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5602010901	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5602011901	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5603003901	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5603011900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5606006900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5606016900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5606017900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5801010901	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5801016904	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5803023900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5866017902	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5870013901	La nada Flintridge			2-14, Upper Los Angeles River Watershed Management Group
Ular	5749018900	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5750003902	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
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Ular	5830013931	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5830013925	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5830013924	La County			2-14, Upper Los Angeles River Watershed Management Group
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Ular	5842020902	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5843008901	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5849025901	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5849025900	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5857035901	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	2451005901	Burbank			2-14, Upper Los Angeles River Watershed Management Group
Ular	2451006904	Burbank			2-14, Upper Los Angeles River Watershed Management Group
Ular	5319027906	South Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5493038900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5467011901	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5723026900	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5723026902	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5593030903	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5593012909	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5593018907	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2459008900	Burbank			2-14, Upper Los Angeles River Watershed Management Group
Ular	2459007901	Burbank			2-14, Upper Los Angeles River Watershed Management Group
Ular	2459007900	Burbank			2-14, Upper Los Angeles River Watershed Management Group
Ular	2459008901	Burbank			2-14, Upper Los Angeles River Watershed Management Group

Region	Apn	Jurisdiction/City	Land Use Type	Address	Figure Number and Title
Ular	2459006900	Burbank			2-14, Upper Los Angeles River Watershed Management Group
Ular	2469001902	Burbank			2-14, Upper Los Angeles River Watershed Management Group
Ular	5830013908	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5830013910	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	2525018901	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2525016901	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2525019900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2525023902	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2526023918	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	2681010910	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2706001907	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2706001906	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2555032900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2557023901	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5601026901	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5606012900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5866005900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5602002900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5603014900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5806019900	La nada Flintridge			2-14, Upper Los Angeles River Watershed Management Group
Ular	5864004900	La nada Flintridge			2-14, Upper Los Angeles River Watershed Management Group
Ular	5602009900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5610024901	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5611015901	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5803011900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5803011901	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5803027900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5803026900	La County			2-14, Upper Los Angeles River Watershed Management Group
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Ular	5804015911	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5804015912	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5804013901	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5804014901	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5803008900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5803020901	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5866026900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5866030901	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5866031900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5864003900	La nada Flintridge			2-14, Upper Los Angeles River Watershed Management Group
Ular	5816014913	La nada Flintridge			2-14, Upper Los Angeles River Watershed Management Group
Ular	2634004913	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5812007900	La nada Flintridge			2-14, Upper Los Angeles River Watershed Management Group
Ular	5812013903	La nada Flintridge			2-14, Upper Los Angeles River Watershed Management Group
Ular	5812013902	La nada Flintridge			2-14, Upper Los Angeles River Watershed Management Group
Ular	5864020900	La nada Flintridge			2-14, Upper Los Angeles River Watershed Management Group
Ular	5611010900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5810012902	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5870012901	La nada Flintridge			2-14, Upper Los Angeles River Watershed Management Group
Ular	5870023902	La nada Flintridge			2-14, Upper Los Angeles River Watershed Management Group
Ular	5864026902	La nada Flintridge			2-14, Upper Los Angeles River Watershed Management Group
Ular	2314001900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2314005900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2314005903	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2409004901	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
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Ular	5613007900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5613008900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
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Ular	5615001900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5807024900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5810023900	La nada Flintridge			2-14, Upper Los Angeles River Watershed Management Group
Ular	5801006902	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5816005900	La nada Flintridge			2-14, Upper Los Angeles River Watershed Management Group
Ular	5617015900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	2462008900	Burbank			2-14, Upper Los Angeles River Watershed Management Group
Ular	2463009900	Burbank			2-14, Upper Los Angeles River Watershed Management Group
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Ular	5819006902	La nada Flintridge			2-14, Upper Los Angeles River Watershed Management Group
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Ular	5842020901	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5829005903	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5829005902	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5616003900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5832017900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5835012908	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5835012901	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5835012904	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5835012900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5835012906	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5835012907	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5842021900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5842021901	La County			2-14, Upper Los Angeles River Watershed Management Group
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Ular	5829006902	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5829006901	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5829006903	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5829006900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	2451010904	Burbank			2-14, Upper Los Angeles River Watershed Management Group
Ular	2451010905	Burbank			2-14, Upper Los Angeles River Watershed Management Group
Ular	5843015900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5828021903	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5840010900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5840009901	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5841032900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	2415015900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group

Region	Apn	Jurisdiction/City	Land Use Type	Address	Figure Number and Title
Ular	2414005902	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2415013900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5730030903	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5730030900	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5730029903	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5848030900	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	2451006903	Burbank			2-14, Upper Los Angeles River Watershed Management Group
Ular	2453023901	Burbank			2-14, Upper Los Angeles River Watershed Management Group
Ular	2453023902	Burbank			2-14, Upper Los Angeles River Watershed Management Group
Ular	2453023900	Burbank			2-14, Upper Los Angeles River Watershed Management Group
Ular	2449035902	Burbank			2-14, Upper Los Angeles River Watershed Management Group
Ular	2449035907	Burbank			2-14, Upper Los Angeles River Watershed Management Group
Ular	2451007904	Burbank			2-14, Upper Los Angeles River Watershed Management Group
Ular	2462017905	Burbank			2-14, Upper Los Angeles River Watershed Management Group
Ular	2462017904	Burbank			2-14, Upper Los Angeles River Watershed Management Group
Ular	5825020908	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5825020900	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5825020902	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5827013904	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	2476013900	Burbank			2-14, Upper Los Angeles River Watershed Management Group
Ular	2480009900	Burbank			2-14, Upper Los Angeles River Watershed Management Group
Ular	2483006901	Burbank			2-14, Upper Los Angeles River Watershed Management Group
Ular	2480009901	Burbank			2-14, Upper Los Angeles River Watershed Management Group
Ular	5627003903	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5627006900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5627003902	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5751018907	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5751020904	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5751019900	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5623010900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5623020900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
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Ular	5728018910	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5728021910	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5825007900	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5825007901	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	2446007900	Burbank			2-14, Upper Los Angeles River Watershed Management Group
Ular	2445027903	Burbank			2-14, Upper Los Angeles River Watershed Management Group
Ular	2447019900	Burbank			2-14, Upper Los Angeles River Watershed Management Group
Ular	2447012904	Burbank			2-14, Upper Los Angeles River Watershed Management Group
Ular	5650004900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5653019900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	2068005900	labasas			2-14, Upper Los Angeles River Watershed Management Group
Ular	2068005901	labasas			2-14, Upper Los Angeles River Watershed Management Group
Ular	2068002900	labasas			2-14, Upper Los Angeles River Watershed Management Group
Ular	2069007906	labasas			2-14, Upper Los Angeles River Watershed Management Group
Ular	5758001901	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5759002900	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5759006913	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5860032900	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5636007901	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5737014901	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5749020901	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5853015901	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5853015900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5759031900	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5740020900	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5633021900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5635006902	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5650036900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5726015900	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5722010913	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5593001902	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5593001906	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	2443009900	Burbank			2-14, Upper Los Angeles River Watershed Management Group
Ular	5757002901	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5752005900	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5636012905	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5644013935	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5752002901	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
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Ular	2443025906	Burbank			2-14, Upper Los Angeles River Watershed Management Group
Ular	2443025900	Burbank			2-14, Upper Los Angeles River Watershed Management Group
Ular	5696010901	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5696008929	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5643020906	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5643019900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5721026900	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	2485029900	Burbank			2-14, Upper Los Angeles River Watershed Management Group
Ular	5593018900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2069006903	labasas			2-14, Upper Los Angeles River Watershed Management Group
Ular	5324003902	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5324003901	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	2424043901	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	2424043900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5676024900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5676024901	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5676024904	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5679001900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5640035901	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5594016900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5594016903	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group

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Ular	5594018901	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5594018900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5594016901	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5594016902	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5593030904	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5593002904	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5593029900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5376001913	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5376001912	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5493037900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5716021903	South Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5467012900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5467012901	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5291027902	Alhambra			2-14, Upper Los Angeles River Watershed Management Group
Ular	5286017902	Rosemead			2-14, Upper Los Angeles River Watershed Management Group
Ular	5287020902	Rosemead			2-14, Upper Los Angeles River Watershed Management Group
Ular	5287020904	Rosemead			2-14, Upper Los Angeles River Watershed Management Group
Ular	5287020900	Rosemead			2-14, Upper Los Angeles River Watershed Management Group
Ular	5287020903	Rosemead			2-14, Upper Los Angeles River Watershed Management Group
Ular	5287021900	Rosemead			2-14, Upper Los Angeles River Watershed Management Group
Ular	5255008902	Monterey Park			2-14, Upper Los Angeles River Watershed Management Group
Ular	5255008900	Monterey Park			2-14, Upper Los Angeles River Watershed Management Group
Ular	5258002908	Monterey Park			2-14, Upper Los Angeles River Watershed Management Group
Ular	5260006901	Monterey Park			2-14, Upper Los Angeles River Watershed Management Group
Ular	5284038900	Rosemead			2-14, Upper Los Angeles River Watershed Management Group
Ular	5284034900	Rosemead			2-14, Upper Los Angeles River Watershed Management Group
Ular	5285007923	Rosemead			2-14, Upper Los Angeles River Watershed Management Group
Ular	5285008905	Rosemead			2-14, Upper Los Angeles River Watershed Management Group
Ular	5285008904	Rosemead			2-14, Upper Los Angeles River Watershed Management Group
Ular	5285008909	Rosemead			2-14, Upper Los Angeles River Watershed Management Group
Ular	5285006908	Rosemead			2-14, Upper Los Angeles River Watershed Management Group
Ular	5285005912	Rosemead			2-14, Upper Los Angeles River Watershed Management Group
Ular	5225011900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5251018902	Monterey Park			2-14, Upper Los Angeles River Watershed Management Group
Ular	5251023900	Monterey Park			2-14, Upper Los Angeles River Watershed Management Group
Ular	5262008900	Monterey Park			2-14, Upper Los Angeles River Watershed Management Group
Ular	5273016900	Monterey Park			2-14, Upper Los Angeles River Watershed Management Group
Ular	5226028904	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5226028905	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5226033907	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5226033906	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5226035901	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5226030900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5227025903	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5227025917	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5233004905	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5233004903	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5233004914	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5233011900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5233012912	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5234002900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5234013903	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5234013904	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5234012903	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5234012902	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5274014900	Monterey Park			2-14, Upper Los Angeles River Watershed Management Group
Ular	5267006900	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	5267009902	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	5267009900	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	5267007900	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	5267007901	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	5267009903	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	5267009901	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	5185025908	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	8117024906	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5232014900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5235008908	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5235007918	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5235020911	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5235021906	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5235025903	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5240008900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5240007900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5246014916	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5246021900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5248012914	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5248010904	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6341009907	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6341023900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5247004905	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5247003901	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5232021900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5232021903	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5233013903	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5233013902	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5233013907	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5233013904	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5233017903	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5233013905	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5239010906	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5232020913	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5278004901	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	5293022900	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	5171024902	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5171024910	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group

Region	Apn	Jurisdiction/City	Land Use Type	Address	Figure Number and Title
Ular	5268010901	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	5294013900	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	5294014903	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	6344001906	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	6345011900	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	6346006900	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	6351024900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6351033902	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6351033903	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6351035901	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6337034900	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	6337034901	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	6349023900	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	6350017906	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	6350016904	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	6350027900	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	6350026900	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	6351004900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6344017900	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	6346028912	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	6349007915	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	6349007910	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	6349005900	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	6350006901	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	6350011900	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	6350018904	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	6008005902	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6346022901	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	6346023900	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	6346022900	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	6346023901	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	6346025907	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	6348003901	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	6348003900	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	6352006901	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	6352005902	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	6352027902	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	6008015903	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6008015908	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6008013906	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6008014900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6008014905	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6008015904	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6008013924	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6008015928	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6008014901	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6008016900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6008014903	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6010017901	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6010023900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6010023901	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6010017903	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6010021900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6010026923	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6354026901	Montebello			2-14, Upper Los Angeles River Watershed Management Group
Ular	2031008906	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2031008903	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2031008905	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5864001901	La nada Flintridge			2-14, Upper Los Angeles River Watershed Management Group
Ular	2519018900	San Fernando			2-14, Upper Los Angeles River Watershed Management Group
Ular	2519019900	San Fernando			2-14, Upper Los Angeles River Watershed Management Group
Ular	2519017900	San Fernando			2-14, Upper Los Angeles River Watershed Management Group
Ular	5607017901	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	2308010902	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2028027900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5823003912	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5823003909	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5653001902	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	2455040900	Burbank			2-14, Upper Los Angeles River Watershed Management Group
Ular	5844022900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5731002901	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5653016901	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5827007901	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	2447010900	Burbank			2-14, Upper Los Angeles River Watershed Management Group
Ular	5652003900	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5749020900	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5719004915	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5719004900	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5719004914	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5719004902	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5734037902	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5723013907	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5319017900	South Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5435038904	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5319030903	South Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5319030900	South Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5319030906	South Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5445004902	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5445031905	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5445031902	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5445031901	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5445031903	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5445031904	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5445004906	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5445031906	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group

Region	Apn	Jurisdiction/City	Land Use Type	Address	Figure Number and Title
Ular	5352028902	Alhambra			2-14, Upper Los Angeles River Watershed Management Group
Ular	5352028901	Alhambra			2-14, Upper Los Angeles River Watershed Management Group
Ular	5409017906	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5409017905	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5226031908	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	5171024904	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5171025900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	6201017904	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6024022900	La County			2-14, Upper Los Angeles River Watershed Management Group
Ular	6071021916	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	6071021915	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	6071021914	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2444015900	Burbank			2-14, Upper Los Angeles River Watershed Management Group
Ular	5171015900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5723017911	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	5723017915	Pasadena			2-14, Upper Los Angeles River Watershed Management Group
Ular	2443025902	Burbank			2-14, Upper Los Angeles River Watershed Management Group
Ular	5435037904	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5172013900	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5387011901	Temple City			2-14, Upper Los Angeles River Watershed Management Group
Ular	5623020901	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5360011900	San Gabriel			2-14, Upper Los Angeles River Watershed Management Group
Ular	2784001901	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2784001902	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2784002903	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2784002902	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2468020904	Burbank			2-14, Upper Los Angeles River Watershed Management Group
Ular	5652005901	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5652004901	Glendale			2-14, Upper Los Angeles River Watershed Management Group
Ular	5360021901	San Gabriel			2-14, Upper Los Angeles River Watershed Management Group
Ular	5171015902	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	2634006908	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group
Ular	5445006909	Los Angeles			2-14, Upper Los Angeles River Watershed Management Group

Region	Apn	Jurisdiction/City	Land Use Type	Address	Figure Number and Title
			Upper San Gabriel River Ewmp		
San Gabriel	8558023905, 8558023910	County	Old Bassett Unified School District Site		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8125014039, 8125014807, 8125014901, 8125016017, 8125016018, 8125016019, 8125016020, 8125016021, 8125016022, 8125016023, 8125016024, 8125016025, 8125016027, 8125016800	Industry	Client Specified Industry No. 1		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8115001270, 8115001800, 8115001801, 8115001908, 8115001909, 8115002270, 8115002800, 8115002801, 8115002902, 8115002904, 8115002905, 8115002906, 8115002907, 8115002908, 8115002909	County	Client Specified Industry No. 2		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8554005900	Baldwin Park	Hilda L. Solis Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8544021900, 8544021901, 8544021902, 8544021903, 8544021904, 8544021905, 8544021907, 8544021908, 8544021909, 8544021910, 8544021911, 8544022902	Baldwin Park	Morgan Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8558022801, 8560028801, 8560028904	County	Shyer Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8564014907, 8564014908, 8564016909, 8564016912, 8564016913	Baldwin Park	Walnut Creek Nature Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8550001904, 8550001906	Baldwin Park	Barnes Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8156001910, 8156001911	County	Adventure Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8633002900	Glendora	Stanton Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8628001905	Glendora	Citrus Community College		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8632001900	Glendora	Sierra High School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8635009901	Glendora	La Fetra Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8638009906	Glendora	Finkbiner Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8640006901	Glendora	Whitcomb Continuation High		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8649020901	Glendora	Williams Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8648018906	Glendora	Cullen Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8653023902	Glendora	Willow Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8660017901	Glendora	Glendora High School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8726001900	County	Rorimer (Remote) Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8110029907	County	High Voltage Electril Easement Near San Angelo Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8742010901	County	Valinda Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8745014900	County	Wing Lane Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8760023909	Industry	Ron Hockwalt High School (Rhhs)		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8210021901	La Puente	Nelson Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8214024900	La Puente	La Puente High School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8214025900	La Puente	La Puente Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8212011901	County	Temple Ademy Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8212020901	County	Sparks Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8212011902	County	Allen J Martin Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8206014904	County	Avodo Heights Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8218009901	County	Truck Loading Dock		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8242004900	County	Glenelder Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8245004906	Industry	Commercial Buildings		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8248015900	County	Grandview Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8248015901	County	Rimgrove Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8251003900	La Puente	Del Valle Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8252013900	La Puente	Fairgrove Ademy		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8263030900	La Puente	Hurley (Remote) Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8641002273, 8641002904	Glendora	Dawson Avenue Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8428016907	County	Western Christian High School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8406001902	Covina	Fairvalley High (Continuation) School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8403013900	County	Charter Oak Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8403013901	County	Charter Oak Park (Cousd Parcel)		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8405008900	County	Ben Lomond Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8407001905	Covina	Hollenbeck Park		2-12, Upper San Gabriel River Watershed Management Groups

Region	Apn	Jurisdiction/City	Land Use Type	Address	Figure Number and Title
San Gabriel	8408021900	Covina	Valencia Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8409019906	Covina	Gladstone High School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8420013901	Covina	Northview High School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8421015900	County	Cypress Ball Park And Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8420013902	Covina	Northview High School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8419031905	County	Lark Ellen Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8426012902	Covina	Badillo Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8110001901	County	Vant Lot Near Sgr		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8550001907	Baldwin Park	Twin Lakes Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8435016901	County	Manzanita Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8435006900	County	Partially Vant Lot Near Irwindale Shopping Center		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8438004900	Baldwin Park	Central Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8438001904, 8459001900	Baldwin Park	Baldwin Park High School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8446007903	Covina	Sierra Vista Middle School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8451008900	Covina	Barran Park, Barran Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8472022901	County	Partially Vant Lot Near lifornia Elementary		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8535011901	Baldwin Park	Site At Top Of Baldwin Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8552011902	Baldwin Park	Sierra Vista High School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8554018900	Baldwin Park	Vineland Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8555012902	Baldwin Park	Jones (Charles D) Middle School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8555017900	Baldwin Park	Foster Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8561020900	Industry	Torch Middle School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8556009900	Baldwin Park	Elwin Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8560008900	County	Van Wig (J E) Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8564004902, 8564004903	Baldwin Park	Buildings And Parking Lot Near Channel		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8565024902	Industry	Madrid (Alfred S) Middle School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8550019901	Baldwin Park	De Anza Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8648001927	Glendora	George Manooshian Park And Goddard Middle School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8535011904	Baldwin Park	Olive Middle School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8725005906	County	Nogales High School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8110029002, 8110029903	County	Vant Lot Near Channel		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8564004901	Baldwin Park	Truck Loading/Parking		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8404010900	County	Cedargrove Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8656005909	Glendora	Sellers Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8628001902	Glendora	Citrus Community College (Buildings)		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8638027908	Glendora	Glendora Civic Center		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8562010901	County	Bassett Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8253014900	County	rolyn Rosas Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8431026001, 8431026900, 8431026901	Covina	Covina Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8431012900, 8431012901	Covina	Edna Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8265019900	County	Gloria Heer Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8428015902, 8428015903, 8428023901	Covina	Kahler Russell Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8430015900, 8430035900	Covina	Kelby Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8211003901	County	Los Robles County Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8215012900	County	Manzanita Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8648018908	Glendora	Ole Hammer Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8447031901	Covina	Parque Xalapa		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8207014900	County	Pepperbrook Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8762004902	County	Rowland Heights Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8110012903, 8110012904, 8110012905	County	San Angelo Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8244005915	County	Stimson Park (Steinmetz Park)		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8656005910	Glendora	Willow Springs Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8430026900	Covina	Civic Center Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8653002902, 8653002905, 8653002906	Glendora	Gladstone Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8407001909	Covina	Hollenbeck Park (Fcd Parcel)		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8727014902, 8727014903, 8727014904, 8727014905, 8727014906, 8727014907, 8727014908, 8727014909, 8727014910, 8727014911, 8727014912, 8727014913	County	Sunshine Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8635003901, 8635005901, 8635005902	Glendora	Sandburg School Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8760002900	County	Santana High (Continuation) School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8403013901	County	Unknown School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8465013900, 8465013901	County	Edgewood Ademy		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8272001900	County	Alvarado Middle School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8543015900	Baldwin Park	Holland (Jerry D) Middle School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8542001900	Baldwin Park	Walnut Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8429017900, 8429018900	Covina	Covina Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8402010939	Covina	Glen Oak Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8761001900	County	Jellick Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8546025900	Baldwin Park	Bursch (Charles) Elementary School		2-12, Upper San Gabriel River Watershed Management Groups

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San Gabriel	8415007900, 8415014902, 8415022900	Baldwin Park	Geddes (Ernest R) Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8443013900, 8443014900, 8443014901	Covina	Covina High School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8551021906, 8551021909	Baldwin Park	Tracy Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8641006900, 8641006901, 8641006902	Glendora	Washington Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8552012901	Baldwin Park	Kenmore Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8727004900	County	La Seda Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8536025902	Baldwin Park	Heath (Margaret) Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8428016908, 8428016907	County	Royal Oak Middle School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8434010901	Covina	Las Palmas Middle School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8635004901	Glendora	Sandburg Middle School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8414018900	Baldwin Park	Pleasant View Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8403005901	Covina	Charter Oak High School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8206005900	County	Don Julian Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8115010900	County	Andrews (Wallen) Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8728015900	County	Villacorta (Remote) Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8035007900	County	Meadow Green Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8464032900	County	Sunkist Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8465027900, 8465027901	County	Erwin (Thomas M) Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8270023902	County	Rowland (Remote) Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8178003900	County	Nelson (Ada S) Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8201010900	La Puente	Bassett Senior High School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8272020901, 8272020902	County	Killian Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8125027907	County	Mill Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8253014901	County	Farjardo (Remote) Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8203008900	La Puente	Sunset Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8203015902	La Puente	Lassalette Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8254008901, 8254008902	County	Baldwin Ademy Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8472018900	County	lifornia Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8250001912	Industry	Workman (William) High School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8251013904, 8251010900	La Puente	Sierra Vista Middle School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8727010900	County	Yorbita (Remote) Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8209001901	County	Wedgeworth Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8207004901	County	Wilson (Glen A) High School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8243036900	County	Cedarlane Middle School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8207004900	County	Bixby Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8290016900	County	Los Molinos Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8222022901	County	Los Altos Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8215022900, 8215022901	County	Newton Middle School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8211003902	County	Los Robles Ademy Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8215001900	County	Los Altos High School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8218013901, 8218014907	County	Shadybend Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8220009900	County	Palm Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8247011906, 8247011907	La Puente	Workman Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8444010900	Covina	TriCommunity Adult School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8641007900, 8641007901, 8641007902, 8641007903, 8641007904, 8641007905, 8641007906, 8641007907, 8641007908, 8641007909, 8641007910, 8641007911, 8641007912, 8641007913, 8641007917, 8641007918, 8641007919, 8641007920, 8641007921	Glendora	Glenoaks Golf Course		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8554001900, 8554001910	Baldwin Park	Baldwin Park City Hall		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8208025910	Industry	Industry City Hall		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8246016903	La Puente	La Puente City Hall		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8206003900, 8206003901, 8206004900	County	Avenue Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8120019905	County	San Jose Creek Overlook		2-12, Upper San Gabriel River Watershed Management Groups

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San Gabriel	8535020800, 8535020801, 8535020902, 8535020909, 8535021001, 8546001800, 8550001800, 8550001801, 8550001803, 8564012801	Baldwin Park	Sce Utility Electril Tower Brownfields		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8550003270, 8550003271, 8550003273, 8551011270, 8551011271, 8556009272, 8564002270, 8564019272	Baldwin Park	Ladwp Utility Electric Corridor		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8653003904	Glendora	Arrow High (Continuation)		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8445001913	Covina	Covina City Hall		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8444021903, 1904	Covina	CovinaValley Unified School District Sports Complex		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8026005900	County	Amelia Mayberry Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8269040900, 8269040901	County	Bill Blevins Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8295021900, 8295021901	County	Countrywood Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8642017901, 8642018900, 8642018907, 8642018908	Glendora	Louie Pompei Memorial Sports Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8171028900	County	Mcnees Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8171015901	County	Sorensen Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8205007900	County	Thomas S Burton Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8241020235, 8241021170, 8241025105	County	Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8031012903	County	Los Altos Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8269003901, 8269003902	County	Pathfinder Community Regional Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8119010905, 8119010906	County	Pico Rivera Municipal Golf Course		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8241001021, 8241001024	County	Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8206034017	County	Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8036016001, 8036016002	County	Southern lifornia University Of Health Sciences		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8125026800, 8125026802, 8125026902, 8125026903	County	Rio Hondo Community College		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8762020030	County	Wisdom Kids College		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8152020042	County	Painter Avenue Christian		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8156020022	County	Walker Ademy		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8453019014	Covina	Sacred Heart Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8432027005	Covina	Western Christian Isp		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8226011033	County	pella Christian Ademy		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8661020017	County	Foothill Montessori		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8130028067	County	Solid Faith Christian School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8428020017	Covina	Amerin Future Learning Center		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8032014900	County	El mino High (Continuation) School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8155018047, 8155018048, 8155019014	County	St. Gregory The Great		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8159003017	County	East Whittier Center		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8031011017	County	Children'S Ademy		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8762018902, 8762018903	County	Ybarra Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8428013901	Covina	Sonrise Christian		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8427003901	Covina	Sonrise Christian		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8402001001, 8402001002, 8402001022, 8402001023	Covina	St. Louise De Marillac Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8404002029	County	Cumorah Ademy		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8764001131, 8764001132	County	Southlands Christian Schools		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8276009900	County	Rowland High School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8159005901	County	Mulberry Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8177019902, 8177019904, 8177019905	County	Pioneer High School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8169008900, 8169008901, 8169008902, 8169020030, 8169020031, 8169020032, 8169020033, 8169020034, 8169020901, 8169020902, 8169020903, 8169020904	County	Aeolian Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8227004900	County	La Colima Elementary School		2-12, Upper San Gabriel River Watershed Management Groups

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San Gabriel	8028005900	County	Loma Vista Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8174021900	County	West Whittier Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8728010900, 8728010901	County	Northam (Remote) Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8031012903, 8031012904, 8031013900	County	Los Altos/Monte Vista Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8030008901, 8030008902	County	Telechron Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8176028900	County	Phelan Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8171015900	County	Sorensen (Christian) Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8258009900	County	Blandford Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8178023900, 8178025901, 8178025902	County	Los Nietos Middle School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8156028029, 8156028920	County	Mckibben (Howard J) Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8036009900	County	Whittier Christian School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8040012900	County	Granada Middle School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8174032901	County	Edwards (Katherine) Middle School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8155008900, 8155008901	County	Ceres Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8276002906	County	Shelyn Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8039014900	County	rden School Of Whittier		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8173022900	County	Washington Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8151027905	County	lifornia High School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8036023900	County	RanchoStarbuck Middle School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8465012011, 8465012013	County	Bishop Amat Memorial High		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8730004006, 8730004032	County	St. Martha'S Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8205014900	County	Mesa Robles Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8204022900	County	Grazide Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8215018002, 8215018022, 8215018023, 8215018026, 8215018027, 8215018028	County	St. Mark'S Lutheran Elementary		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8211013900	County	Orange Grove Middle School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8215012901	County	Kwis Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8178005001, 8178005021, 8178005025, 8178005027	County	Brethren Christian School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8684033036	Glendora	St. Lucy'S Priory High School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8555011011	Baldwin Park	East Valley Adventist		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8666008010	County	Leroy Boys Home Secondary		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8205023024	County	Um Molokan Elementary		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8228022900, 8228022901	County	Hillview Middle School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8170012023	County	Palm View Christian		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8214016020	La Puente	New Montessori School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8201009001	La Puente	St. Louis Of France		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8120005032	County	Creative Corners		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8640012061	Glendora	Foothill Christian		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8272001046	County	Oxford School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8404004054	County	Gateway Montessori And Preschool		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8453006036	Covina	Acia Montessori		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8762010011	County	Fairway Edution Center		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8631010017	Glendora	Live Oak nyon		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8226001002	County	Kids And Blocks Preschool & Kindergarten		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8222003050	County	Morning Star Christian School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8218016037	County	Hacienda Christian		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8210001028	La Puente	Sunset Christian		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8156027021, 8156027022	County	All Nations Ademy Of Excellence		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8152001012	County	Faith Lutheran Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8649014043	Glendora	Hope Lutheran Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8031013018	County	Le Lycee Franis De Downey		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8268014044	County	lvary		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	7016015120	County	First Evangelil Church Of Cerritos Children		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8401021062	County	Beginning Montessori Children'S House		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8401036038	County	Covina Baptist Ademy		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8655024039	Glendora	St. Dorothy Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8543009053	Baldwin Park	Creative Planet School Of The Arts		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8251016044	La Puente	St. Joseph Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8553007029	Baldwin Park	St. John The Baptist		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8258019036	County	Rowland Christian Preschool		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8658002033, 8658006015	Glendora	Bluebird Preserve		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8125012910, 8125062003, 8125062904	County	Whittier Narrows Equestrian Center		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8552017019	Baldwin Park	Mid Valley Learning Centers		2-12, Upper San Gabriel River Watershed Management Groups

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San Gabriel	8247013904, 8247014900, 8262001010, 8262001011, 8262001900, 8262001902, 8262011011, 8262011930, 8262011931, 8262012028, 8262012270, 8262012271, 8262012272, 8262012273, 8262012274, 8262012275, 8262012276, 8262015900, 8262015902, 8262015904, 8262015905, 82	Industry	Industry Hills Golf Club		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8115001904, 8115001906	County	San Jose Creek Water Reclamation Plant West		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8125021933, 8125026026, 8125026027, 8125026028	County	Puente Hills Materials Recovery Facility		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8710002902, 8710002903, 8710003907, 8710003916	County	lifornia Polytechnic University Pomona		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8265028900	County	Trailview Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8265002904, 8265002906, 8265002908, 8265003904, 8295019900, 8295019901, 8295019903	County	Peter F Schabarum Regional County Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8426026016, 8426026018	County	Via Verde Country Club		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8119010905, 8119010906	County	Streamland Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8391015025, 8391015027	County	lvary Baptist Church And Schools		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8226020905	County	Orchard Dale Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8026006900	County	rmela Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8167029907, 8167029908	County	Lake Marie Elementary School		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8636047021, 8636047022	County	Brodiaea Reserve		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8636013005, 8636013006, 8636013012, 8636016009	Glendora	Brodiaea Reserve		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8658002019, 8658017030, 8658017031, 8658017032, 8658017033, 8658017034, 8658017035, 8658017036, 8658017037, 8658017038, 8658017039, 8658017040, 8658017041, 8658017050, 8658017054, 8658017063, 8658018032, 8658018033, 8658018034, 8658018035, 8658018036, 86	Glendora	Gordon Mull Preserve		2-12, Upper San Gabriel River Watershed Management Groups

Region	Apn	Jurisdiction/City	Land Use Type	Address	Figure Number and Title
San Gabriel	8644010056, 8644010902, 8644013905, 8644013906, 8644013907, 8644014271, 8644014273, 8644014901, 8644014902, 8644014904, 8644014905, 8644014907, 8644014909, 8644014910, 8644014911, 8644015911, 8644015914, 8644015915, 8644027270, 8644027901, 8644027902, 86	Glendora	South Hills Park		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8764002007, 8764002008	County	Los Angeles Royal Vista Golf Course		2-12, Upper San Gabriel River Watershed Management Groups
San Gabriel	8762022002, 8762022005, 8762022006, 8762022008, 8762023001, 8762023002	County	Los Angeles Royal Vista Golf Course		2-12, Upper San Gabriel River Watershed Management Groups

Region	Apn	Jurisdiction/City	Land Use Type	Address	Figure Number and Title
				Upper Santa Clara River Ewmp	
Upper Santa Clara	2802003908	L A Co Flood Control Dist			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2802004900	L A County			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2805013900	Saugus Union School Dist			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2811029900	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2811029901	Saugus Union School District			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2836018900	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2837033900	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2844013900	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2844021900	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2844006904	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2854038900	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2865007906	Newhall Co Water Dist			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2865024901	L A County			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2866014900	L A County			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2866020909	Castaic Union School District			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2866020910	Castaic Union School District			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2866015900	L A County			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2866014934	Castaic Union School Dist			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2866020908	Castaic Union School District			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2825010929	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2827040900	La Co Flood Control Dist			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2827034901	L A Co Flood Control Dist			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2833016900	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2827022900	L A Co Flood Control Dist			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2827022901	L A Co Flood Control Dist			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2827001901	L A County			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2829009911	L A Co Flood Control Dist			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2833012900	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2831026914	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2827001908	L A County			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2827001900	L A County			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2827001902	L A County			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2831014900	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2826130900	L A County			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2827001904	L A County			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2827001903	L A County			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2833014902	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2831006900	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2831009900	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2833014903	City Of Santa Clarita			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2833005904	L A County			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2855006904	William S Hart Union High School			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2855006902	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2855006903	William S Hart Union High School			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2833005903	L A County			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2855006900	William S Hart Union			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2855011902	L A Co Flood Control Dist			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2834024918	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2855006901	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2855011901	L A Co Flood Control Dist			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2858012900	Newhall School Dist			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2855011900	L A Co Flood Control Dist			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2859014900	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2859030900	L A County			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2859030901	L A County			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2859004902	L A County Housing Authority			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2859030902	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2858007900	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2836036900	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2836064900	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2860003900	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2861026900	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2861009905	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2861009901	L A County			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2811065907	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2861009903	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2861009907	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2861009906	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2812009900	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	3244160900	L A County			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2826119900	L A County			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2837020900	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2826022901	L A County			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2834023950	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2826160901	La County Park			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2810041900	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2810032901	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2831011904	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2811083902	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2836012905	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2802038904	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2802038902	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2865012916	L A County			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2865021902	L A County			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2826160900	La Co Flood Control Dist			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2866047900	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2810032902	Saugus Union School Dist			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2810070900	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2861009900				2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2826075900	L A County			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	3270021900	L A County			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2865018900	L A County			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2836066901	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2864003920	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group

Region	Apn	Jurisdiction/City	Land Use Type	Address	Figure Number and Title
Upper Santa Clara	2810110900				2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2864003919	L A County			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	3270020902	L A County			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2831006901	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2831006903	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2831006902	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2810109900	L A Co Flood Control Dist			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2826085900	Newhall School District			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2864003921	L A County			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2864003922	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	3244035900	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2833005902	L A County			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2836018901	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2865012912	L A County			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2810001903	Hart William S Union High School			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2866005806				2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2861009904	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2811062904	Santa Clarita City			2-16, Upper Santa Clara River Watershed Management Group
Upper Santa Clara	2859002901	L A Co Flood Control Dist S By S			2-16, Upper Santa Clara River Watershed Management Group

Region	Apn	Jurisdiction/City	Land Use Type	Address	Figure Number and Title
				Ballona Creek Emwp	
Ballona	4259018901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4261003900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4261011911	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4261011912	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4261013900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4261018900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4262004900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4263022901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4262023900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4261010908	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4262032901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4263021904	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	6017012900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	6019003905	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4105016900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4106026900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4211017900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4218002908	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4218002906	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4249011900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4258005900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4258016900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4365009900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4005023900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4006013900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4006014900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4006011901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4006019900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4006019901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4013029901	Inglewood			2-6, Ballona Creek Watershed Management Group
Ballona	4014007900	Inglewood			2-6, Ballona Creek Watershed Management Group
Ballona	4014007901	Inglewood			2-6, Ballona Creek Watershed Management Group
Ballona	4015013901	Inglewood			2-6, Ballona Creek Watershed Management Group
Ballona	4015015900	Inglewood			2-6, Ballona Creek Watershed Management Group
Ballona	4017026900	Inglewood			2-6, Ballona Creek Watershed Management Group
Ballona	4017026901	Inglewood			2-6, Ballona Creek Watershed Management Group
Ballona	4017032902	Inglewood			2-6, Ballona Creek Watershed Management Group
Ballona	4017026903	Inglewood			2-6, Ballona Creek Watershed Management Group
Ballona	4017026902	Inglewood			2-6, Ballona Creek Watershed Management Group
Ballona	4017032908	Inglewood			2-6, Ballona Creek Watershed Management Group
Ballona	4017031905	Inglewood			2-6, Ballona Creek Watershed Management Group
Ballona	4127016901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4205015902	Culver City			2-6, Ballona Creek Watershed Management Group
Ballona	4206027900	Culver City			2-6, Ballona Creek Watershed Management Group
Ballona	4208027900	Culver City			2-6, Ballona Creek Watershed Management Group
Ballona	4208032900	Culver City			2-6, Ballona Creek Watershed Management Group
Ballona	4210021900	Culver City			2-6, Ballona Creek Watershed Management Group
Ballona	4210025900	Culver City			2-6, Ballona Creek Watershed Management Group
Ballona	4213006901	Culver City			2-6, Ballona Creek Watershed Management Group
Ballona	4215005905	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4213026902	Culver City			2-6, Ballona Creek Watershed Management Group
Ballona	4215031902	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4251010902	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4252023900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4254023901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4314014900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5001002908	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5003014920	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5003013901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5003021900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5005006903	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5005006907	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5005007904	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5005007911	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5005005900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5005006909	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5005007905	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5005006910	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5005006911	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5005007909	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5005007907	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5005006912	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5005005901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5005006908	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5005007913	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5005007912	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5005007914	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5005007915	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5005007916	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5005007906	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5005007910	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5005019900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5005007908	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5006007900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5006008900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5006009902	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5007011900	La County			2-6, Ballona Creek Watershed Management Group
Ballona	5010003900	La County			2-6, Ballona Creek Watershed Management Group
Ballona	5014001922	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5014024901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5014024900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5016015926	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5017001905	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5017013901	Los Angeles			2-6, Ballona Creek Watershed Management Group

Region	Apn	Jurisdiction/City	Land Use Type	Address	Figure Number and Title
Ballona	5017013904	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5017020900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5018003914	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5018024900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5019004903	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5020029902	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5021017902	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5023027900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5024018901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5024018900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5024019900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5024018902	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5024019904	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5024029901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5028004902	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5030015900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5031004900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5032003901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5032003902	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5032003900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5033004901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5034010900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5036026912	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5036026901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5036025910	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5036026914	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5036026900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5036027900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5036026902	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5037028909	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5040004900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5040016908	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5040030905	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5041011902	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5041013905	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5041026900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5041034900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5041034901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5042008904	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5042008902	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5045001900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5046004902	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5045019900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5046013900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5047018924	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5049017901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5050006905	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5050006909	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5050022900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5051038911	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5054029912	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5054031901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5054029906	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5059003901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5123008910	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5124009902	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5124020903	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5124023911	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5124009903	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5124023909	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5124021906	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	6001016900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	6001019900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	6001014900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	6001017901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	6002024900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	6003013908	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	6003013906	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	6003005908	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	6003006901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	6003013907	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	6004002903	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	6004006900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	6016023912	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5056018912	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5056014908	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5056024906	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5056024901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5056025908	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5056025909	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5056024905	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5056024904	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5056030904	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5056024903	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5056030909	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5060030905	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5060030901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5060030902	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5060031900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5061014900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5071022900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5072013900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5072014901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5072012917	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5072014902	Los Angeles			2-6, Ballona Creek Watershed Management Group

Region	Apn	Jurisdiction/City	Land Use Type	Address	Figure Number and Title
Ballona	5073001900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5073001901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5073018900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5073013900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5073018901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5075014900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5075035907	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5075034906	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5075035911	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5075033900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5075035900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5075035913	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5075033901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5076008900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5076007900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5077006900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5077009913	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5077006901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5077027900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5077026903	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5078001920	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5077021900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5078002904	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5077026902	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5078002905	Los Angeles			2-6, Ballona Creek Watershed Management Group
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Ballona	5080016907	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5080016910	Los Angeles			2-6, Ballona Creek Watershed Management Group
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Ballona	5080023900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5080023903	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5080023904	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5080032903	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5082007910	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5082011903	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5082007903	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5082012900	Los Angeles			2-6, Ballona Creek Watershed Management Group
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Ballona	5092011901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5092011904	Los Angeles			2-6, Ballona Creek Watershed Management Group
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Ballona	5094006903	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5094006904	Los Angeles			2-6, Ballona Creek Watershed Management Group
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Ballona	5135025900	Los Angeles			2-6, Ballona Creek Watershed Management Group
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Ballona	5141006904	Los Angeles			2-6, Ballona Creek Watershed Management Group
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Ballona	5141016903	Los Angeles			2-6, Ballona Creek Watershed Management Group
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Ballona	5142023900	Los Angeles			2-6, Ballona Creek Watershed Management Group
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Ballona	5142013906	Los Angeles			2-6, Ballona Creek Watershed Management Group
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Ballona	5157015905	Los Angeles			2-6, Ballona Creek Watershed Management Group
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Ballona	5501008908	Los Angeles			2-6, Ballona Creek Watershed Management Group
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Ballona	5501010904	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5501020900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5501010907	Los Angeles			2-6, Ballona Creek Watershed Management Group
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Ballona	5502018902	Los Angeles			2-6, Ballona Creek Watershed Management Group
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Ballona	5504008901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5507017900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5513030900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5516007900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5517007916	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5517007917	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5517007918	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5517014900	Los Angeles			2-6, Ballona Creek Watershed Management Group

Region	Apn	Jurisdiction/City	Land Use Type	Address	Figure Number and Title
Ballona	5518032906	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5518032900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5520014900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5520018901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5522023903	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5532013900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5533017901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5533018900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5533014900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5533017900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5535032900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5535032907	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5536014900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5535032905	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5535032904	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5535032906	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5535032903	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5536014905	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5535033900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5535032901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5535032902	Los Angeles			2-6, Ballona Creek Watershed Management Group
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Ballona	4255020900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4255021900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4256011902	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4256011901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4301017904	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4305003900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4307013909	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4307012902	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4307014908	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4309002901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4309002902	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4318001900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4319001902	Beverly Hills			2-6, Ballona Creek Watershed Management Group
Ballona	4319001900	Beverly Hills			2-6, Ballona Creek Watershed Management Group
Ballona	4319001901	Beverly Hills			2-6, Ballona Creek Watershed Management Group
Ballona	4319003900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4321015900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4325005932	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4325030900	Los Angeles			2-6, Ballona Creek Watershed Management Group
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Ballona	4331012901	Beverly Hills			2-6, Ballona Creek Watershed Management Group
Ballona	4331012900	Beverly Hills			2-6, Ballona Creek Watershed Management Group
Ballona	4333017904	Beverly Hills			2-6, Ballona Creek Watershed Management Group
Ballona	4333017906	Beverly Hills			2-6, Ballona Creek Watershed Management Group
Ballona	4333017905	Beverly Hills			2-6, Ballona Creek Watershed Management Group
Ballona	4333026900	Beverly Hills			2-6, Ballona Creek Watershed Management Group
Ballona	4333026901	Beverly Hills			2-6, Ballona Creek Watershed Management Group
Ballona	4333031900	Beverly Hills			2-6, Ballona Creek Watershed Management Group
Ballona	4336008909	West Hollywood			2-6, Ballona Creek Watershed Management Group
Ballona	4336008910	West Hollywood			2-6, Ballona Creek Watershed Management Group
Ballona	5063021901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5063022908	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5064029908	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5064024901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5068008900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5069031902	Los Angeles			2-6, Ballona Creek Watershed Management Group
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Ballona	5070013907	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5070013904	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5088010900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5088018900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5088005900	Los Angeles			2-6, Ballona Creek Watershed Management Group
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Ballona	5527021900	Los Angeles			2-6, Ballona Creek Watershed Management Group
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Ballona	5529009900	West Hollywood			2-6, Ballona Creek Watershed Management Group
Ballona	5529020901	Los Angeles			2-6, Ballona Creek Watershed Management Group
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Ballona	5529023901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5531020900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4340003900	West Hollywood			2-6, Ballona Creek Watershed Management Group
Ballona	4341029901	Beverly Hills			2-6, Ballona Creek Watershed Management Group
Ballona	4341029900	Beverly Hills			2-6, Ballona Creek Watershed Management Group
Ballona	4358003900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4359014902	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4359019900	Beverly Hills			2-6, Ballona Creek Watershed Management Group
Ballona	4359018900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4360024900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5531003900	West Hollywood			2-6, Ballona Creek Watershed Management Group
Ballona	5531003901	West Hollywood			2-6, Ballona Creek Watershed Management Group
Ballona	5533009900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5533009901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5534012909	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5536005900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5545016900	Los Angeles			2-6, Ballona Creek Watershed Management Group

Region	Apn	Jurisdiction/City	Land Use Type	Address	Figure Number and Title
Ballona	5545017907	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5545019914	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5545017902	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5545017904	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5545019915	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5545017900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5546009906	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5547003908	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5547015900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5547015904	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5547016908	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5547003907	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5547015901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5547015908	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5547030900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5547009900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5547015903	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5547015905	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5547016907	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5548014900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5550013900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5550025902	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5550025903	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5559003901	West Hollywood			2-6, Ballona Creek Watershed Management Group
Ballona	5559003900	West Hollywood			2-6, Ballona Creek Watershed Management Group
Ballona	5401015900	Los Angeles			2-6, Ballona Creek Watershed Management Group
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Ballona	5537009910	Los Angeles			2-6, Ballona Creek Watershed Management Group
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Ballona	5591022901	Los Angeles			2-6, Ballona Creek Watershed Management Group
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Ballona	5122004900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5122014907	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5122017908	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5126001900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5126018917	Los Angeles			2-6, Ballona Creek Watershed Management Group
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Ballona	5128016904	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5128016910	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5134007921	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5134022903	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5134022902	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4212001900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4134020903	Culver City			2-6, Ballona Creek Watershed Management Group
Ballona	4208023902	Culver City			2-6, Ballona Creek Watershed Management Group
Ballona	4206026906	Culver City			2-6, Ballona Creek Watershed Management Group
Ballona	4210026903	Culver City			2-6, Ballona Creek Watershed Management Group
Ballona	4255009901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4255006900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4301018900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4213026903	Culver City			2-6, Ballona Creek Watershed Management Group
Ballona	4254023900	Los Angeles			2-6, Ballona Creek Watershed Management Group
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Ballona	4308019900	Los Angeles			2-6, Ballona Creek Watershed Management Group
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Ballona	5048013901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5048012900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4249002900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4249026900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4249001901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4217011903	Culver City			2-6, Ballona Creek Watershed Management Group
Ballona	4249025900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4213026900	Culver City			2-6, Ballona Creek Watershed Management Group
Ballona	4212007900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4102015900	Inglewood			2-6, Ballona Creek Watershed Management Group
Ballona	5047014900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4259020900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4001013900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4001014901	Inglewood			2-6, Ballona Creek Watershed Management Group
Ballona	4013028900	Inglewood			2-6, Ballona Creek Watershed Management Group
Ballona	4013025900	Inglewood			2-6, Ballona Creek Watershed Management Group
Ballona	4014017900	Inglewood			2-6, Ballona Creek Watershed Management Group
Ballona	4235020901	Culver City			2-6, Ballona Creek Watershed Management Group
Ballona	4204013900	Culver City			2-6, Ballona Creek Watershed Management Group

Region	Apn	Jurisdiction/City	Land Use Type	Address	Figure Number and Title
Ballona	4205012903	Culver City			2-6, Ballona Creek Watershed Management Group
Ballona	4206030902	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5047014901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5047014902	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5048017901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5065015906	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5048008901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5048014901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5048017900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4311031901	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4211011900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4218003900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4221024908	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4210017900	Culver City			2-6, Ballona Creek Watershed Management Group
Ballona	4221008900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4217029903	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4220015900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4221006900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4221024907	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4218002907	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4203011902	Culver City			2-6, Ballona Creek Watershed Management Group
Ballona	4210026902	Culver City			2-6, Ballona Creek Watershed Management Group
Ballona	4019019900	La County			2-6, Ballona Creek Watershed Management Group
Ballona	4221024900	Los Angeles			2-6, Ballona Creek Watershed Management Group
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Ballona	4210015902	Culver City			2-6, Ballona Creek Watershed Management Group
Ballona	4210016900	Culver City			2-6, Ballona Creek Watershed Management Group
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Ballona	5142026921	Los Angeles			2-6, Ballona Creek Watershed Management Group
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Ballona	6001013906	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	6001001900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5123008905	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4206034906	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5046013905	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5066013900	Los Angeles			2-6, Ballona Creek Watershed Management Group
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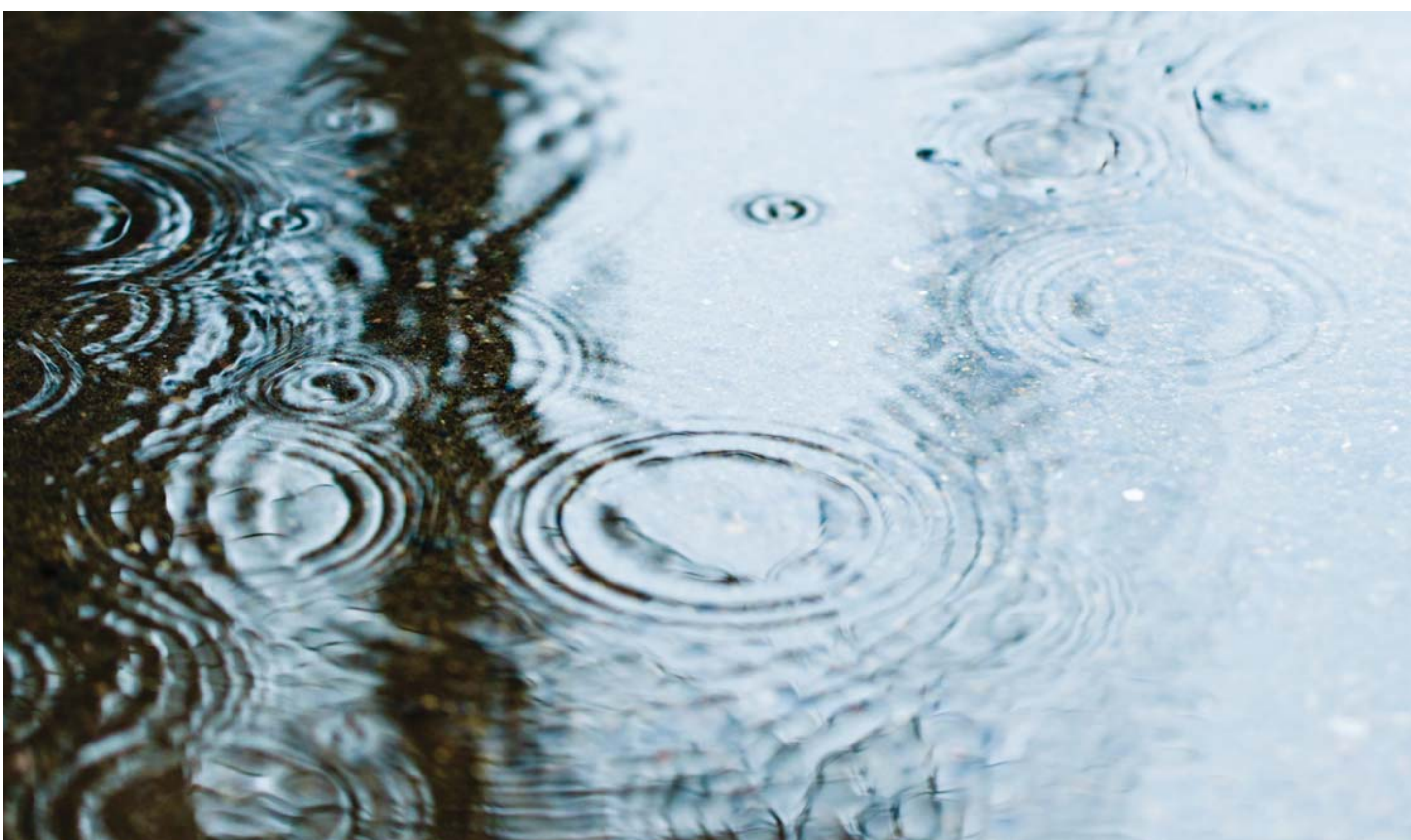
Ballona	4006011900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	4235021900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5124001900	Los Angeles			2-6, Ballona Creek Watershed Management Group
Ballona	5032004908	Los Angeles			2-6, Ballona Creek Watershed Management Group

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT ENHANCED WATERSHED MANAGEMENT PROGRAMS

Final Program Environmental Impact Report

Prepared for
County of Los Angeles
Department of Public Works

April 2015



RB-AR 9194

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT ENHANCED WATERSHED MANAGEMENT PROGRAMS

Final Program Environmental Impact Report

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County of Los Angeles
Department of Public Works

April 2015

ESA

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Acronym List

AB	Assembly Bill
ACS	American Community Survey
AGB	Alamitos Gap Barrier
AOA	Air Operations Area
AQMP	Air Quality Management Plan
AR4	IPCC Fourth Assessment Report
ARMR	Archaeological Resource Management Reports
ASBS	Areas of Special Biological Significance
ASTM	American Society for Testing and Materials
ASTs	Aboveground Storage Tanks
ATCM	Airborne Toxics Control Measure
B.P.	Before Present
BACT	Best Available Control Technology
BAU	Business As-usual
BMP	Best Management Practices
BMPs	Best Management Practices
BWER	Ballona Wetlands Ecological Reserve
C1-C4	Chlordane (tissue), Chrysene
CAA	Clean Air Act
CAAA	CAA Amendments of 1990
CAAQS	California Ambient Air Quality Standards
Cal/OSHA	California Division of Occupational Safety and Health
CalARP	California Accidental Release Prevention
CalEPA	California Environmental Protection Agency
CARB	California Air Resources Board
CB	Catch Basin
CBC	California Building Code
CCAA	California Clean Air Act
CCAP	Community Climate Action Plan
CCAT	California Climate Action Team
CCC	California Coastal Commission
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CDP	Coastal Development Permit
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFCs	Chlorofluorocarbons
CFR	Code of Federal Regulations
CGP	Construction General Permit
CH4	Methane
CHLs	California Historical Landmarks
CIRS	Coastal Interceptor Relief Sewer
CIWMB	California Integrated Waste Management Board
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	Carbon Monoxide
CO2	Carbon Dioxide
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources

Acronym List (cont.)

CWA	Clean Water Act
DGSG	Dominguez Channel Spreading Grounds
DHS	Department of Health Services
DNL	Day-Night Average Noise Level
DOT	Department of Transportation
DTSC	Department of Toxic Substances Control
EIR	environmental impact report
ERP	Emergency Response Plan
ESA	Environmental Site Assessment
ET	Evapotranspiration
EWMP	Enhanced Watershed Management Program
FAA	Federal Aviation Administration
FESA	Federal Endangered Species Act
FHSZs	Fire Hazard Severity Zones
FMMP	Farmland Mapping and Monitoring Program
GHG	Greenhouse Gas
GWP	Global Warming Potential
HAPs	Hazardous Air Pollutants
HFCs	Hydrofluorocarbons
HMBP	Hazardous Materials Business Plan
HR	Hydrologic Region
HVAC	Heating, Ventilation, and Air Conditioning
IC/ID	Illicit Connection / Illicit Discharges
IPCC	Intergovernmental Panel on Climate Change
IRAs	Identified Resource Areas
JWPCP	Joint Water Pollution Control Plant
LACFCD	Los Angeles County Flood Control District
LACFD	Los Angeles County Fire Department
LACOE	Los Angeles County Office of Education
LACSD	Los Angeles County Sanitation Districts
LARWQCB	Los Angeles Regional Water Quality Control Board
LASD	Los Angeles County Sheriff's Department
LAUSD	Los Angeles Unified School District
LCFS	Low Carbon Fuel Standard
LCPs	Local Coastal Programs
LFD	Low-Flow Diversion
LID	Low-Impact Development
LOS	Level of Service
LST	Localized Significance Threshold
LUSTs	Leaking Underground Storage Tanks
MACT	Maximum Achievable Control Technology
MBTA	Migratory Bird Treaty Act
MCM	Minimum Control Measure
ML	Richter Local Magnitude
MMRP	Mitigation Monitoring and Reporting Program
MMT	Million Metric Tons
MOU	Memorandum of Understanding
MPO	Metropolitan Planning Organization
MRZs	Mineral Resource Zones
MS4	Municipal Separate Storm Sewer System

Acronym List (cont.)

N2O	Nitrous Oxide
NAAQS	National Ambient Air Quality Standards
NCCP/HCP	Natural Community Conservation Planning/Habitat Conservation Plan
NESHAPs	National Emission Standards for Hazardous Air Pollutants
NH3	Ammonia
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO	Nitric Oxide
NO2	Nitrogen Dioxide
NOI	Notice of Intent
NOP	Notice of Preparation
NOX	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
OEHHA	Office of Environmental Health Hazard Assessment
OES	Office of Emergency Services
OPR	Office of Planning and Research
OSHA	Office of Safety and Health Administration
P-C	Production-Consumption
PEIR	Program Environmental Impact Report
PFCs	Perfluorocarbons
PGA	Peak Ground Acceleration
PHI	Points of Historical Interest
PM10	Particulate Matter (10 micrometers or less)
PM2.5	Particulate Matter (2.5 micrometers or less)
PPV	Peak Particle Velocity
PRDs	Permit Registration Documents
PSD	Prevention of Significant Deterioration
PVC	Polyvinyl Chloride
RAA	Reasonable Assurance Analysis
RCRA	Resource Conservation and Recovery Act
RMP	Risk Management Plan
RMS	Root Mean Square
ROG	Reactive Organic Gases
RWLs	Receiving Water Limitations
RWQCB	Regional Water Quality Control Board
RWQCBs	Regional Water Quality Control Boards
SAR	Second Assessment Report
SB	Senate Bill
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SEAs	Significant Ecological Areas
SF6	Sulfur Hexafluoride
SIP	State Implementation Plan
SLIC	Spills, Leaks, Investigations, and Cleanups Program
SMARA	State Surface Mining and Reclamation Act
SMURRF	Santa Monica Urban Runoff Recycling Facility
SO2	Sulfur Dioxide
SO3	Sulfur Trioxide
SO4	Sulfates

Acronym List (cont.)

SOX	Sulfur Oxides
SPCC	Spill Prevention, Control and Countermeasure
SVP	Society for Vertebrate Paleontology
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
SZs	Scientific Resource Zones
TAC	Technical Advisory Committee
TACs	Toxic Air Contaminants
TDS	Total Dissolved Solids
TMDLs	Total Maximum Daily Loads
UCMP	University of California Museum of Paleontology
ULSD	Ultra Low Sulfur Diesel
UNFCCC	United Nations Framework Convention on Climate Change
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USTs	Underground Storage Tanks
UWMP	Urban Water Management Plan
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compound
WCBB	West Coast Basin Barrier Project
WDRs	Waste Discharge Requirements
WMA	Watershed Management Area
WMG	Watershed Management Group
WMP	Watershed Management Program
WRP	Water Reclamation Plants
WWII	World War II

CHAPTER 10 FINAL EIR PURPOSE AND ENVIRONMENTAL REVIEW PROCESS

10.1 Purpose

As defined by Section 15050 of the *California Environmental Quality Act (CEQA) Guidelines*, the Los Angeles County Flood Control District (LACFD) is serving as "Lead Agency" for the preparation of the Program Environmental Impact Report (PEIR) for implementation of the Enhanced Watershed Management Programs (EWMPs). The Final PEIR presents the environmental information and analyses that have been prepared for the proposed program, including comments received addressing the adequacy of the Draft PEIR, and responses to those comments. The Final PEIR—which includes the Draft PEIR, responses to comments and clarifications and modifications—will be used by the Board of Supervisors in the decision-making process for the proposed program.

10.2 Environmental Review Process

Public Circulation

A Notice of Preparation (NOP)/Initial Study (SCH No. 2014081106) was circulated for a 30-day public review period beginning on August 29, 2014. Twenty (20) individual written comment letters were received and used in the preparation of the Draft PEIR. Following the preparation of the Draft PEIR, eight other comment letters were later identified as comments submitted during the NOP public review period. These comment letters did not include any new comment topics that the existing identified NOP comments, and have since been added to Table 1.1 in Chapter 12, *Clarifications and Modifications* of this PEIR. The Draft PEIR for the proposed project was initially circulated for a 45-day public review period beginning on January 21, 2015 and ending on March 9, 2015. Per an announcement via e-mail blast on March 6, the comment period was extended through March 16, 2015 at 5PM. A total of 46 individual written comment letters were received on the Draft PEIR.

Section 15088 of the *CEQA Guidelines* requires that the lead agency evaluate comments on environmental issues received from persons and agencies that reviewed the Draft PEIR and prepare a written response addressing each of the comments received. The response to comments is contained in this document—Volume 2, Chapter 11 of the Final PEIR. Volumes 1 and 2 together constitute the Final PEIR. A list of agencies and interested parties who have commented on the Draft PEIR is provided below. A copy of each numbered comment letter and a lettered response to each comment are provided in Chapter 11, *Response to Comments*, of this Final PEIR.

The following agencies, organizations and individuals submitted written comments on the Draft PEIR.

Agencies

City of Baldwin Park Department of Public Works – January 21, 2015 (Comment Letter 1)

Culver City Department of Public Works – February 13, 2015 (Comment Letter 2)

City of Baldwin Park Department of Public Health – February 23, 2015 (Comment Letter 3)

Metropolitan Water District – February 25, 2015 (Comment Letter 4)

City of Inglewood Public Works Department – March 2, 2015 (Comment Letter 5)

City of Los Angeles Sanitation District – March 2, 2015 (Comment Letter 6)

Los Angeles Regional Water Quality Control Board– March 6, 2015 (Comment Letter 7)

City of West Hollywood – March 9, 2015 (Comment Letter 8)

County of Los Angeles Department of Parks and Recreation – March 10, 2015 (Comment Letter 9)

Central Basin Municipal Water District – March 12, 2015 (Comment Letter 10)

City of Malibu – March 16, 2015 (Comment Letter 11)

State Clearinghouse – March 17, 2015 (Comment Letter 12)

City of Santa Monica – March 12, 2015 (Comment Letter 45)

Organizations

Westwood Gardens Civic Association – March 1, 2015 (Comment Letter 13)

Arcadia Historical Society – March 3, 2015 (Comment Letter 14)

Kellogg Garden Products – March 4, 2015 (Comment Letter 15)

Los Angeles Water Keeper – March 9, 2015 (Comment Letter 16)

Topanga Creek Watershed Committee – March 9, 2015 (Comment Letter 17)

Monrovia –March 11, 2015 (Comment Letter 18)

California Native Plant Society – March 16, 2015 (Comment Letter 19)

Sierra Club, Angeles Chapter – March 17, 2015 (Comment Letter 20)

Interested Individuals

Connie Heflin – February 10, 2015 (Comment Letter 21)

Harry Heflin – February 13, 2015 (Comment Letter 22)

Leelee Doughty – February 24, 2015 (Comment Letter 23)

Jonathan Weiss – February 24, 2015 (Comment Letter 24)

George Brumder – February 24, 2015 (Comment Letter 25)

Pamela Warner – February 26, 2015 (Comment Letter 26)

Kathleen BonEske – March 2, 2015 (Comment Letter 27)

Dan Foliart – March 2, 2015 (Comment Letter 28)

Catherine Heinlein – March 2, 2015 (Comment Letter 29)

Andy Edmonds – March 3, 2015 (Comment Letter 30)

Shake Manigonian – March 3, 2015 (Comment Letter 31)

Gina Shaw – March 3, 2015 (Comment Letter 32)

Chris and Gloria Cox – March 4, 2015 (Comment Letter 33)

Margaret Page – March 4, 2015 (Comment Letter 34)

Virginia Stein – March 4, 2015 (Comment Letter 35)

Martini Arden – March 5, 2015 (Comment Letter 36)

Kristine Hannibal – March 5, 2015 (Comment Letter 37)

Emily Rosedale-Kousoulis – March 8, 2015 (Comment Letter 38)

Margaraux Viera – March 8, 2015 (Comment Letter 39)

Robin Kirk – March 9, 2015 (Comment Letter 40)

Joyce Dillard – March 16, 2015 (Comment Letter 41)

Rex Frankel – March 16, 2015 (Comment Letter 42)

Theresa Brady – March 18, 2015 (Comment Letter 43)

Enrique Huerta (Comment Letter 44)

Sarah Hays – February 27, 2015 (Comment Letter 46)

Public Meetings, Newspaper Ads and E-mails

LACFCD held 6 community meetings on January 29 and February 3, 5, 10, 11 and 17, 2015 to discuss the Draft PEIR analysis and alternatives. The six public meetings that took place at 6PM each night listed are as follows:

- Public Meeting 1 (Florence-Firestone Service Center – January 29, 2015)
- Public Meeting 2 (LA County Fire Camp – February 3, 2015)
- Public Meeting 3 (San Pedro Service Center – February 5, 2015)

- Public Meeting 4 (Topanga Library – February 10, 2015)
- Public Meeting 5 (Hacienda Heights Community Center – February 11, 2015)
- Public Meeting 6 (East Los Angeles Library – February 17, 2015)

The general topics of oral public comments made at these meetings were transcribed and presented in Section 11.3 of Chapter 11, *Response to Comments*, of this Final PEIR. As the lead agency under CEQA, LACFCD provided responses to the comments received on the Draft PEIR.

A summary of the PEIR was included in the following publications:

- LA Times (legal notice – 1/29)
- The Signal (legal notice – 1/23)
- Arcadia Weekly (legal notice – 1/26)
- Eastern Group Publications (legal notice – 1/29)
- Santa Monica Daily Press (legal notice – 1/28, website ad – 2/5, print ad – 2/6 through 2/12)
- San Gabriel Valley Tribune (legal notice – 2/9, website ad – 2/8, print ad – 2/9 through 2/12)
- Topanga Messenger (website ad – 2/4 through 3/4, print ad – 2/12)
- Malibu Times (legal notice – 2/11, website ad – 2/5 through 3/5)

CHAPTER 11 RESPONSE TO COMMENTS

11.1 REQUIREMENTS FOR RESPONDING TO COMMENTS ON A DRAFT EIR

Lead agencies are required to evaluate all comments on environmental issues received on the Draft PEIR and prepare a written response pursuant to CEQA Guidelines Section 15088. Written responses should address the environmental issue(s) raised and provide a detailed response. Rationale must be provided when specific comments or suggestions (e.g., additional mitigation measures) are not accepted. In addition, the written response must be a good faith and reasoned analysis. As long as a good faith effort at full disclosure is made in the EIR (CEQA Guidelines Section 15204), lead agencies need only to respond to significant environmental issues associated with the project and do not need to provide all the information requested by commenters.

CEQA Guidelines Section 15204 recommends that commenters provide detailed comments that focus on the sufficiency of the Draft PEIR in identifying and analyzing the possible impacts on the environment and ways in which the significant effects of the project might be avoided or mitigated. CEQA Guidelines Section 15204 also notes that commenters should provide an explanation and evidence supporting their comments. Pursuant to CEQA Guidelines Section 15064, an effect shall not be considered significant in the absence of substantial evidence.

CEQA Guidelines Section 15088 also recommends that where the response to comments results in revisions to the Draft PEIR, those revisions should be noted as a revision to the Draft PEIR or in a separate section of the Final EIR. Chapter 12, *Clarifications and Modifications,* outlines the revisions to the Draft PEIR.

11.2 COMMENTS AND RESPONSE TO COMMENTS

This section responds to those comments received that specifically pertain to the scope and content of the Draft PEIR. The written comment letters received by the County are included at the beginning of each response.

Where comments have prompted changes to text in the Draft EIR, the new text is provided in indented paragraphs showing additions in <u>underline</u> and deletions in ~~strikethrough~~ text. These changes have been compiled in Chapter 12. Where stated in the responses that implementation of mitigation measures would reduce potentially significant impacts to less than significant levels, it is assumed that the agencies implementing the projects will employ the mitigation as well. As noted in the Draft EIR on page 1-4, "Each implementing agency would determine the significance after mitigation for potential impacts of their proposed projects."

Paige Anderson

To: Crumpacker, Andrea
Subject: RE: Letter of support for PEIR to Eval.EWMPs

-----Original Message-----
From: David Lopez [mailto:DLopez@baldwinpark.com]
Sent: Wednesday, January 21, 2015 6:21 PM
To: Linda Lee Miller
Subject: Letter of support for PEIR to Eval.EWMPs

Linda,

Please see attached. I'll also send via e-mail.

David Lopez
Associate Engineer

City of Baldwin Park, DPW
14403 East Pacific Avenue
Baldwin Park, CA 91706

Gen. (626) 813-5255
Dir. (626) 960-4011 ext. 458
Fax. (626) 962-2625

BALDWIN
P · A · R · K

January 21, 2015

Gregg BeGell, P.E.
County of Los Angeles Department of Public Works
900 South Fremont Avenue, 5th Floor
Alhambra, CA 91803

Subject: Support for LACFCD Program EIR to Evaluate Enhanced Watershed Management Programs (EWMPs)

Dear Mr. BeGell:

The City of Baldwin Park supports the development of programs that improve water quality.

The Los Angeles County Flood Control District is preparing a Program Environmental Impact Report (PEIR) to evaluate the proposed Enhanced Watershed Management Programs (EWMPs) that are being developed to improve water quality in Los Angeles County. The PEIR is an Advanced Planning Document describing details of the Countywide water quality program (EWMPs) being launched in partnership with Baldwin Park and other municipalities in the County to comply with new MS4 Permit. Advanced Planning improves public awareness and government transparency and provides for a higher level assessment of policy decisions prior to the consideration of individual projects.

The City of Baldwin Park has reviewed the Draft PEIR and agrees with its conclusions regarding the impacts of the proposed EWMPs on the environment and its proposed mitigation measures. The City is writing to offer its support for the implementation of EWMPs to achieve compliance with the MS4 Permit and to encourage the certification of the Program Environmental Impact Report (PEIR) developed by the Los Angeles County Flood Control District (LACFCD).

Sincerely,

D-Wall

Daniel Wall, P.E.
Director of Public Works

CITY OF BALDWIN PARK · 14403 EAST PACIFIC AVENUE · BALDWIN PARK · CA · 91706 · (626) 960-4011 FAX (626) 962-2625

Response to Comment Letter 1 (City of Baldwin Park Department of Public Works – January 21, 2015)

Response to Comment 1-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The commenter's support for the PEIR is noted.

Paige Anderson

To: Crumpacker, Andrea
Subject: RE: Culver City - Letter of Support for PEIR (EWMPs)

From: Finton, Steven [mailto:Steven.Finton@culvercity.org]
Sent: Friday, February 13, 2015 11:31 AM
To: Gregg Begell
Cc: Herbertson, Charles; Skinner, Damian; Young, Kaden; TJ Moon
Subject: Culver City - Letter of Support for PEIR (EWMPs)

Gregg-
Attached is a letter indicating our support for the EWMP PEIR.
Thank you

Steven Finton, P.E.
Senior Civil Engineer
City of Culver City
Environmental Programs and Operations
Public Works Department
9505 Jefferson Bl. 90232
(310) 253-6457 Steven.Finton@CulverCity.org

Culver CITY
PUBLIC WORKS DEPARTMENT
9770 Culver Boulevard, Culver City, California 90232

Charles D. Herbertson, P.E., LS
Public Works Director and
City Engineer

Damian Skinner
Environmental Programs and
Operations Manager

(310) 253-5600

FAX (310) 253-5626

February 12, 2015

Gregg BeGell, P.E.
County of Los Angeles Department of Public Works
900 South Fremont Avenue, 5th Floor
Alhambra, CA 91803

To Mr. BeGell:

The Los Angeles County Flood Control District is preparing a Program Environmental Impact Report (PEIR) to evaluate proposed Enhanced Watershed Management Programs (EWMPs) being developed to comply with the new National Pollutant Discharge Elimination System Permit No. CAS004001 (MS4 Permit). The PEIR is an Advanced Planning Document describing details of twelve EWMPs being developed countywide in partnership with local agencies. Advanced Planning improves public awareness and government transparency and provides for a higher level assessment of policy decisions prior to the consideration of individual projects.

The City of Culver City supports preparation of the PIER by the Los Angeles County Flood Control District.

Yours truly,

Charles Herbertson, P.E.
Public Works Director, City Engineer

Response to Comment Letter 2 (Culver City Department of Public Works – February 13, 2015)

Response to Comment Letter 2-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The commenter's support for the PEIR is noted.

Paige Anderson

To: Crumpacker, Andrea
Subject: RE: Notice of Availability of the Draft Program EIR for the Enhanced Watershed Management Programs-Comments

From: Michelle Tsiebos
Sent: Monday, February 23, 2015 9:21 AM
To: Gregg Begell
Subject: Notice of Availability of the Draft Program EIR for the Enhanced Watershed Management Programs-Comments

Dear Mr. BeGell,

Thank you for the opportunity to comment on the Enhanced Watershed Management Programs Draft EIR. The Los Angeles County Department of Public Health-Environmental Health Division has reviewed the document, and offers the following comment:

In the Hydrological Resources Chapter, in section 3.8-2 on the impact on Groundwater it is stated: **"The proposed project would result in higher groundwater levels and could potentially affect groundwater quality."**
We agree with the above statement, but we noticed the question of the impact on existing and future Onsite Wastewater Treatment Systems (OWTS) was not addressed. OWTS are still the only method of wastewater disposal in some areas of the County of Los Angeles.

Please feel free to contact me for any questions regarding this comment.

Thank you.

Michelle Tsiebos, REHS, DPA
Environmental Health Specialist IV
Land Use Program
Environmental Health Services
Department of Public Health
5050 Commerce Drive
Baldwin Park, CA 91706
Ph. (626) 430-5382
Fax. (626) 813-3016

Response to Comment Letter 3 (City of Baldwin Park Department of Public Health – February 23, 2015)

Response to Comment 3-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The PEIR evaluates potential impacts of higher groundwater levels on groundwater quality on Page 3.8-5. As noted in the PEIR, Regional BMPs would recharge stormwater into the groundwater basin and could raise local groundwater levels following major storm events. In areas with shallow groundwater tables or impermeable soils, recharge could result in mounding that affects subsurface infrastructure such as building or bridge foundations. As noted in the comment, OWTS are classified as subsurface infrastructure and could be affected if water was infiltrated adjacent to their location. However, areas within the County where OWTS are used for wastewater treatment (rather than a sewer system) are usually more rural with some exceptions for instance in Malibu. The proposed BMPs would be installed largely but not exclusively in highly urbanized areas. Therefore, OWTS are not expected to be significantly affected by BMP implementation except in certain areas, such as Malibu. However, in response to the comment, Mitigation Measure HYDRO-3 has been modified on page 3.8-36 of the PEIR, as shown below to specifically include an assessment of local OWTS when installing BMPs. Implementation of the mitigation measure would reduce potentially significant impacts to less than significant levels. This modification has been included in Chapter 12, *Clarifications and Modifications* of the Final PEIR. Since the Draft PEIR already identified potentially significant impacts to groundwater quality, the comment does not identify a new significant impact, and the modification to the mitigation measure clarifying that on-site treatment plant systems can be one of many sources of pollution does not trigger recirculation of the Draft PEIR under Section 15088.5 of the *CEQA Guidelines*.

> **HYDRO-3:** Prior to the installation of an infiltration BMP, the Permittee shall conduct a <u>regulatory</u> database review for contaminated groundwater sites within a quarter mile of the proposed infiltration facility. <u>The review shall include locations of on-site wastewater treatment systems that could be affected by the BMP.</u> The Permittee shall identify whether any contaminated groundwater plumes <u>or leach fields</u> are present <u>within close proximity to the BMP location that could be affected by infiltrated water</u> and whether coordination with the local and state environmental protection overseeing agency and responsible party is warranted prior to final design of infiltration facility.

MWD
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Executive Office

February 25, 2015 **Via Mail**

Mr. Gregg BeGell
Project Management Division II
Los Angeles County Flood Control District
900 South Fremont Avenue, 5th Floor
Alhambra, CA 91803

RECEIVED
MAR 03 2015
DEPT. PUBLIC WORKS
PROJECT MANAGEMENT DIVISION II

Dear Mr. BeGell:

Notice of Availability of the Draft Program
Environmental Impact Report for the Enhanced Watershed Management Programs

The Metropolitan Water District of Southern California (Metropolitan) has reviewed the Draft Program Environmental Impact Report for Enhanced Watershed Management Programs (EWMPs) in Los Angeles County, California. The Los Angeles County Flood Control District (LACFCD) is the Lead Agency. An EWMP is one regulatory compliance mechanism for stormwater management under the Los Angeles County Municipal Separate Storm Sewer System (MS4) Permit adopted in 2012 (hereafter referred to as 2012 LA County MS4 Permit). The LACFCD proposes the development of 12 separate EWMPs in their respective watershed groups. The potential benefits from the EWMPs include the following: (1) improved water quality; (2) reduction in the impairment of water bodies for Designated Beneficial Uses; (3) promotion of water conservation and supply; (4) enhanced recreational opportunities; (4) support for public education opportunities; (5) improved local aesthetics; and (6) management of flood risks. Metropolitan commented on the Notice of Preparation for this project in September 2014. This letter contains Metropolitan's comments to the proposed project as a potentially affected agency.

Metropolitan is a public agency and regional water wholesaler. It is comprised of 26 member public agencies serving approximately 18.4 million people in portions of six counties in Southern California, including Los Angeles County. Metropolitan's mission is to provide its 5,200-square-mile service area with adequate and reliable supplies of high-quality water to meet present and future needs in an environmentally and economically responsible way. Metropolitan owns and operates numerous facilities within Los Angeles County including pipelines, a water treatment plant, power plants, dams, reservoirs, and other infrastructure associated with our water conveyance and distribution system.

Metropolitan supports the development and implementation of EWMPs, particularly as watershed management plans can impact supply and promote water conservation. A governor-declared drought has been in effect since January 17, 2014, and agency and public awareness is extremely important in carrying out conservation measures.

The proposed project may impact Metropolitan's ability to dewater its pipelines. As part of a proactive maintenance and refurbishment program, Metropolitan periodically dewaters its treated and raw water pipelines prior to inspection, maintenance, or repair activities. Such periodic inspections and repairs are essential to prevent pipe failures and subsequent damage from high-pressure water releases. These water discharges are short-term in nature and are acknowledged by both the LA County Regional Water Quality Control Board and the State Water Resources Control Board as having a *de minimus,* or low-threat, impact to the environment and aquatic life. As such, these discharges are categorized as "Conditionally Exempt Essential Non-Storm Water Discharges" under the 2012 LA County MS4 Permit and are authorized under the recently adopted Statewide NPDES Permit for Drinking Water System Discharges to Waters of the United States (Order WQ 2014-0194-DWQ).

Metropolitan requests that LACFCD and its co-permitees continue to allow for periodic discharges by potable water systems into the MS4 under the proposed EWMPs. These *de minimus,* low-threat discharges are specifically called out as permissible under the 2012 LA County MS4 and Statewide Drinking Water System Discharges permits. Metropolitan will continue to follow industry-accepted best management practices (BMPs) for its potable water system discharges. BMPs include, but are not limited to, the following: (a) advanced notification of LACFCD 72 hours prior to all planned discharges greater than 100,000 gallons and as soon as possible after an unplanned discharge greater than 100,000 gallons; (b) dechlorination; (c) monitoring for pollutants of concern; and (d) recordkeeping (e.g., date, time, and location of discharge, discharge pathway, receiving water, total number of gallons discharged, BMPs used, etc.).

Based on a review of the proposed project boundaries, the proposed project has potential to impact Metropolitan facilities. Metropolitan must be allowed to maintain its rights-of-way and requires unobstructed access to its facilities in order to maintain and repair its system. Any future design plans associated with this project should be submitted to the attention of Metropolitan's Substructures Team. Approval of the project should be contingent on Metropolitan's approval of design plans for portions of the proposed project that could impact its facilities.

Detailed prints of drawings of Metropolitan's pipelines and rights-of-way may be obtained by calling Metropolitan's Substructures Information Line at (213) 217-6564. To assist the applicant in preparing plans that are compatible with Metropolitan's facilities and easements, we have enclosed a copy of the "Guidelines for Developments in the Area of Facilities, Fee Properties, and/or Easement of The Metropolitan Water District of Southern California." Please note that all submitted designs or plans must clearly identify Metropolitan's facilities and rights-of-way.

We appreciate the opportunity to provide input to your planning process and we look forward to receiving future documentation and plans for this project. For further assistance, please contact Ms. Michelle Morrison at (213) 217-7906.

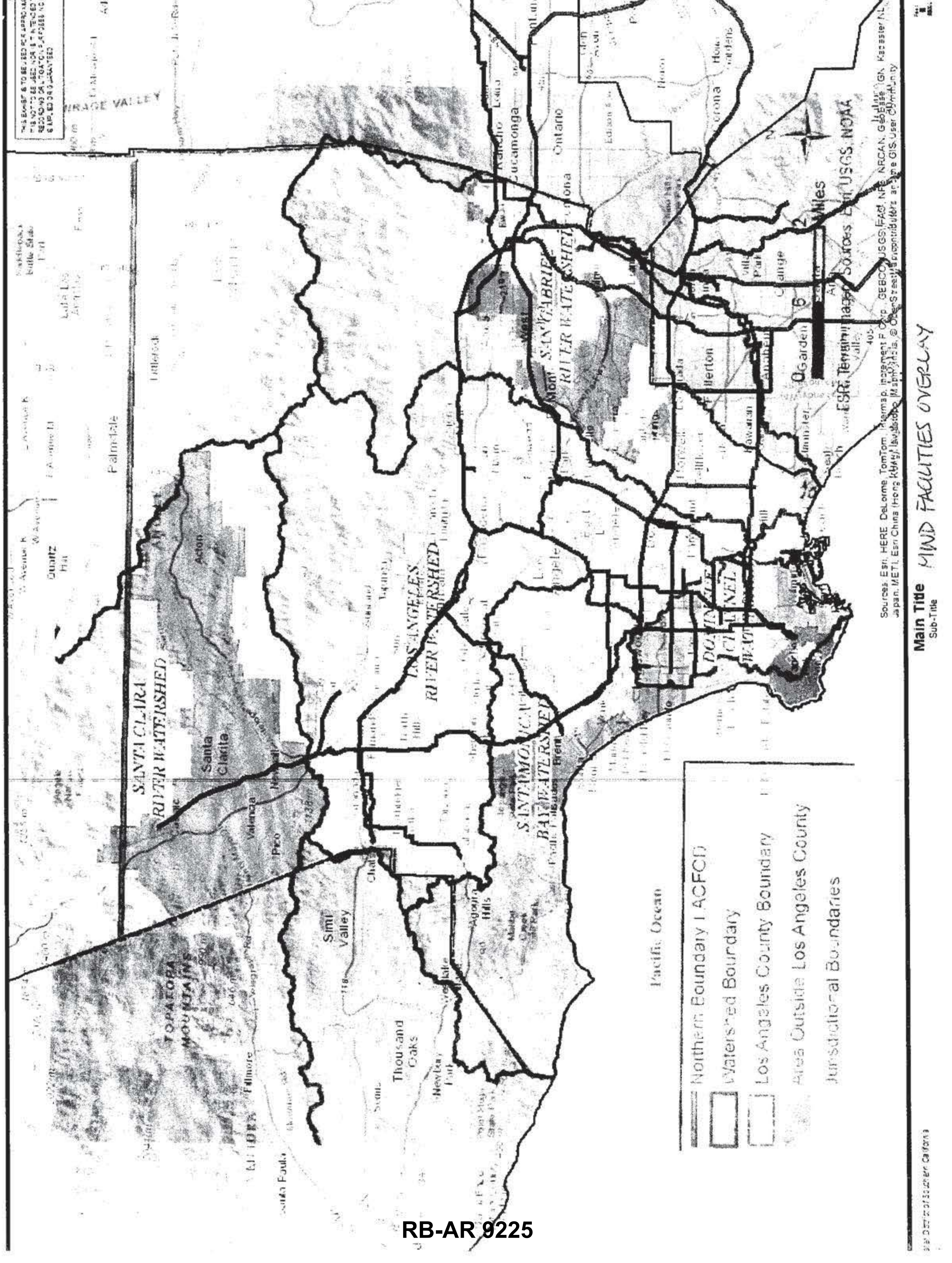
Very truly yours,

for

Deirdre West
Manager, Environmental Planning Team

J:\Environmental Planning&Compliance\COMPLETED JOBS\February2015\EPT Job No. 20150201EXT

Enclosures: Planning Guidelines and Map of Metropolitan Facilities in Project Vicinity


SANTA CLARA RIVER WATERSHED
LOS ANGELES RIVER WATERSHED
SAN GABRIEL RIVER WATERSHED
SANTA MONICA BAY WATERSHED
DOMINGUEZ CHANNEL WATERSHED
Pacific Ocean
Palmdale
Santa Clarita
Acton
Simi Valley
Thousand Oaks
Rancho Cucamonga
Ontario
Corona
TOPATOPA MOUNTAINS
Northern Boundary LACFCD
Watershed Boundary
Los Angeles County Boundary
Area Outside Los Angeles County
Jurisdictional Boundaries
Main Title
Sub-Title
Sources: Esri, HERE, DeLorme, USGS, NOAA
Miles
MIND FACILITIES OVERLAY

Guidelines for Developments in the
Area of Facilities, Fee Properties, and/or Easements
of The Metropolitan Water District of Southern California

1. Introduction

a. The following general guidelines should be followed for the design of proposed facilities and developments in the area of Metropolitan's facilities, fee properties, and/or easements.

b. We require that 3 copies of your tentative and final record maps, grading, paving, street improvement, landscape, storm drain, and utility plans be submitted for our review and written approval as they pertain to Metropolitan's facilities, fee properties and/or easements, prior to the commencement of any construction work.

2. Plans, Parcel and Tract Maps

The following are Metropolitan's requirements for the identification of its facilities, fee properties, and/or easements on your plans, parcel maps and tract maps:

a. Metropolitan's fee properties and/or easements and its pipelines and other facilities must be fully shown and identified as Metropolitan's on all applicable plans.

b. Metropolitan's fee properties and/or easements must be shown and identified as Metropolitan's with the official recording data on all applicable parcel and tract maps.

c. Metropolitan's fee properties and/or easements and existing survey monuments must be dimensionally tied to the parcel or tract boundaries.

d. Metropolitan's records of surveys must be referenced on the parcel and tract maps.

3. Maintenance of Access Along Metropolitan's Rights-of-Way

a. Proposed cut or fill slopes exceeding 10 percent are normally not allowed within Metropolitan's fee properties or easements. This is required to facilitate the use of construction and maintenance equipment, and provide access to its aboveground and belowground facilities.

b. We require that 16-foot-wide commercial-type driveway approaches be constructed on both sides of all streets crossing Metropolitan's rights-of-way. Openings are required in any median island. Access ramps, if necessary, must be at least 16-feet-wide. Grades of ramps are normally not allowed to exceed 10 percent. If the slope of an access ramp must exceed 10 percent due to the topography, the ramp must be paved. We require a 40-foot-long level area on the driveway approach to access ramps where the ramp meets the street. At Metropolitan's fee properties, we may require fences and gates.

c. The terms of Metropolitan's permanent easement deeds normally preclude the building or maintenance of structures of any nature or kind within its easements, to ensure safety and avoid interference with operation and maintenance of Metropolitan's pipelines or other facilities. Metropolitan must have vehicular access along the easements at all times for inspection, patrolling, and for maintenance of the pipelines and other facilities on a routine basis. We require a 20-foot-wide clear zone around all above-ground facilities for this routine access. This clear zone should slope away from our facility on a grade not to exceed 2 percent. We must also have access along the easements with construction equipment. An example of this is shown on Figure 1.

d. The footings of any proposed buildings adjacent to Metropolitan's fee properties and/or easements must not encroach into the fee property or easement or impose additional loading on Metropolitan's pipelines or other facilities therein. A typical situation is shown on Figure 2. Prints of the detail plans of the footings for any building or structure adjacent to the fee property or easement must be submitted for our review and written approval as they pertain to the pipeline or other facilities therein. Also, roof eaves of buildings adjacent to the easement or fee property must not overhang into the fee property or easement area.

e. Metropolitan's pipelines and other facilities, e.g. structures, manholes, equipment, survey monuments, etc. within its fee properties and/or easements must be protected from damage by the easement holder on Metropolitan's property or the property owner where Metropolitan has an easement, at no expense to Metropolitan. If the facility is a cathodic protection station it shall be located prior to any grading or excavation. The exact location, description and way of protection shall be shown on the related plans for the easement area.

4. Easements on Metropolitan's Property

a. We encourage the use of Metropolitan's fee rights-of-way by governmental agencies for public street and utility purposes, provided that such use does not interfere with Metropolitan's use of the property, the entire width of the property is accepted into the agency's public street system and fair market value is paid for such use of the right-of-way.

b. Please contact the Director of Metropolitan's Right of Way and Land Division, telephone (213) 250-6302, concerning easements for landscaping, street, storm drain, sewer, water or other public facilities proposed within Metropolitan's fee properties. A map and legal description of the requested easements must be submitted. Also, written evidence must be submitted that shows the city or county will accept the easement for the specific purposes into its public system. The grant of the easement will be subject to Metropolitan's rights to use its land for water pipelines and related purposes to the same extent as if such grant had not been made. There will be a charge for the easement. Please note that, if entry is required on the property prior to issuance of the easement, an entry permit must be obtained. There will also be a charge for the entry permit.

5. Landscaping

Metropolitan's landscape guidelines for its fee properties and/or easements are as follows:

a. A green belt may be allowed within Metropolitan's fee property or easement.

b. All landscape plans shall show the location and size of Metropolitan's fee property and/or easement and the location and size of Metropolitan's pipeline or other facilities therein.

c. Absolutely no trees will be allowed within 15 feet of the centerline of Metropolitan's existing or future pipelines and facilities.

d. Deep-rooted trees are prohibited within Metropolitan's fee properties and/or easements. Shallow-rooted trees are the only trees allowed. The shallow-rooted trees will not be permitted any closer than 15 feet from the centerline of the pipeline, and such trees shall not be taller than 25 feet with a root spread no greater than 20 feet in diameter at maturity. Shrubs, bushes, vines, and ground cover are permitted, but larger shrubs and bushes should not be planted directly over our pipeline. Turf is acceptable. We require submittal of landscape plans for Metropolitan's prior review and written approval. (See Figure 3).

e. The landscape plans must contain provisions for Metropolitan's vehicular access at all times along its rights-of-way to its pipelines or facilities therein. Gates capable of accepting Metropolitan's locks are required in any fences across its rights-of-way. Also, any walks or drainage facilities across its access route must be constructed to AASHTO H-20 loading standards.

f. Rights to landscape any of Metropolitan's fee properties must be acquired from its Right of Way and Land Division. Appropriate entry permits must be obtained prior to any entry on its property. There will be a charge for any entry permit or easements required.

6. <u>Fencing</u>

Metropolitan requires that perimeter fencing of its fee properties and facilities be constructed of universal chain link, 6 feet in height and topped with 3 strands of barbed wire angled upward and outward at a 45 degree angle or an approved equal for a total fence height of 7 feet. Suitable substitute fencing may be considered by Metropolitan. (Please see Figure 5 for details).

7. <u>Utilities in Metropolitan's Fee Properties and/or Easements or Adjacent to Its Pipeline in Public Streets</u>

Metropolitan's policy for the alinement of utilities permitted within its fee properties and/or easements and street rights-of-way is as follows:

a. Permanent structures, including catch basins, manholes, power poles, telephone riser boxes, etc., shall not be located within its fee properties and/or easements.

b. We request that permanent utility structures within public streets, in which Metropolitan's facilities are constructed under the Metropolitan Water District Act, be placed as far from our pipeline as possible, but not closer than 5 feet from the outside of our pipeline.

c. The installation of utilities over or under Metropolitan's pipeline(s) must be in accordance with the requirements shown on the enclosed prints of Drawings Nos. C-11632 and C-9547. Whenever possible we request a minimum of one foot clearance between Metropolitan's pipe and your facility. Temporary support of Metropolitan's pipe may also be required at undercrossings of its pipe in an open trench. The temporary support plans must be reviewed and approved by Metropolitan.

d. Lateral utility crossings of Metropolitan's pipelines must be as perpendicular to its pipeline alinement as practical. Prior to any excavation our pipeline shall be located manually and any excavation within two feet of our pipeline must be done by hand. This shall be noted on the appropriate drawings.

e. Utilities constructed longitudinally within Metropolitan's rights-of-way must be located outside the theoretical trench prism for uncovering its pipeline and must be located parallel to and as close to its rights-of-way lines as practical.

f. When piping is jacked or installed in jacked casing or tunnel under Metropolitan's pipe, there must be at least two feet of vertical clearance between the bottom of Metropolitan's pipe and the top of the jacked pipe, jacked casing or tunnel. We also require that detail drawings of the shoring for the jacking or tunneling pits be submitted for our review and approval. Provisions must be made to grout any voids around the exterior of the jacked pipe, jacked casing or tunnel. If the piping is installed in a jacked casing or tunnel the annular space between the piping and the jacked casing or tunnel must be filled with grout.

g. Overhead electrical and telephone line requirements:

1) Conductor clearances are to conform to the California State Public Utilities Commission, General Order 95, for Overhead Electrical Line Construction or at a greater clearance if required by Metropolitan. Under no circumstances shall clearance be less than 35 feet.

2) A marker must be attached to the power pole showing the ground clearance and line voltage, to help prevent damage to your facilities during maintenance or other work being done in the area.

3) Line clearance over Metropolitan's fee properties and/or easements shall be shown on the drawing to indicate the lowest point of the line under the most adverse conditions including consideration of sag, wind load, temperature change, and support type. We require that overhead lines be located at least 30 feet laterally away from all above-ground structures on the pipelines.

4) When underground electrical conduits, 120 volts or greater, are installed within Metropolitan's fee property and/or easement, the conduits must be incased in a minimum of three inches of red concrete. Where possible, above ground warning signs must also be placed at the right-of-way lines where the conduits enter and exit the right-of-way.

h. The construction of sewerlines in Metropolitan's fee properties and/or easements must conform to the California Department of Health Services Criteria for the Separation of Water Mains and Sanitary Services and the local City or County Health Code Ordinance as it relates to installation of sewers in the vicinity of pressure waterlines. The construction of sewerlines should also conform to these standards in street rights-of- way.

i. Cross sections shall be provided for all pipeline crossings showing Metropolitan's fee property and/or easement limits and the location of our pipeline(s). The exact locations of the crossing pipelines and their elevations shall be marked on as-built drawings for our information.

j. Potholing of Metropolitan's pipeline is required if the vertical clearance between a utility and Metropolitan's pipeline is indicated on the plan to be one foot or less. If the indicated clearance is between one and two feet, potholing is suggested. Metropolitan will provide a representative to assists others in locating and identifying its pipeline. Two-working days notice is requested.

k. Adequate shoring and bracing is required for the full depth of the trench when the excavation encroaches within the zone shown on Figure 4.

l. The location of utilities within Metropolitan's fee property and/or easement shall be plainly marked to help prevent damage during maintenance or other work done in the area. Detectable tape over buried utilities should be placed a minimum of 12 inches above the utility and shall conform to the following requirements:

1) Water pipeline: A two-inch blue warning tape shall be imprinted with:

"CAUTION BURIED WATER PIPELINE"

2) Gas, oil, or chemical pipeline: A two-inch yellow warning tape shall be imprinted with:

"CAUTION BURIED _______ PIPELINE"

3) Sewer or storm drain pipeline: A two-inch green warning tape shall be imprinted with:

"CAUTION BURIED ______ PIPELINE"

4) Electric, street lighting, or traffic signals conduit: A two-inch red warning tape shall be imprinted with:

"CAUTION BURIED _______ CONDUIT"

5) Telephone, or television conduit: A two-inch orange warning tape shall be imprinted with:

"CAUTION BURIED _______ CONDUIT"

m. Cathodic Protection requirements:

1) If there is a cathodic protection station for Metropolitan's pipeline in the area of the proposed work, it shall be located prior to any grading or excavation. The exact location, description and manner of protection shall be shown on all applicable plans. Please contact Metropolitan's Corrosion Engineering Section, located at Metropolitan's F. E. Weymouth Softening and Filtration Plant, 700 North Moreno Avenue, La Verne, California 91750, telephone (714) 593-7474, for the locations of Metropolitan's cathodic protection stations.

2) If an induced-current cathodic protection system is to be installed on any pipeline crossing Metropolitan's pipeline, please contact Mr. Wayne E. Risner at (714) 593-7474 or (213) 250-5085. He will review the proposed system and determine if any conflicts will arise with the existing cathodic protection systems installed by Metropolitan.

3) Within Metropolitan's rights-of-way, pipelines and carrier pipes (casings) shall be coated with an approved protective coating to conform to Metropolitan's requirements, and shall be maintained in a neat and orderly condition as directed by Metropolitan. The application and monitoring of cathodic protection on the pipeline and casing shall conform to Title 49 of the Code of Federal Regulations, Part 195.

4) If a steel carrier pipe (casing) is used:

(a) Cathodic protection shall be provided by use of a sacrificial magnesium anode (a sketch showing the cathodic protection details can be provided for the designers information).

(b) The steel carrier pipe shall be protected with a coal tar enamel coating inside and out in accordance with AWWA C203 specification.

n. All trenches shall be excavated to comply with the CAL/OSHA Construction Safety Orders, Article 6, beginning with Sections 1539 through 1547. Trench backfill shall be placed in 8-inch lifts and shall be compacted to 95 percent relative compaction (ASTM D698) across roadways and through protective dikes. Trench backfill elsewhere will be compacted to 90 percent relative compaction (ASTM D698).

o. Control cables connected with the operation of Metropolitan's system are buried within streets, its fee properties and/or easements. The locations and elevations of these cables shall be shown on the drawings. The drawings shall note that prior to any excavation in the area, the control cables shall be located and measures shall be taken by the contractor to protect the cables in place.

p. Metropolitan is a member of Underground Service Alert (USA). The contractor (excavator) shall contact USA at 1-800-422-4133 (Southern California) at least 48 hours prior to starting any excavation work. The contractor will be liable for any damage to Metropolitan's facilities as a result of the construction.

8. Paramount Right

Facilities constructed within Metropolitan's fee properties and/or easements shall be subject to the paramount right of Metropolitan to use its fee properties and/or easements for the purpose for which they were acquired. If at any time Metropolitan or its assigns should, in the exercise of their rights, find it necessary to remove any of the facilities from the fee properties and/or easements, such removal and replacement shall be at the expense of the owner of the facility.

9. Modification of Metropolitan's Facilities

When a manhole or other of Metropolitan's facilities must be modified to accommodate your construction or reconstruction, Metropolitan will modify the facilities with its forces. This should be noted on the construction plans. The estimated cost to perform this modification will be given to you and we will require a deposit for this amount before the work is performed. Once the deposit is received, we will schedule the work. Our forces will coordinate the work with your contractor. Our final billing will be based on actual cost incurred, and will include materials, construction, engineering plan review, inspection, and administrative overhead charges calculated in accordance with Metropolitan's standard accounting practices. If the cost is less than the deposit, a refund will be made; however, if the cost exceeds the deposit, an invoice will be forwarded for payment of the additional amount.

10. Drainage

a. Residential or commercial development typically increases and concentrates the peak storm water runoff as well as the total yearly storm runoff from an area, thereby increasing the requirements for storm drain facilities downstream of the development. Also, throughout the year water from landscape irrigation, car washing, and other outdoor domestic water uses flows into the storm drainage system resulting in weed abatement, insect infestation, obstructed access and other problems. Therefore, it is Metropolitan's usual practice not to approve plans that show discharge of drainage from developments onto its fee properties and/or easements.

b. If water must be carried across or discharged onto Metropolitan's fee properties and/or easements, Metropolitan will insist that plans for development provide that it be carried by closed conduit or lined open channel approved in writing by Metropolitan. Also the drainage facilities must be maintained by others, e.g., city, county, homeowners association, etc. If the development proposes changes to existing drainage features, then the developer shall make provisions to provide for replacement and these changes must be approved by Metropolitan in writing.

11. Construction Coordination

During construction, Metropolitan's field representative will make periodic inspections. We request that a stipulation be added to the plans or specifications for notification of Mr. __________ of Metropolitan's Operations Services Branch, telephone (213) 250-____, at least two working days prior to any work in the vicinity of our facilities.

12. Pipeline Loading Restrictions

a. Metropolitan's pipelines and conduits vary in structural strength, and some are not adequate for AASHTO H-20 loading. Therefore, specific loads over the specific sections of pipe or conduit must be reviewed and approved by Metropolitan. However, Metropolitan's pipelines are typically adequate for AASHTO H-20 loading provided that the cover over the pipeline is not less than four feet or the cover is not substantially increased. If the temporary cover over the pipeline during construction is between three and four feet, equipment must restricted to that which

imposes loads no greater than AASHTO H-10. If the cover is between two and three feet, equipment must be restricted to that of a Caterpillar D-4 tract-type tractor. If the cover is less than two feet, only hand equipment may be used. Also, if the contractor plans to use any equipment over Metropolitan's pipeline which will impose loads greater than AASHTO H-20, it will be necessary to submit the specifications of such equipment for our review and approval at least one week prior to its use. More restrictive requirements may apply to the loading guideline over the San Diego Pipelines 1 and 2, portions of the Orange County Feeder, and the Colorado River Aqueduct. Please contact us for loading restrictions on all of Metropolitan's pipelines and conduits.

b. The existing cover over the pipeline shall be maintained unless Metropolitan determines that proposed changes do not pose a hazard to the integrity of the pipeline or an impediment to its maintenance.

13. Blasting

a. At least 20 days prior to the start of any drilling for rock excavation blasting, or any blasting, in the vicinity of Metropolitan's facilities, a two-part preliminary conceptual plan shall be submitted to Metropolitan as follows:

b. Part 1 of the conceptual plan shall include a complete summary of proposed transportation, handling, storage, and use of explosions.

c. Part 2 shall include the proposed general concept for blasting, including controlled blasting techniques and controls of noise, fly rock, airblast, and ground vibration.

14. CEQA Requirements

a. When Environmental Documents Have Not Been Prepared

1) Regulations implementing the California Environmental Quality Act (CEQA) require that Metropolitan have an opportunity to consult with the agency or consultants preparing any environmental documentation. We are required to review and consider the environmental effects of the project as shown in the Negative Declaration or Environmental Impact Report (EIR) prepared for your project before committing Metropolitan to approve your request.

2) In order to ensure compliance with the regulations implementing CEQA where Metropolitan is not the Lead Agency, the following minimum procedures to ensure compliance with the Act have been established:

a) Metropolitan shall be timely advised of any determination that a Categorical Exemption applies to the project. The Lead Agency is to advise Metropolitan that it and other agencies participating in the project have complied with the requirements of CEQA prior to Metropolitan's participation.

b) Metropolitan is to be consulted during the preparation of the Negative Declaration or EIR.

c) Metropolitan is to review and submit any necessary comments on the Negative Declaration or draft EIR.

d) Metropolitan is to be indemnified for any costs or liability arising out of any violation of any laws or regulations including but not limited to the California Environmental Quality Act and its implementing regulations.

b. <u>When Environmental Documents Have Been Prepared</u>

If environmental documents have been prepared for your project, please furnish us a copy for our review and files in a timely manner so that we may have sufficient time to review and comment. The following steps must also be accomplished:

1) The Lead Agency is to advise Metropolitan that it and other agencies participating in the project have complied with the requirements of CEQA prior to Metropolitan's participation.

2) You must agree to indemnify Metropolitan, its officers, engineers, and agents for any costs or liability arising out of any violation of any laws or regulations including but not limited to the California Environmental Quality Act and its implementing regulations.

15. <u>Metropolitan's Plan-Review Cost</u>

a. An engineering review of your proposed facilities and developments and the preparation of a letter response

giving Metropolitan's comments, requirements and/or approval that will require 8 man-hours or less of effort is typically performed at no cost to the developer, unless a facility must be modified where Metropolitan has superior rights. If an engineering review and letter response requires more than 8 man-hours of effort by Metropolitan to determine if the proposed facility or development is compatible with its facilities, or if modifications to Metropolitan's manhole(s) or other facilities will be required, then all of Metropolitan's costs associated with the project must be paid by the developer, unless the developer has superior rights.

b. A deposit of funds will be required from the developer before Metropolitan can begin its detailed engineering plan review that will exceed 8 hours. The amount of the required deposit will be determined after a cursory review of the plans for the proposed development.

c. Metropolitan's final billing will be based on actual cost incurred, and will include engineering plan review, inspection, materials, construction, and administrative overhead charges calculated in accordance with Metropolitan's standard accounting practices. If the cost is less than the deposit, a refund will be made; however, if the cost exceeds the deposit, an invoice will be forwarded for payment of the additional amount. Additional deposits may be required if the cost of Metropolitan's review exceeds the amount of the initial deposit.

16. Caution

We advise you that Metropolitan's plan reviews and responses are based upon information available to Metropolitan which was prepared by or on behalf of Metropolitan for general record purposes only. Such information may not be sufficiently detailed or accurate for your purposes. No warranty of any kind, either express or implied, is attached to the information therein conveyed as to its accuracy, and no inference should be drawn from Metropolitan's failure to comment on any aspect of your project. You are therefore cautioned to make such surveys and other field investigations as you may deem prudent to assure yourself that any plans for your project are correct.

17. Additional Information

Should you require additional information, please contact:

Civil Engineering Substructures Section
Metropolitan Water District
of Southern California
P.O. Box 54153
Los Angeles, California 90054-0153
(213) 217-6000

JEH/MRW/lk

Rev. January 22, 1989

Encl.

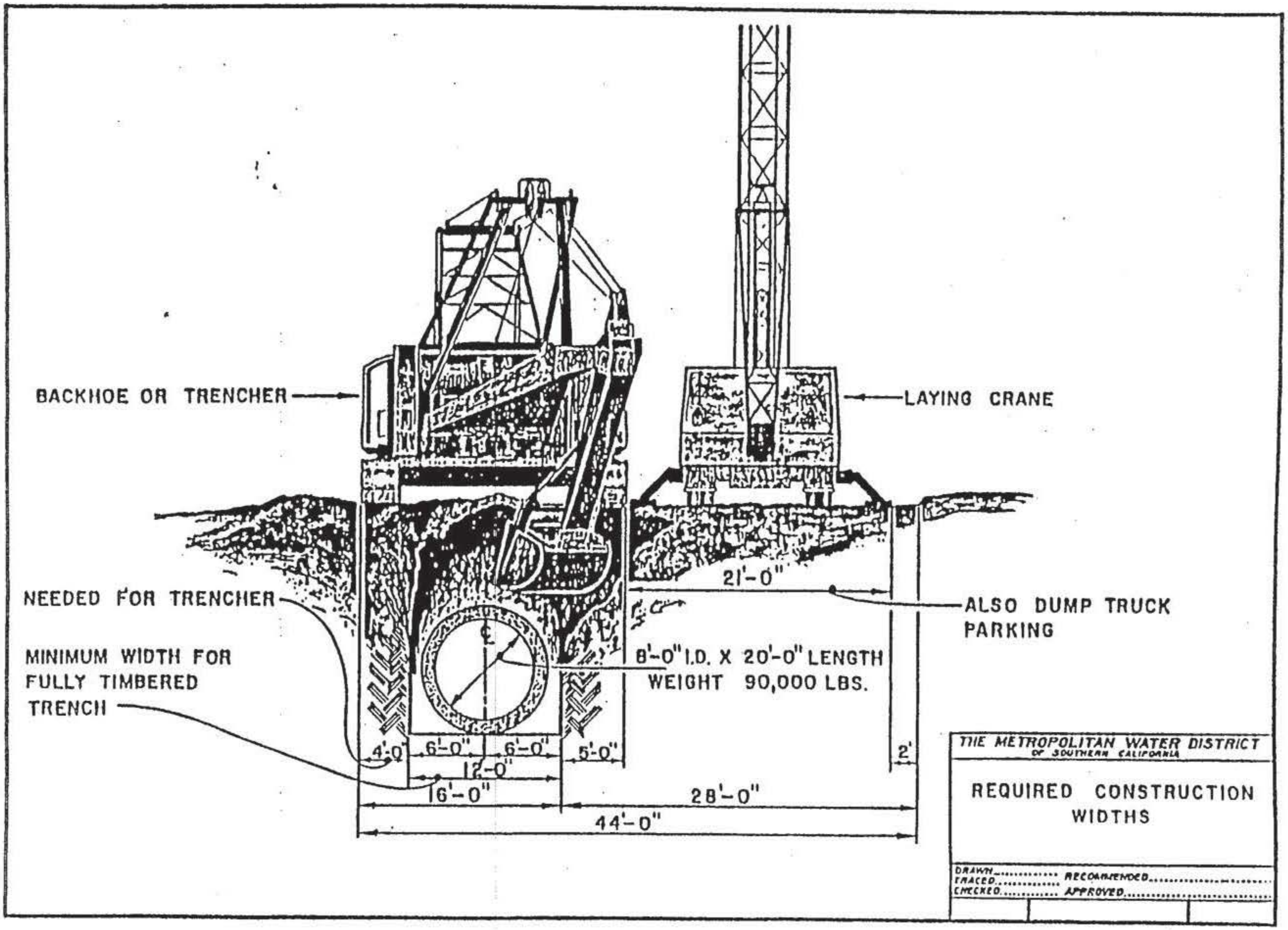
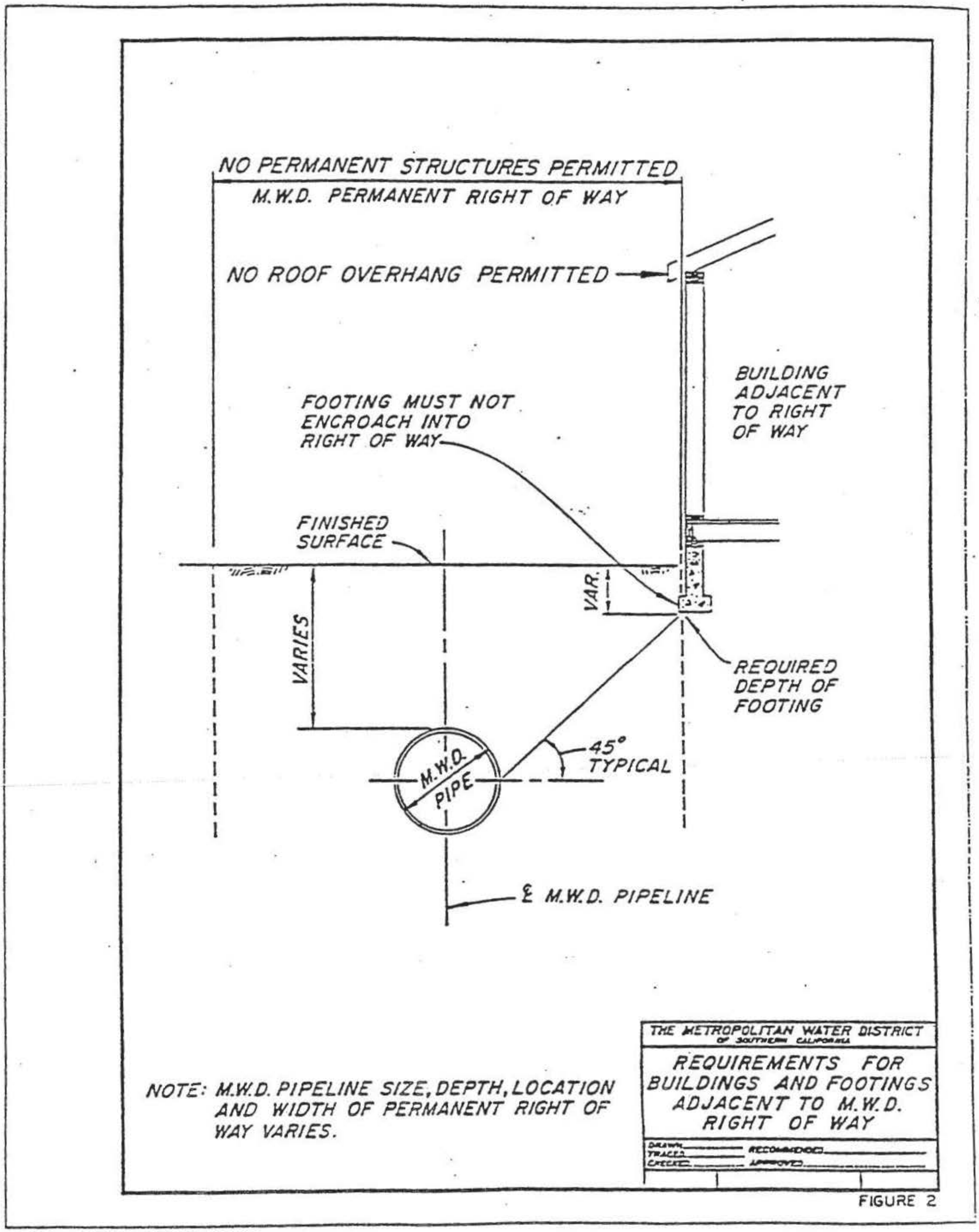


FIGURE 1

FORM NO 20 9 1000 11-60 P.O. NO. 66-0007

Comment Letter 4


NO PERMANENT STRUCTURES PERMITTED
M.W.D. PERMANENT RIGHT OF WAY
NO ROOF OVERHANG PERMITTED
BUILDING ADJACENT TO RIGHT OF WAY
FOOTING MUST NOT ENCROACH INTO RIGHT OF WAY
FINISHED SURFACE
VAR.
VARIES
REQUIRED DEPTH OF FOOTING
45° TYPICAL
M.W.D. PIPE
℄ M.W.D. PIPELINE
NOTE: M.W.D. PIPELINE SIZE, DEPTH, LOCATION AND WIDTH OF PERMANENT RIGHT OF WAY VARIES.
THE METROPOLITAN WATER DISTRICT
REQUIREMENTS FOR BUILDINGS AND FOOTINGS ADJACENT TO M.W.D. RIGHT OF WAY
FIGURE 2

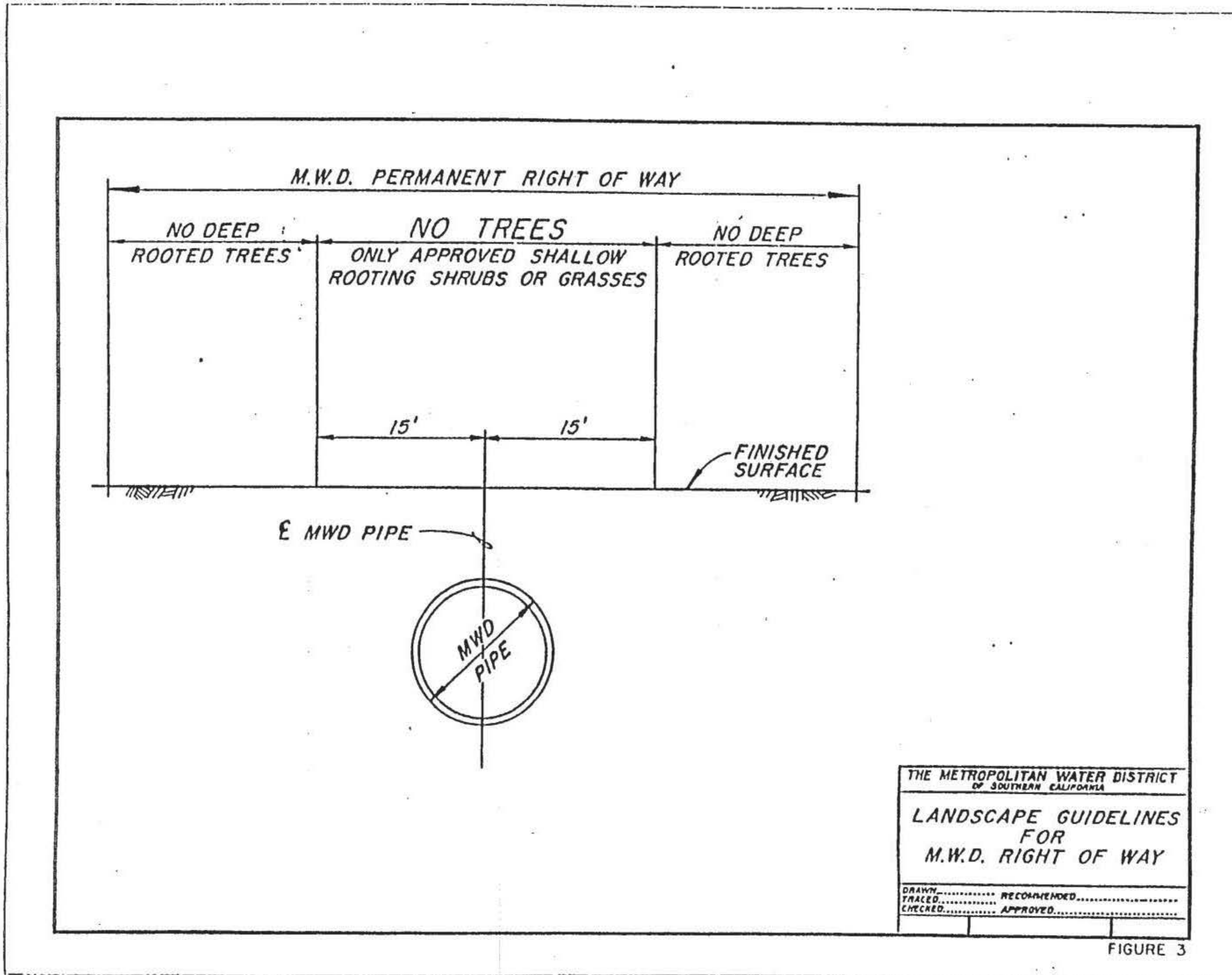


FIGURE 3

Comment Letter 4

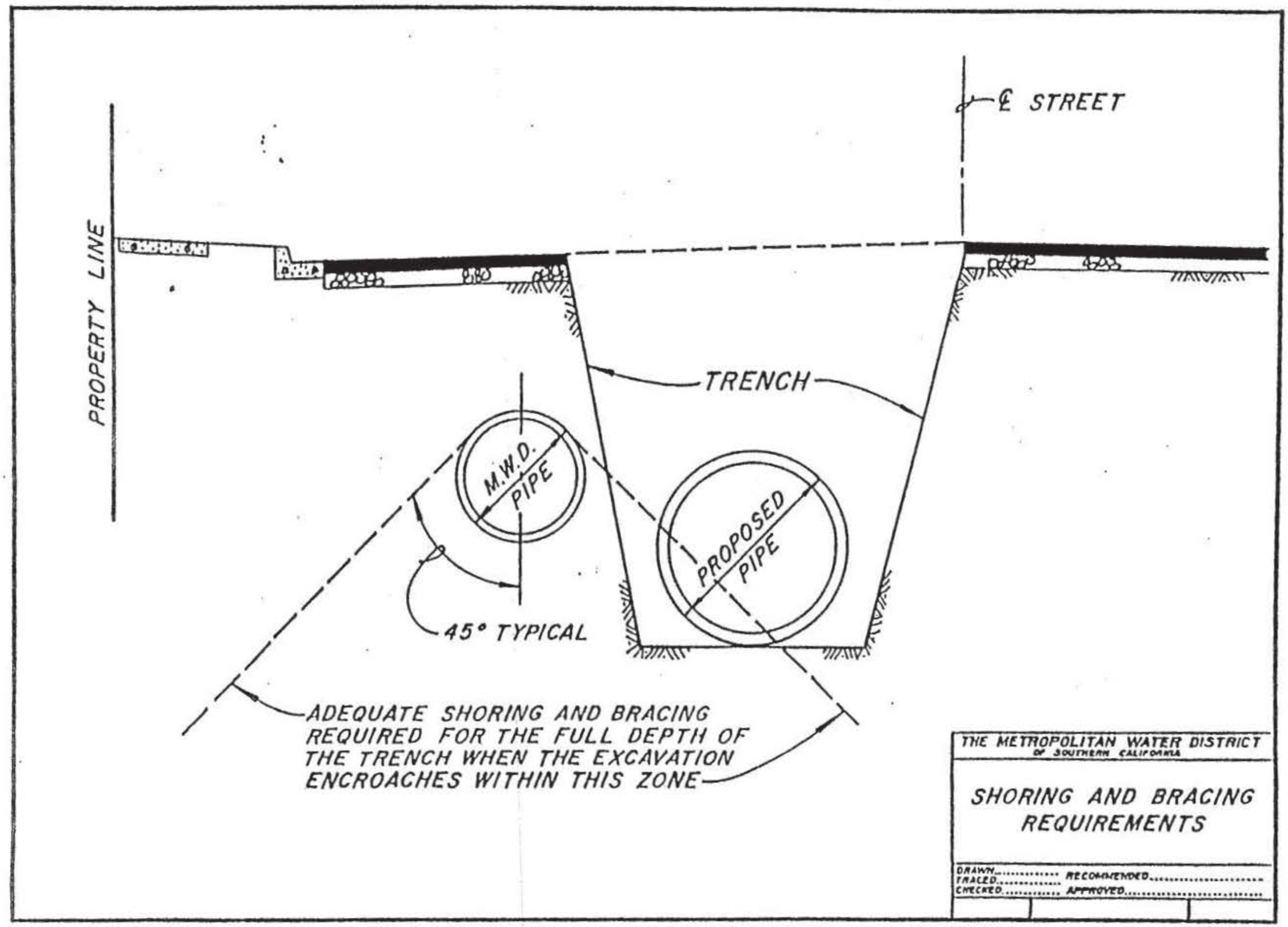
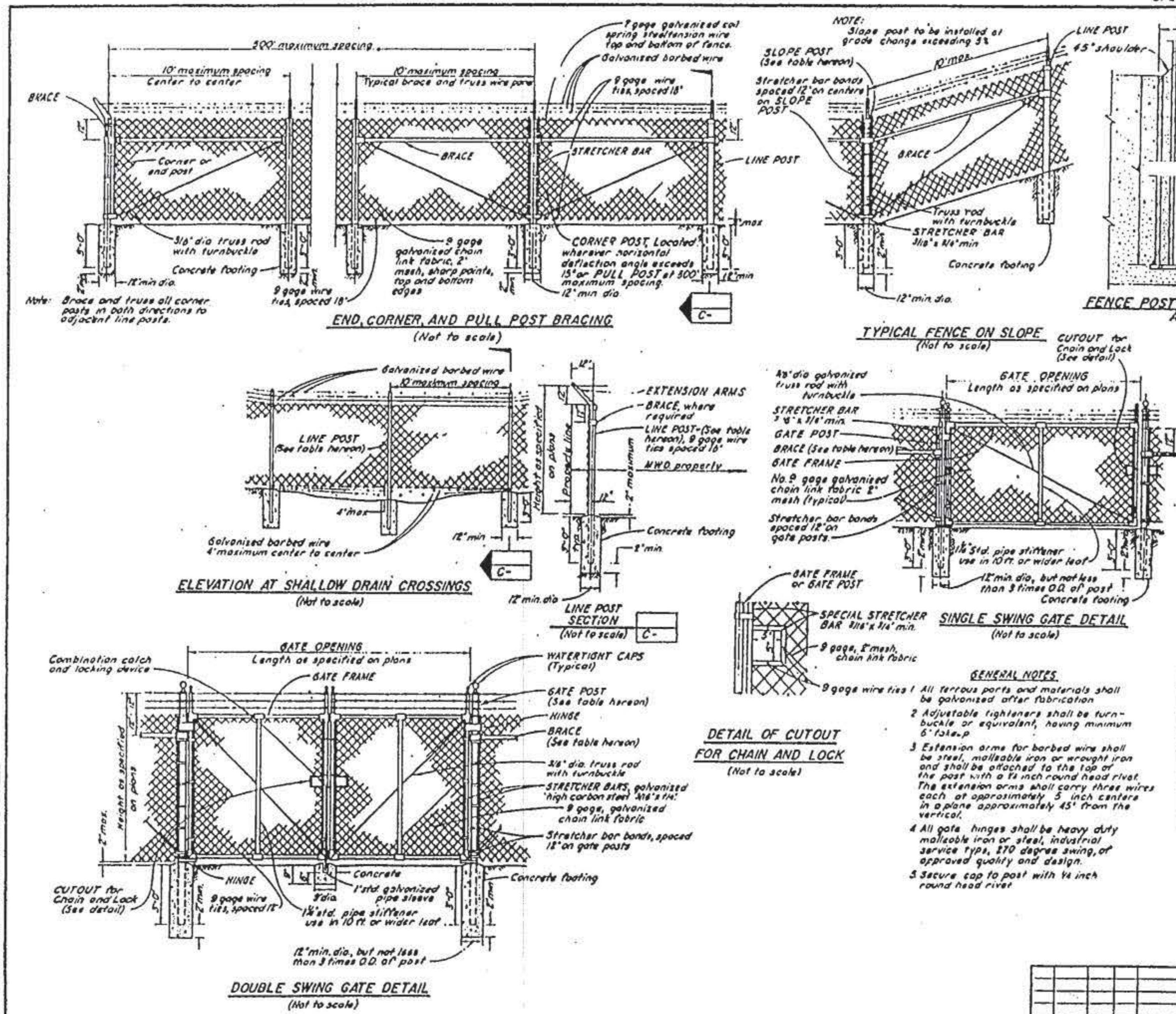


FIGURE 4

FORM NO. 39 B 1000 11-48 P.O. NO. 48-5607

Comment Letter 4

SPECIFICATIONS NO. SHEET NO.



GENERAL NOTES

1. All ferrous parts and materials shall be galvanized after fabrication
2. Adjustable tighteners shall be turnbuckle or equivalent, having minimum 6" take-up
3. Extension arms for barbed wire shall be steel, malleable iron or wrought iron and shall be attached to the top of the post with a ¼ inch round head rivet. The extension arms shall carry three wires each at approximately 5 inch centers in a plane approximately 45° from the vertical.
4. All gate hinges shall be heavy duty malleable iron or steel, industrial service type, 270 degree swing, of approved quality and design.
5. Secure cap to post with ¼ inch round head rivet

Use	Type	Nominal Size (Inches)	Actual O.D. (Inches)	Weight per foot (Pounds)
End, corner, slope, pull and gate posts (for single gates 6 feet or less in width and double gates 12 feet or less in width) for chain link fabric 72" inches or higher	Pipe	2½	2.875	3.79
End, corner, slope, pull and gate posts (for single gates 6 feet or less in width and double gates 12 feet or less in width) for chain link fabric less than 72 inches height	Pipe	2	2.375	3.65
Gate posts for single swing gates over 6 feet but not over 13 feet in width and double swing gates over 12 feet but not over 26 feet in width.	Pipe	3½	4.000	9.11
Gate posts for single swing gates over 13 feet but not over 18 feet in width and double swing gates over 26 feet but not over 36 feet in width.	Pipe	6	6.625	18.97
Gate posts for single swing gates over 18 feet in width and double swing gates over 36 feet in width	Pipe	8	8.625	24.70
Line posts for chain link fabric 72 inches or higher	Pipe	2	2.375	3.65
	H-Section	2¼ x 1⅞		4.10
Line posts for chain link fabric less than 72 inches in height	Pipe	1½	1.900	2.72
	H-Section	1⅞ x 1⅝		2.80
Braces	Pipe	1¼	1.660	2.27
	H-Section	1⅝ x 1¼		2.80
Frame for gates	Pipe	1½	1.900	2.72
Stiffeners for gates	Pipe	1¼	1.660	2.27

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA
DISTRIBUTION SYSTEM

CHAIN LINK FENCE DETAILS

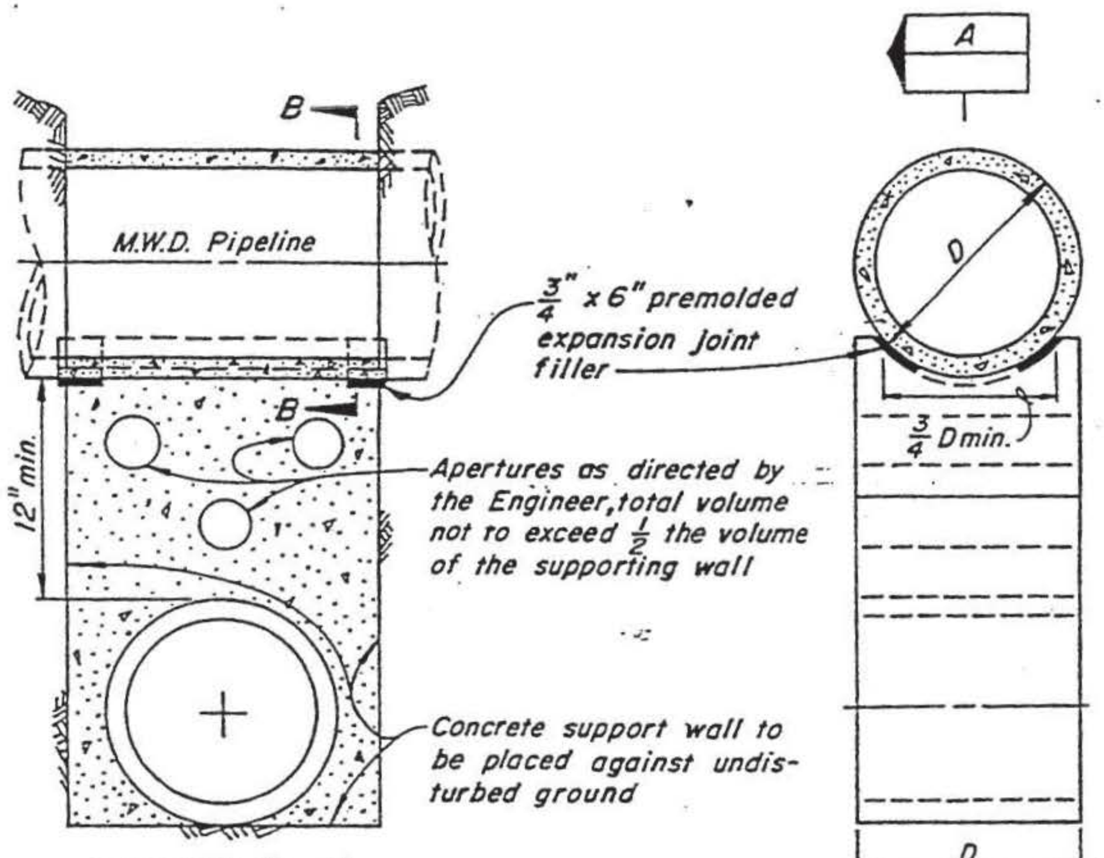
DESIGNED DRAWN CHECKED RECOMMENDED APPROVED
WORK ORDER NO. LOS ANGELES

NO.	DATE	DWN.	CKD.	REVISION	REC.	APP.

REVISION COORDINATION CHECK
ORIGINAL RELEASE | MECH. | STRUCT. | ELEC. | CIVIL | SPECS. | DATE
INTERSECTIONAL COORDINATION CHECK

FIGURE 5

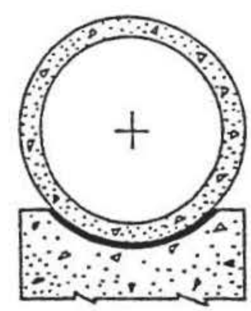
FORM NO. 88-8 1000 11-67 P.O. 67-0714



SECTION "A-A"

CROSS SECTION

1. Supporting wall shall have a firm bearing on the subgrade and against the side of the excavation.
2. Premolded expansion joint filler per ASTM D-1751-73 to be used in support for steel pipe only.
3. If trench width is 4 feet or greater, measured along centerline of M.W.D. pipe, concrete support must be constructed.
4. If trench width is less than 4 feet, clean sand backfill, compacted to 90% density in accordance with the provisions of ASTM Standard D-1557-70 may be used in lieu of the concrete support wall.



SECTION "B-B"

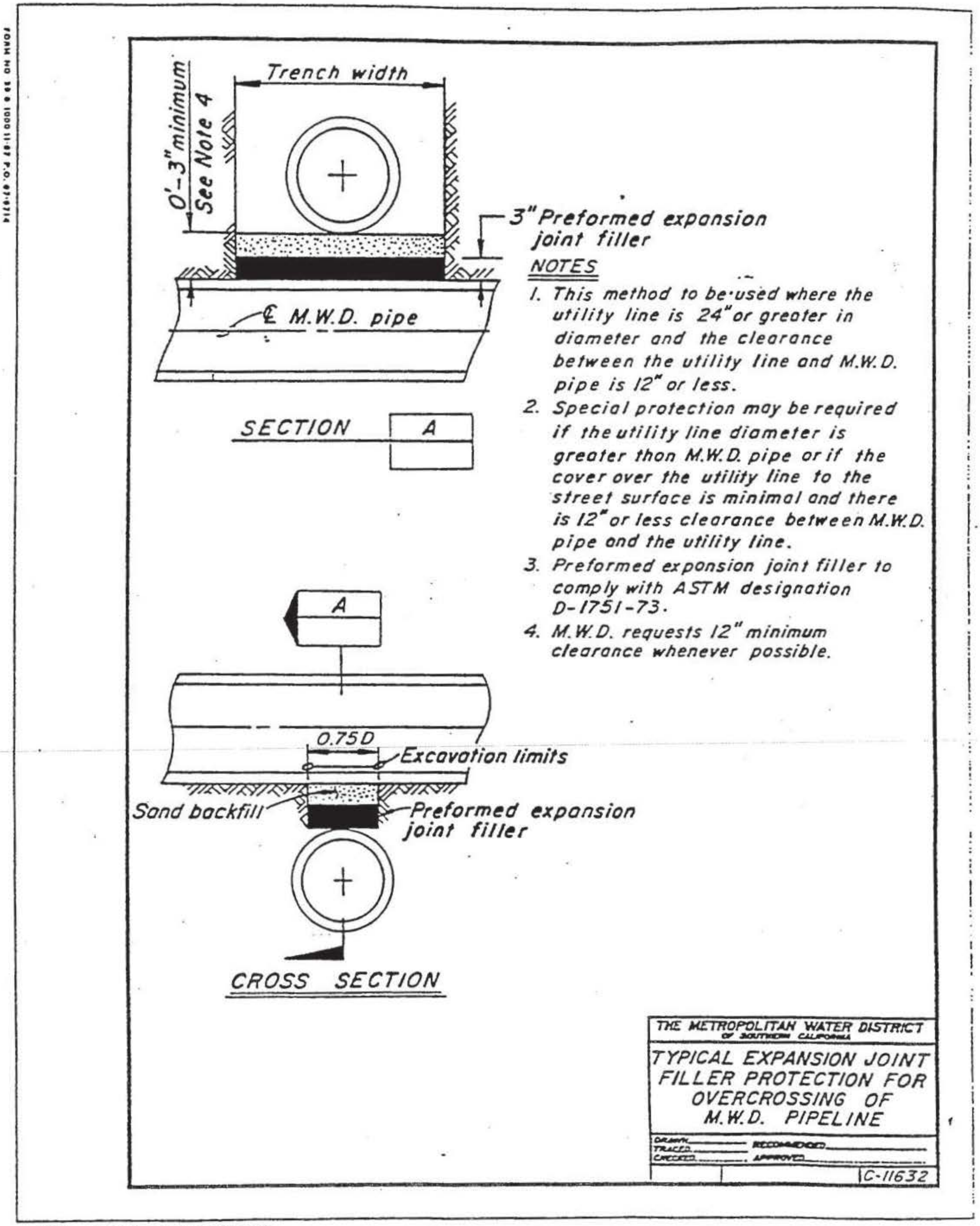
THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

TYPICAL SUPPORT FOR M.W.D. PIPELINE

DRAWN ________ RECOMMENDED ________
TRACED ________
CHECKED ________ APPROVED ________

C-9547

11-67 DIETERICH-POST CLEARPRINT 1023


Trench width
0'-3" minimum
See Note 4
3" Preformed expansion joint filler
℄ M.W.D. pipe
SECTION A
NOTES
1. This method to be used where the utility line is 24" or greater in diameter and the clearance between the utility line and M.W.D. pipe is 12" or less.
2. Special protection may be required if the utility line diameter is greater than M.W.D. pipe or if the cover over the utility line to the street surface is minimal and there is 12" or less clearance between M.W.D. pipe and the utility line.
3. Preformed expansion joint filler to comply with ASTM designation D-1751-73.
4. M.W.D. requests 12" minimum clearance whenever possible.
A
0.75D
Excavation limits
Sand backfill
Preformed expansion joint filler
CROSS SECTION
THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA
TYPICAL EXPANSION JOINT FILLER PROTECTION FOR OVERCROSSING OF M.W.D. PIPELINE
DRAWN
TRACED
CHECKED
RECOMMENDED
APPROVED
C-11632
11-47 DIETERICH-POST CLEARPRINT 1023

Response to Comment Letter 4 (Metropolitan Water District – February 25, 2015)

Response to Comment 4-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or “Program”). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The commenter’s support for the PEIR is noted.

Response to Comment 4-B

The comment notes that dewatering discharges from water utilities are permitted under separate NPDES permits and WDRs issued by the RWQCB. The EWMPs would be designed to accommodate projected flows within their watersheds. If a pipeline dewatering activity resulted in a volume of water greater than the capacity of the BMP, it could potentially overwhelm the BMP, and discharge from the MS4 as is currently the case. Advanced notification of the discharges as currently required would ensure that no adverse impacts would occur.

Response to Comment 4-C

Periodic dewatering discharges from water utilities are permitted under separate NPDES permits and WDRs issued by the RWQCB; therefore, the proposed EWPMS would not inhibit these discharges. Advanced notification of the discharges as currently required would ensure that no adverse impacts would occur. The commenter’s plan to continue to follow BMPs for these discharges is noted for the record.

Response to Comment 4-D

The proposed EWMP BMPs are under development. As BMPs are developed, the location of underground utilities would be identified to ensure that services are maintained and access to utilities is maintained. If a project is expected to interfere with Metropolitan’s facility access, the project operator would consult with Metropolitan prior to implementation. In response to this comment, an additional mitigation measure has been added (UTIL-1) under the Impact 3.14-1 discussion on page 3.14-14 as follows (thereby shifting the numbering of the original Mitigation Measures UTIL-1 and UTIL-2 to Mitigation Measures UTIL-2 and UTIL-3):

> Construction requiring ground disturbance could encounter buried utilities including water supply infrastructure. As part of Mitigation Measure UTIL-1, ~~the project design,~~ Implementing Agencies ~~would be required to identify the potential for underground utilities and determine whether they would need to be relocated to accommodate the BMP. As standard construction practices require, Implementing Agencies~~ would conduct an underground utility search prior to excavation and would coordinate with utility providers in advance to ensure no disruption in services to the utility customers. With

implementation of UTIL-1, i~~I~~mpacts to water supply and other utility infrastructure would be less than significant.

On page 3.14-14 as follows (further lessening less than significant impacts):

Mitigation Measures: ~~None required~~

UTIL-1: Prior to implementation of BMPs, the implementing agency shall conduct a search for local utilities above and below ground that could be affected by the project. The implementing agencies shall contact each utility potentially affected to address relocation of the utility if necessary to ensure access and services are maintained.

Under the Impact 3.14-3 discussion on page 3.14-16 as follows:

Construction requiring ground disturbance could encounter buried utilities including water supply infrastructure. As part of Mitigation Measure UTIL-1, ~~the project design,~~ Implementing Agencies ~~would be required to identify the potential for underground utilities and determine whether they would need to be relocated to accommodate the BMP. As standard construction practices require, Implementing Agencies~~ would conduct an underground utility search prior to excavation and would coordinate with utility providers in advance to ensure no disruption in services to the utility customers. With implementation of UTIL-1, i~~I~~mpacts to water supply and other utility infrastructure would be less than significant.

On page 3.14-16 as follows (further lessening less than significant impacts):

These flows would not be affected by infiltration BMPs. However, implementation of **Mitigation Measure UTIL-~~1~~2** would ensure that downstream water rights would not be affected by upstream diversions.

On page 3.14-17 as follows:

Mitigation Measure: Implement Mitigation Measure UTIL-1.

UTIL-~~1~~2: Prior to approval of BMPs, implementing agencies shall evaluate the potential for impacts to downstream beneficial uses, including surface water rights. Implementing agencies shall not approve BMPs that result in preventing access to previously appropriated surface water downstream.

On page 3.14-18 as follows:

Development of a waste management or recycling plan (**Mitigation Measure UTIL-~~2~~3**) would reduce this impact.

On page 3.14-18 as follows:

Mitigation Measure:

UTIL-~~2~~3: Implementing agencies shall encourage construction contractors to recycle construction materials and divert inert solids (asphalt, brick, concrete, dirt, fines, rock, sand, soil, and stone) from disposal in a landfill, where feasible. Implementing agencies shall incentivize construction contractors with waste minimization goals in bid specifications where feasible.

Under the Impact 3.14-5 discussion on page 3.14-19 as follows:

Construction requiring ground disturbance could encounter buried or overhead utilities including electric or gas conveyance infrastructure. As part of Mitigation Measure UTIL-1, ~~the project design,~~ Implementing Agencies ~~would be required to identify the potential for underground utilities and determine whether they would need to be relocated to accommodate the BMP. As standard construction practices require, Implementing Agencies~~ would conduct an underground utility search prior to excavation and would coordinate with utility providers in advance to ensure no disruption in services to the utility customers. Impacts to electric or gas infrastructure would be less than significant.

On page 3.14-20 as follows (further lessening less than significant impacts):

Mitigation Measures: ~~None required~~ Implement Mitigation Measure UTIL-1.

This change also applies to the cumulative impact discussion, requiring added text on page 3.14-21 as follows:

The proposed program consists of improvements to existing storm drainage facilities as well as new storm drain facilities within the EWMP program areas. This PEIR contains an analysis on the potential environmental effects that might result from the installation of storm drainage facilities identified in the proposed EWMPs. **Mitigation Measure UTIL-1** would require the implementing agency to search for local utilities that could be affected by the project, thereby avoiding impacts to existing utilities. Cumulative impacts to storm drain facilities would be less than significant.

Impacts to the existing water supplies are anticipated to be beneficial as a result of the stormwater and non-stormwater runoff infiltration and conservation BMPs implemented across the EWMP areas. **Mitigation Measure UTIL-~~1~~2** would require that implementing agencies evaluate impacts to downstream beneficial uses, including surface water rights prior to BMP approval. No adverse cumulative impacts related to new or expanded water supply resources or entitlements would occur.

Construction and operation of the structural BMPs would generate solid waste; however, landfills serving the program area are expected to have sufficient capacity to accommodate the amount of waste generated. Development of a waste management or recycling plan (**Mitigation Measure UTIL-~~2~~3**) would reduce this impact. Disposal of the solid waste generated during construction and operation would comply with all pertinent regulations and statutes. All other projects implemented in the area would also be required to comply with federal, state, and local solid waste regulations and statutes. Cumulative impacts would be less than significant.

And on page 3.14-21 as follows (further lessening less than significant impacts):

> **Mitigation Measures:** Implement **Mitigation Measure UTIL-1**, ~~and~~ **Mitigation Measure UTIL-2**, and **Mitigation Measure UTIL-3.**

These modifications have been included in Chapter 12, *Clarifications and Modifications*, of the Final PEIR. The Draft PEIR identified the need for underground utility searches as standard practice. However, in response to the comment and to ensure that the practice is carried out, the new mitigation measure is added. The need to investigate project areas for underground utilities was noted in the analysis on page 3.14-16 as a standard practice. The new Mitigation Measure UTIL-1 ensures that the practice is carried out. Therefore, no new significant impact would occur, and the modification does not trigger recirculation of the Draft PEIR under Section 15088.5 of the *CEQA Guidelines*.

Response to Comment 4-E

The commenter's statement that Metropolitan pipeline details can be obtained from Metropolitan and that all designs or plans must identify Metropolitan's facilities and rights-of-way has been noted for the record. Metropolitan pipelines qualify as potential utilities that could be affected by future projects, and thus would be included in the required search for utilities as specified in Mitigation Measure UTIL-1 added in Response to Comment 4-D above.

Comment Letter 5

Inglewood California

Public Works Department
ONE MANCHESTER BOULEVARD / INGLEWOOD, CA. 90301 / P.O. BOX 6500 / INGLEWOOD, CA. 90312
Telephone (310) 412-5333 / Fax (310) 412-5552
www.cityofinglewood.org

LOUIS A. ATWELL, P.E.
PUBLIC WORKS DIRECTOR

March 2, 2015

Gregg BeGell, P.E.
County of Los Angeles Department of Public Works
900 South Fremont Avenue, 5th Floor
Alhambra, CA 91803

Re: Enhanced Watershed Management Programs (EWMP)

Dear Mr. BeGell:

The City of Inglewood (City) supports the development of programs that improve water quality.

The Los Angeles County Flood Control District (LACFCD) is preparing the Program Environmental Impact Report (PEIR) to evaluate the proposed Enhanced Watershed Management Programs (EWMP); this program is being developed to improve water quality in Los Angeles County.

PEIR is an advanced planning document that describes details of the countywide water quality program EWMP. Partnership with municipalities in the county will promote compliance with the new MS4 Permit.

The City reviewed the draft PEIR and agrees with its conclusions regarding the impacts of the proposed EWMP on the environment and its proposed mitigation measures.

Therefore, the purpose of this letter is to offer the City's support for the implementation of EWMP.

Sincerely,

Louis A. Atwell, P.E.
Public Works Director

Response to Comment Letter 5 (City of Inglewood Public Works Department – March 2, 2015)

Response to Comment 5-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The commenter's support for the PEIR is noted.

Paige Anderson

To: Laura Rocha
Subject: RE: Letter Regarding LCFCD Program EIR for EWMPs

From: Susie Santilena [mailto:susie.santilena@lacity.org]
Sent: Tuesday, March 03, 2015 3:15 PM
To: Gregg Begell
Cc: Hubertus Cox; TJ Moon; Ryan Thiha
Subject: Letter Regarding LCFCD Program EIR for EWMPs

Dear Mr. Begell,

Please see the attached letter from the City of Los Angeles regarding the Los Angeles County Flood Control District Enhanced Watershed Management Program EIR. Let us know if you have any questions.

Susie Santilena
Environmental Engineering Associate
Bureau of Sanitation, Watershed Protection Division
City of Los Angeles
susie.santilena@lacity.org
213.485.0526

Stay in the Loop!

CITY OF LOS ANGELES

CALIFORNIA

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LOS ANGELES, CA 90015
TEL: (213) 485-0587
FAX: (213) 485-3939
WWW.LACITYSAN.ORG

March 2, 2015

ELECTRONIC MAIL

Mr. Gregg BeGell, P.E.
County of Los Angeles
Department of Public Works
900 South Fremont Avenue, 5th Floor
Alhambra, CA 91803

Dear Mr. BeGell:

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROGRAM EIR FOR THE ENHANCED WATERSHED MANAGEMENT PROGRAMS

The City of Los Angeles (City) supports the development of programs that improve water quality. Through LA Sanitation, the City acts as watershed lead in the development of Enhanced Watershed Management Programs (EWMPs) that are being developed to improve water quality in Los Angeles County for four (4) watersheds, including the Upper Los Angeles River, Ballona Creek, Dominguez Channel, and Santa Monica Bay watersheds. These plans aim to provide a multi-benefit approach to complying with water quality regulations, leading to the construction of projects that will improve stormwater quality, enhance water supply, improve flood control, and bring green space and other amenities to the community.

The Los Angeles County Flood Control District (LACFCD) is preparing a Program Environmental Impact Report (EIR) to evaluate the proposed EWMPs. The Program EIR is an Advanced Planning Document describing details of the County-wide water quality program (EWMPs) being launched in partnership with municipalities in the County to comply with the new MS4 Permit. Advanced planning improves public awareness and government transparency and provides for a higher level assessment of policy decisions prior to the consideration of individual projects.

LA Sanitation has reviewed the Draft PEIR and supports the advanced planning approach detailed in the PEIR. LA Sanitation is writing to offer its support for the implementation of EWMPs to achieve compliance with the MS4 Permit and to encourage the certification of the Program Environmental Impact Report (EIR) developed by the LACFCD.

Sincerely,

SHAHRAM KHARAGHANI, Ph.D., P.E., BCEE
Program Manager

SK:HC:WS
WPDCR9167

cc: Enrique Zaldivar, LASAN
Traci Minamide, LASAN
Adel Hagekhalil, LASAN
Hubertus Cox, LASAN
Angela George, LA County Public Works

Response to Comment Letter 6 (City of Los Angeles Sanitation District – March 2, 2015)

Response to Comment 6-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or “Program”). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The commenter’s support for the PEIR is noted.

Paige Anderson

To: Laura Rocha
Subject: RE: EWMP Draft PEIR Comments

From: "Ridgeway, Ivar@Waterboards" <Ivar.Ridgeway@waterboards.ca.gov>
Date: March 6, 2015 at 11:30:36 AM PST
To: "gbegell@dpw.lacounty.gov" <gbegell@dpw.lacounty.gov>
Cc: "Purdy, Renee@Waterboards" <Renee.Purdy@waterboards.ca.gov>, "Birosik, Shirley@Waterboards" <Shirley.Birosik@waterboards.ca.gov>
Subject: EWMP Draft PEIR Comments

Mr. BeGell, P.E,

Please see the following comments from the Los Angeles Regional Water Board on the County of Los Angeles's Draft PEIR:

1. The draft EIR notes that participation in an EWMP is optional but some sections of the document make it appear that the Los Angeles MS4 Permit requires permittees to develop EWMPs to ensure meeting water quality objectives.
2. The draft EIR makes it appear that all EWMP projects will be implemented in an urbanized area. The draft EIR's assumptions regarding project implementation appear valid but there should be a short discussion of potential impacts of projects implemented in non-urbanized areas (e.g. Upper Santa Clara River EWMP).
3. The Basin Plan for the California Regional Water Quality Control Board, Santa Ana Region is included as a reference but the Basin Plan for the California Regional Water Quality Control Board, Los Angeles Region, where the EWMP projects will be implemented, is not referenced.

If you have any questions feel free to contact me.

Ivar K. Ridgeway
Senior Environmental Scientist
California Regional Water Quality Control Board, Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, CA 90013-2343
(213) 620-2150
Ivar.Ridgeway@waterboards.ca.gov

Response to Comment Letter 7 (Los Angeles Regional Water Quality Control Board – March 6, 2015)

Response to Comment 7-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The commenter does not specifically identify which sections of the PEIR the comment refers to, however, the LACFCD acknowledges that participation in an EWMP is one of several options identified in the MS4 Permit for achieving compliance with water quality standards.

The MS4 Permit allows Permittees the option of preparing an EWMP to achieve compliance as noted on page 1-1. The commenter is correct that preparation of an EWMP is not a requirement for each Permittee. However, the MS4 provides specific requirements for Permittees that elect to prepare EWMPs. The PEIR refers to these "requirements" when explaining the Permit's outline for preparing an EWMP as noted on page 1-3 and elsewhere in the document. In response to this comment the text on page 1-1 has been revised as follows:

> The MS4 Permit gives Permittees the option of implementing an innovative approach to permit compliance through development of an Enhanced Watershed Management Program (EWMP). Development of an EWMP is optional, but allows Permittees a longer timeline to develop and implement Best Management Practices (BMPs) needed to achieve compliance. The EWMPS will result in additional benefits including provision of open space and parkland, habitat creation, and stormwater retention. Permittees not preparing Watershed Management Programs or EWMPs must achieve compliance within a year of permit adoption. The EWMPs will identify potential and priority structural and non-structural ~~Best Management Practices (~~BMPs~~)~~ within the region's stormwater collection system to improve runoff water quality. The LACFCD, along with participating Permittees, has opted to exercise this option and has submitted to the LARWQCB 12 separate Notices of Intent (NOIs) for the development of EWMPs within 12 distinct watershed groups (refer to **Figure 1-1**). Implementation of the EMWPs would be the responsibility of each Permittee and would occur following approval of the EWMPs by the LARWQCB.

And on page 1-3 as follows:

> The timeline identified in the MS4 Permit requires that Permittees who elect to prepare Watershed Management Programs submit them ~~the EWMP~~ to the LARWQCB by June 28, 2015, in order to be in compliance with the permit conditions. The LACFCD recognizes that implementation of the EWMPs may potentially result in changes to environmental conditions. As a result, the LACFCD has prepared this Program

> Environmental Impact Report (PEIR) in compliance with the California Environmental Quality Act (CEQA) to provide the public and the responsible and trustee agencies with information about the potential effects on the local and regional environment associated with implementation of the EWMPs. The LACFCD will submit the PEIR to its governing body, the Los Angeles County Board of Supervisors, for approval prior to submittal of the EWMPs. The EWMPs will be submitted by each EWMP group to the LARWQCB.

Participation in a Watershed Management Program is voluntary and allows a Permittee to address the highest watershed priorities, including complying with the requirements of Receiving Water Limitations, Total Maximum Daily Load Provisions by customizing the control measures. The Watershed Management Programs shall ensure that discharges from the Permittee's MS4: (i) achieve applicable water quality-based effluent limitations, (ii) do not cause or contribute to exceedances of receiving water limitations, and (iii) do not include non-storm water discharges that are effectively prohibited. Watershed Management Programs shall be developed either collaboratively or individually using the Regional Water Board's Watershed Management Areas (WMAs). Permittees may elect to develop an enhanced Watershed Management Program (EWMP). An EWMP is one that comprehensively evaluates opportunities, within the participating Permittees' collective jurisdictional area in a WMA, for collaboration among Permittees and other partners on multi-benefit regional projects.

As a result of the extended timeline given to achieve permit compliance through development of EWMP, as well as collaboration of resources, several Permittees have selected to prepare EWMPs as their form of MS4 Permit compliance; specific requirements detailed in the MS4 Permit must be met to successfully implement this compliance method. The PEIR discusses the effects of the implementation of these EWMPs.

Response to Comment 7-B:

The PEIR assumes that BMPs may be installed in any location, whether urbanized or previously undisturbed. The impact analysis assumes some projects may be proposed in open space areas and evaluates impact avoidance and minimization measures. The PEIR provides maps in Appendix G to the PEIR showing prospective locations for BMPs. The locations are broadly distributed throughout the watersheds. The LACFCD acknowledges that BMPs are not limited to urban areas but may be installed throughout a watershed if necessary to achieve water quality objectives. In response to the comment, the following changes have been made to the PEIR on page 1-3.

> The PEIR analysis is not intended to focus on the site-specific construction and operation details of each management strategy and project included in the EWMP. Rather, this PEIR serves as a first-tier environmental document that focuses on the effects of implementing the EWMPs to reduce urban runoff pollution <u>anywhere in the watershed</u>. The analysis assesses worst case situations where construction or operation of projects may significantly impact environmental resources<u> whether in urban environments or previously undisturbed open space</u>. The analysis outlines mitigation strategies to be followed by the LACFCD and other implementing agencies that rely on this PEIR to

> avoid or minimize impacts wherever feasible. The determinations of significance after mitigation in this PEIR will apply to the LACFCD and other implementing agencies that rely on this PEIR and the mitigation measures proposed herein.

And on page 1-11 as follows:

> The PEIR focuses its assessment on construction and operation of these potential and priority BMPs to be installed throughout the watersheds—but primarily within urbanized areas where the pollutant loading is greatest and where these BMPs can be most cost-effective in meeting water quality goals. The analysis assesses worst case situations where construction or operation of projects may significantly impact environmental resources. The analysis also considers potential impacts and mitigation for BMPs implemented in less developed and urbanized areas of the EWMP where water quality issues may exist that are not directly linked to urbanization but are still regulated under the MS4 Permit. The analysis outlines mitigation strategies to be followed by Implementing Agencies to avoid or minimize impacts wherever feasible. Exact locations and BMP designs are not defined. Rather, the overall compliance strategy of BMP type, quantity, and geographic distribution is assessed on a cumulative, regional scale.

Response to Comment 7-C:

The Basin Plan for the Santa Ana Regional Water Quality Control Board is mistakenly included as a reference on page 9-16. Refer to page 3.8-29 of Section 3.8, *Hydrology and Water Quality*, which correctly references the Los Angeles Basin Plan. The correct reference has been updated in Chapter 9, *References*, as shown below.

> California Regional Water Quality Control Board, ~~Santa Ana~~ Los Angeles Region - 1994~~5~~ Water Quality Control Plan ~~for the Santa Ana River~~ Los Angeles Region ~~Basin~~ (Basin Plan) ~~updated in February 2008~~ June 1994.

City of West Hollywood
California 1984

CITY OF
WEST HOLLYWOOD

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90069-6216
Tel: (323) 848-6460
Fax: (323) 848-6562

OFFICE OF THE
CITY MANAGER

PAUL AREVALO
CITY MANAGER

March 02, 2015

RECEIVED
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DEPT. PUBLIC WORKS
PROJECT MANAGEMENT DIVISION II

Gregg BeGell, P.E.
County of Los Angeles Department of Public Works
900 South Fremont Avenue, 5th Floor
Alhambra, CA 91803

Mr. BeGell:

The City of West Hollywood is committed to the development of programs that improve water quality.

The Los Angeles County Flood Control District is preparing a Program Environmental Impact Report (PEIR) to evaluate the proposed Enhanced Watershed Management Programs (EWMPs) which are being developed to improve water quality in Los Angeles County. The PEIR is an Advanced Planning Document describing details of the County-wide water quality program (EWMPs) being launched in partnership with municipalities within the County to comply with the new MS4 Permit. Advanced Planning improves public awareness and government transparency and provides for a higher level assessment of policy decisions prior to the consideration of individual projects.

The City of West Hollywood has reviewed the Draft PEIR and agrees with its conclusions regarding the impacts of the proposed EWMPs on the environment and its proposed mitigation measures. The City is writing to offer its support for the implementation of EWMPs to achieve compliance with the MS4 Permit and to encourage the certification of the PEIR developed by the Los Angeles County Flood Control District (LACFCD). A

Sincerely,

Paul Arevalo
City Manager

cc: Sharon Perlstein, City Engineer
Matt Magener, Environmental Coordinator
File

shop WEST HOLLYWOOD

Response to Comment Letter 8 (City of West Hollywood – March 9, 2015)

Response to Comment 8-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The commenter's support for the PEIR is noted.

Paige Anderson

To: Laura Rocha
Subject: RE: Notice of Availability for the Draft PEIR-Enhanced Watershed Management Programs

From: Bryan Moscardini
Sent: Tuesday, March 10, 2015 11:55 AM
To: Gregg Begell
Cc: Kathline J. King; Hayden Sohm; Frank Gonzales; Joe Mendoza; Norma E. Garcia; Joan Rupert
Subject: Notice of Availability for the Draft PEIR-Enhanced Watershed Management Programs

Gregg,

Please see attached comment letter for the above project. We look forward to working with you and your Department as these projects are prioritized, funded and implemented. Thank you.

Bryan Moscardini
Departmental Facility Planner I

County of Los Angeles Department of Parks and Recreation
Planning Division-Land Management and Compliance
510 South Vermont Avenue Los Angeles, CA 90020
P 213.351.5133 F 213.639.3959
bmoscardini@parks.lacounty.gov

Please note that our office is closed on Fridays

COUNTY OF LOS ANGELES
DEPARTMENT OF PARKS AND RECREATION
"Parks Make Life Better!"
Russ Guiney, Director John Wicker, Chief Deputy Director

March 3, 2015

Sent via email: gbegell@dpw.lacounty.gov

Mr. Greg BeGell
County of Los Angeles Department of Public Works
Project Management Division II
900 South Fremont Avenue, 5th Floor
Los Angeles, CA 91803

Dear Mr. BeGell:

NOTICE OF AVAILABILITY OF A DRAFT PROGRAM ENVIRONMENTAL IMPACT REPORT FOR THE ENHANCED WATERSHED MANAGEMENT PROGRAMS

The Department of Parks and Recreation (DPR) has reviewed the above project for potential impact on the facilities under the jurisdiction of the Department and offers the following comments:

The County Park facilities listed in the document as candidates for structural BMP implementation would likely experience some level of temporary construction impacts:

- **Ladera Park** (Ballona Creek EWMP Group)
- **Hellen Keller Park** (Dominguez Channel Watershed Management Area Group)
- **Roosevelt Park** (Upper Los Angeles River Watershed EWMP)
- **San Angelo Park** (Upper San Gabriel River EWMP Group)
- **Adventure Park** (Upper San Gabriel River EWMP Group)
- **Allen Martin Park** (Upper San Gabriel River EWMP Group)
- **Bassett Park** (Upper San Gabriel River EWMP Group)
- **Santa Anita Golf Course** (Rio Hondo/San Gabriel River Water Quality Group)
- **Chester Washington Golf Course** (Dominguez Channel WMA Group)
- **The Los Angeles County Arboretum** (Rio Hondo/San Gabriel River WQ Group)
- **Peck Road Water Conservation Park** (Rio Hondo/San Gabriel River WQ Group)

Please continue to coordinate with our Department as BMP project-types (bio-infiltration cells, bio-swales, porous pavement and filter strips, low-flow diversions, detention ponds, treatment wetlands, and steam/creek restoration projects) and funding opportunities are identified as well as implementation priorities established.

Thank you for including this Department in the environmental review process. If you have any questions, please contact Bryan Moscardini of my staff at (213) 351-5133 or by email at bmoscardini@parks.lacounty.gov.

Sincerely,

Kathline King

Kathline J. King
Chief of Planning

KK:JR:bm / Response to LACFCD-EWMP

c: Parks and Recreation (N. E. Garcia, J. Rupert, B. Moscardini)

Response to Comment Letter 9 (County of Los Angeles Department of Parks and Recreation – March 10, 2015)

Response to Comment 9-A

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The projects implemented as part of the EWMPs are not known at this time; therefore, specific impacts to parks are not known. As discussed in Impact 3.12-4 on pages 3.12-12 and 3.12-13 of the PEIR, certain parts of selected parks and recreational facilities would temporarily be removed from service during the construction of the final proposed structural BMPs, and could potentially increase the use of adjacent parks and other recreational facilities. However, construction periods for each BMP are expected to be relatively short, typically several months to a year. Because the construction will be temporary, the physical deterioration of park and recreational facilities to which recreational activities were diverted would not be substantial. Coordination with the County Parks and Recreation Department will be carried out as projects are identified and moved forward. This comment has been noted and will be provided to the County of Los Angeles Board of Supervisors for their consideration.

Response to Comment 9-B

The proposed EWMP BMPs are under development. Coordination with the County Parks and Recreation Department will be carried out as projects, funding and implementation priorities are identified.

Central Basin
Municipal Water District

RECEIVED
MAR 12 2015
DEPT. PUBLIC WORKS
PROJECT MANAGEMENT DIVISION II

6252 Telegraph Road
Commerce, CA 90040-2512

Phone: 323.201.5500
Fax: 323.201.5550
www.centralbasin.org

March 9, 2015

Mr. Gregg BeGell, P.E
County of Los Angeles
Department of Public Works
Project Management Division II
900 South Fremont Avenue, 5th Floor
Alhambra, CA 91803

Re: Responses and Comments to the Draft Program Environmental Impact Report for the Enhanced Watershed Management Programs (PEIR)

Dear Mr. BeGell,

This following letter presents comments to the Draft Program Environmental Impact Report for the Enhanced Watershed Management Programs (PEIR). I would like to thank you for the opportunities to comment on the PEIR and for the extension of the deadline for such comments.

Project Purpose

- Municipal Separate Storm System (MS4) Permit Compliance (Order No. R4-2012-0175)
- Each Permittee is responsible for its local MS4 compliance through development of Enhanced Watershed Management Programs (EWMPs)
- Twelve (12) Notices of Intent (NOIs) have been submitted for the development of twelve (12) EWMPs in their respective watershed groups to the Los Angeles Regional Water Quality Control Board (LARWQCB).
- The LARWQCB is responsible for approval of the WWMPs in compliance with the MS4 Permit.

Enhanced Watershed Management Program (EWMP)

- Permittees are to identify watershed control measures through implementation of storm water best management practices (BMPs).
- Goal of BMPs in the EWMP is to reduce the impact of stormwater and non-stormwater on receiving water quality.

- The PEIR focuses on the effects of implementing the EWMP overall as plans to reduce urban runoff pollution.
- The LACDPW has a vested interest in increasing opportunities for stormwater capture and groundwater recharge as a means of assisting local water supply augmentation.
- Central Basin MWD is interested in and supports LACDPW in its efforts to augment local water supply.

Goals and Objectives

- Achieve Water Quality Performance goals through EWMP implementation.
- Promote more cost-effective and multi-beneficial water quality improvement projects to comply with the MS4.
- Reduce the impact of stormwater and non-storrnwater on receiving water quality.
- Remove or reduce pollutants from dry and wet-weather urban runoff in a cost-effective manner.
- We recommend a goal to increase stormwater capture to augment water supply.

Centralized Structural BMPs vs. Distributed Structural BMPs

- Centralized Structural BMPs are intended to treat runoff from a contributing area of multiple parcels. They are generally installed on large public parcels or adjacent to storm drain outfalls and receiving waters. Examples of Centralized Structural BMPs include Dominguez Gap Wetlands project of creek restoration.
- Another great example of a Centralized Structural BMP is Marie Canyon Low Flow Diversion (LFD) in which the urban runoff from Pepperdine University and the neighboring residential tract are diverted through a drainage course to a low flow diversion station.
- Distributed Structural BMPS treat runoff close to the source and are typically implemented at a single or few parcel level.
- Examples include green infrastructure and low impact development such as: biofiltration, bioretention, bioswales, buffer strips, green streets, rainfall harvesting, planter boxes, and permeable pavers.

The Planning Associates Questions and Comments to the PEIR

- **Introduction**
  - **Comment:** Please elaborate and identify projects currently in the works and provide analysis on the plans and policies guiding these projects.
  - **Comment:** Does tiering from the PEIR excuse the lead agency from analyzing foreseeable significant environmental effects of the project?
  - **Comment:** There are no references to the types of soils or vegetation that underlie the 12 EWMPs. A short summary of the soil types and their respective infiltration rates would be helpful in the introduction summary.

  - **Comment:** What types of pollution stem from the natural environment and exist in the soils being eroded from natural parcels of land?

- **Agriculture and Forestry**
  - **Comment:** What impact does the EWMP projects have on wetlands? Please provide detail background on specific avoidances or controversial issues.

- **Biological Resources:**
  - **Comment:** Implementation of the EWMP projects could occur within existing sensitive habitats, which may result in changes to wildlife habitat, disruption of natural movement corridors, or disturbance of sensitive species during construction or operation. How will the PEIR evaluate for such impacts and how can local ordinances or state and federal regulations protect or mitigate from these disruptions to the natural environment? What Habitat Mitigation plans have been contemplated or prepared?

- **Cultural Resources**
  - **Comment:** Area of Project Effect (APE) must be surveyed for cultural resources and to determine if an archaeological inventory survey is required.
  - **Comment:** The Native American Heritage Commission must be contacted for consultation concerning projects in sensitive cultural sites. Who are the most probable Native American Tribes of interest in the project area? Are there probable cultural sites in the project area or APE areas?

- **Geology, Soils & Seismicity**
  - **Comment:** Please provide more detail as to where recharge and groundwater infiltration areas are in relation to liquefaction zones and other permeable soils.
  - **Comment:** More information is needed on known groundwater levels and the elevations of stream beds downslopes of the groundwater tables.

- **Hazards & Hazardous**
  - **Comment:** It is important to provide more detail on the influence of groundwater movements upon hazards and hazardous materials in the soil because contaminated groundwater can migrate to groundwater flows and basin pumping for water supplies.
  - **Comment:** The PEIR must illustrate the uncovering of contaminated soils or hazardous substances during excavation of proposed EWMP BMPs that pose a hazard to public safety or the natural environment.

- **Mandatory Findings of Significance**
  - **Comment:** Information regarding the setting, effects, and mitigation for the projects related to issues of environmental justice will be necessary to

understand those receiving benefits and those experiencing adverse effects directly or indirectly through water related operations.

- **Hydrology & Water Quality:**
    - **Comment:** It will be helpful if the PEIR expanded as to where recharge and infiltration areas are in relation to liquefaction zones and other permeable soils. A general map of the program area will help illustrate this more effectively.
    - **Comment:** Illustrations of known groundwater levels and elevation of stream beds downslope of the groundwater tables will be beneficial.
    - **Comment:** Implementation of the proposed EWMP BMPs may result in increased infiltration and recharge in various locations throughout the EWMP watersheds. Therefore, it is important that the PEIR evaluate potential effects of increased storm water recharge and identify mitigation measure.

- **Population & Housing**
    - **Comment:** What are the consequences of minimal or no implementation of BMPs in cities with low income housing? How will these communities bear the burden of paying non-compliance fees?

- **Alternatives**
    - **Comment:** What method and level of detail will be used to identify and evaluate BMPs?

- **Cumulative Projects**
    - **Comment:** The PDEIR must provide a general map of the projects with existing delineated riparian, wetlands, and aquatic habitats.

Thank you for allowing interested persons such as myself to ask questions and provide comments to this Draft PEIR.

Cordially,

Kevin P. Hunt, P.E.
Interim General Manager

Response to Comment Letter 10 (Central Basin Municipal Water District – March 12, 2015)

Response to Comment 10-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The PEIR acknowledges that most of the projects to be included in the EWMPs are either currently undefined or currently under development. Priority projects are listed in Appendix G of the PEIR. Some background on the MS4 Permit is provided in Section 1, explaining the policies guiding the implementation of the BMPs.

Response to Comment 10-B:

Because project details are largely incomplete since the EWMPs are being drafted concurrently, each individual project will be subject to a CEQA compliance evaluation prior to approval by the implementing agencies as noted in Section 1 of the Draft PEIR. As individual projects identified in the EWMPs are fully developed, the implementing agency (i.e., the Permittee responsible for implementing the project) will conduct CEQA analysis for individual projects, as appropriate, or may determine that no additional CEQA analysis is required or that a project is exempt from CEQA. Each implementing agency would determine the significance after mitigation for potential impacts of its proposed projects.

The PEIR serves as a first-tier environmental document that focuses on the effects of implementing the EWMPs to reduce urban runoff pollution. The analysis assesses worst case situations where construction or operation of projects may significantly impact environmental resources. The analysis outlines mitigation strategies to be followed by the LACFCD and other implementing agencies that rely on the PEIR to avoid or minimize impacts wherever feasible.

The PEIR provides the LACFCD a foundation for any necessary future environmental review that focus on individual projects of the EWMPs for which the LACFCD is the designated Lead Agency.

Response to Comment 10-C:

The 12 EWMPs cover a large geography that exhibits numerous soil types. A comprehensive soils assessment and vegetation mapping within the entire County would not be helpful at the high-level scale of the impact analysis because the level of detail needed for individual BMP projects would not be feasible for all potential BMP locations throughout the County. Soil types may differ acre-by-acre in potential BMP locations, requiring a site specific analysis that is impractical to employ for the entire County in the PEIR. Some areas are underlain by alluvial soils of varying characteristics and other areas by clay or bedrock. Some areas are underlain by aquitards—subsurface impermeable clay layers—that prevent infiltrated water from entering deeper drinking water aquifers. Locating infiltration BMPs in areas with permeable soils (generally sandy soils that allow percolation of water) is a primary criterion for successful infiltration. Mitigation Measure GEO-1 requires that implementing agencies conduct geotechnical assessment of proposed BMP locations to ascertain soil types prior to installing infiltration BMPs, which reduces potentially significant impacts to less than significant levels.

Response to Comment 10-D:

As noted on page 3.8-35 of the PEIR, soils may contain legacy contamination from past overlying uses or may contain naturally occurring minerals that may be entrained by infiltrating water and conveyed to the drinking water aquifer. Naturally occurring pollutants may include minerals such as arsenic, iron, and manganese. Concentrations of these pollutants are regulated in drinking water. Other pollutants may include petroleum hydrocarbons, nitrates, and pathogens. As described in the PEIR, Mitigation Measures HYDRO-1 through HYDRO-3 would lessen potential impacts from naturally occurring pollutants to a less than significant level.

> **HYDRO-3:** Prior to the installation of an infiltration BMP, the Permittee shall conduct a <u>regulatory</u> database review for contaminated groundwater sites within a quarter mile of the proposed infiltration facility. <u>The review shall include locations of on-site wastewater treatment systems that could be affected by the BMP.</u> The Permittee shall identify whether any contaminated groundwater plumes <u>or leach fields</u> are present and whether coordination with the local and state environmental protection overseeing agency and responsible party is warranted prior to final design of infiltration facility.

Response to Comment 10-E:

Impacts to wetlands were discussed in Impact 3.3-3 on page 3.3-26 of the Draft PEIR. Mitigation measures BIO-1 through BIO-9 were identified to mitigate impacts to wetlands and reduce potentially significant impacts to less than significant levels. Mitigation BIO-9 specifically requires conducting formal wetland delineation in areas where potential jurisdictional resources (i.e., wetlands or drainages) subject to the jurisdiction of the United States Army Corps of Engineers, the Los Angeles Regional Water Quality Control Board, and the California Department of Fish and Wildlife may be affected by the project.

Response to Comment 10-F:

Impacts to sensitive habitats, wildlife habitat, and natural movement corridors were discussed in Impact 3.3-1, Impact 3.3-2, and Impact 3.3-4, respectively. Mitigation Measures BIO-1 through BIO-8 involve the protection of sensitive habitats and wildlife habitat and would reduce potentially significant impacts under Impact 3.3-1 and Impact 3.3-2 to less than significant levels. As noted under Impact 3.3-4 on pages 3.3-27 and 3.3-28 of the PEIR, , implementation of the EWMPs would not be expected to interfere with wildlife movement or any migratory corridor/linkage, and the BMPs would not be constructed within a native wildlife nursery site; no mitigation is necessary to reduce Impact 3.3-4 to less than significant levels.

Response to Comment 10-G:

The proposed EWMP BMPs as described in the PEIR are under development. Impacts to cultural resources are detailed in in Impact 3.4-1 through Impact 3.4-4 of the Draft PEIR (pages 3.4-19 through 3.4-26). Per Mitigation Measure CUL-2, an archeological survey of the APE shall be performed where deemed appropriate by a qualified archaeologist, which would reduce potentially significant impacts to less than significant levels.

Response to Comment 10-H

The proposed EWMP BMPs as described in the PEIR are under development. Mitigation Measures CUL-2, CUL-3 of the Draft PEIR (pages 3.4-22 through 3.4-23) require consultation with local Native American representatives concerning Phase I cultural resources, treatment measures, qualification of historical resources or unique archaeological resources requiring archaeological monitoring, and avoidance measures and mitigation. These mitigation measures would reduce potentially significant impacts to less than significant levels. For projects under development, additional mitigation measures may be identified as necessary to address future-identified impacts.

Response to Comment 10-I:

Figure 3.5-3 locates the liquefaction zones established in the County. Figures 2-5 through 2-16 identify potential BMP locations. As BMPs are developed, a site assessment would be conducted in accordance with County Low Impact Development Standards. This includes identifying the potential for seismically-induced liquefaction and other ground failures. In addition, Mitigation Measure GEO-1 requires that implementing agencies conduct geotechnical assessment of proposed BMP locations to ascertain soil types prior to installing infiltration BMPs, which would identify liquefaction zones. The PEIR acknowledges that BMPs will be located within liquefaction zones.

Response to Comment 10-J:

The proposed EWMP BMPs as described in the PEIR are under development. Site specific details regarding groundwater levels and flow gradient would be collected as the BMPs are developed and additional environmental impacts will be analyzed pursuant to the requirements of the California Environmental Quality Act. The PEIR includes Mitigation Measure HYDRO-2 that requires implementing agencies to identify depth to groundwater prior to implementing infiltration BMPS. Mitigation Measure GEO-2 requires implementing agencies to contact groundwater managers prior to installing infiltration BMPs. Both of these mitigation measures would reduce potentially significant impacts to less than significant levels.

Response to Comment 10-K:

The PEIR acknowledges on page 3.8-35 that underground contamination may be influenced by infiltration BMPs. Mitigation Measure HYDRO-3 requires a database search for groundwater contamination plumes prior to installing infiltration BMPs and would reduce potentially significant impacts to less than significant levels.

It should be noted that as part of Response to Comment 3-A above, Mitigation Measure HYDRO-3 has been modified on page 3.8-36 of the PEIR as shown below:

> **HYDRO-3:** Prior to the installation of an infiltration BMP, the Permittee shall conduct a regulatory database review for contaminated groundwater sites within a quarter mile of the proposed infiltration facility. The review shall include locations of on-site wastewater treatment systems that could be affected by the BMP. The Permittee shall identify whether any contaminated groundwater plumes or leach fields are present and whether coordination with the local and state environmental protection overseeing agency and responsible party is warranted prior to final design of infiltration facility.

Response to Comment 10-L:

As discussed in Section 3.8, *Hazards and Hazardous Materials*, page 3.7-19, contaminated soil and/or groundwater could be encountered during excavation posing a health hazard to construction crews, the public, and the environment. Implementation of Mitigation Measure HAZ-2 would reduce the potential impact to less than significant. Mitigation Measure HAZ-2 would require a Phase I Environmental Site Assessment in areas where hazardous material use or management may have occurred and would reduce potentially significant impacts to less than significant levels.

Response to Comment 10-M:

Environmental justice is discussed in Section 3.11, *Population and Housing and Environmental Justice*, Impact 3.11-4 on page 3.11-7. The PEIR concludes that impacts would be less than significant due to the broad distribution of water quality BMPs to be implemented throughout the communities. No mitigation was determined to be necessary to reduce environmental justice impacts to less than significant levels.

Response to Comment 10-N:

Figure 3.5-3 locates the liquefaction zones established in the County. Figures 2-5 through 2-16 identify potential BMP locations. The 12 EWMPs cover a large geography that exhibits numerous soil types. A comprehensive soils assessment and recharge mapping within the entire County would not be helpful at the high-level scale of the impact analysis because the level of detail needed for individual BMP projects would not be feasible for all potential BMP locations throughout the County. Soil types may differ acre-by-acre in potential BMP locations, requiring a site-specific analysis that is impractical to employ for the entire County in the PEIR. Some areas are underlain by alluvial soils of varying characteristics and other areas by clay or bedrock. Some areas are underlain by aquitards—subsurface impermeable clay layers—that prevent infiltrated water from entering deeper drinking water aquifers. Locating infiltration BMPs in areas with permeable soils (generally sandy soils that allow percolation of water) is a primary criterion for successful infiltration.

As described in Section 3.14, *Utilities*, page 3.14-1 of the Draft PEIR, the largest stormwater detention and recharge facilities in Los Angeles County are located along the San Gabriel River in the City of Pico Rivera. These facilities are shown in Figure 3.14-1, Water Recharge Facilities. As BMPs are developed, a site assessment would be conducted in accordance with County Low Impact Development Standards. This includes identifying the potential for seismically-induced liquefaction and other ground failures. In addition, Mitigation Measure GEO-1 requires that implementing agencies conduct geotechnical assessment of proposed BMP locations to ascertain soil types prior to installing infiltration BMPs, which would identify liquefaction zones. The PEIR acknowledges that BMPs will be located within liquefaction zones.

Response to Comment 10-O:

The proposed EWMP BMPs as described in the PEIR are under development. Site-specific details regarding groundwater levels and as necessary, streambeds downslope of the groundwater tables, would be collected as the BMPs are developed and additional environmental impacts will be analyzed pursuant to the requirements of the California Environmental Quality Act. The PEIR includes Mitigation Measure HYDRO-2 that requires implementing agencies to identify depth to groundwater prior to implementing infiltration BMPS. Mitigation Measure GEO-2 requires implementing agencies to contact groundwater managers prior to installing infiltration BMPs. Both of these mitigation measures would reduce potentially significant impacts to less than significant levels.

Response to Comment 10-P:

The PEIR includes an assessment of potential impacts of groundwater recharge to water quality on page 3.8-35 and to soil stability on page 3.5-23. Implementation of Mitigation Measures GEO-1, HYDRO-1, HYDRO-2, and HYDRO-3 would reduce impacts to less than significant levels. It should be noted that as part of Response to Comment 3-A above, Mitigation Measure HYDRO-3 has been modified as shown below.

HYDRO-3: Prior to the installation of an infiltration BMP, the Permittee shall conduct a <u>regulatory</u> database review for contaminated groundwater sites within a quarter mile of the proposed infiltration facility. <u>The review shall include locations of on-site wastewater treatment systems that could be affected by the BMP.</u> The Permittee shall identify whether any contaminated groundwater plumes <u>or leach fields</u> are present <u>within close proximity to the BMP location that could be affected by infiltrated water</u> and whether coordination with the local and state environmental protection overseeing agency and responsible party is warranted prior to final design of infiltration facility.

It should be noted that as part of Response to Comment 16-J below, Mitigation Measure HYDRO-4 has been added under Impact 3.8-3 as shown below, which would also reduce impacts to water quality and soil stability.

> <u>**HYDRO-4:** Prior to approving a structural BMP, the implementing agencies shall conduct an evaluation of the potential hydromodification impacts of the project. The evaluation shall recommend design measures necessary to prevent or minimize</u>

any identified impacts, including flooding, erosion and/or scour. Design measures could include velocity dissipaters and bank re-enforcement components. Implementing agencies shall include these measures in project designs.

The 12 EWMPs cover a large geography that exhibits numerous soil types. A comprehensive stormwater recharge assessment within the entire County would not be helpful at the high-level scale of the impact analysis because the level of detail needed for individual BMP projects would not be feasible for all potential BMP locations throughout the County. Soil types may differ acre-by-acre in potential BMP locations, requiring a site specific analysis that is impractical to employ for the entire County in the PEIR. Some areas are underlain by alluvial soils of varying characteristics and other areas by clay or bedrock. Some areas are underlain by aquitards—subsurface impermeable clay layers—that prevent infiltrated water from entering deeper drinking water aquifers. Locating infiltration BMPs in areas with permeable soils (generally sandy soils that allow percolation of water) is a primary criterion for successful infiltration. As described in Section 3.14, *Utilities*, page 3.14-1 of the Draft PEIR, the largest stormwater detention and recharge facilities in Los Angeles County are located along the San Gabriel River in the City of Pico Rivera. These facilities are shown in Figure 3.14-1, Water Recharge Facilities. Mitigation Measure GEO-1 requires that implementing agencies conduct geotechnical assessment of proposed BMP locations to ascertain soil types prior to installing infiltration BMPs, which reduces potentially significant impacts to less than significant levels.

Response to Comment 10-Q:

The EWMPs are being developed cooperatively by municipalities covered in the Permit. Each Permittee is required to implement stormwater quality improvement BMPs regardless of the economic condition of the city or local community. As cooperating Permittees, the EWMP groups have combined resources to develop BMPs benefiting the entire region. Access to funding for BMPs is not an environmental impact addressed in this PEIR. However, the EWMPs will contain a discussion on proposed funding sources available. Financing considerations are outside the realm of CEQA and are thus outside of this PEIR analysis.

Response to Comment 10-R:

The EWMP groups have developed BMPs based on modeling of local water quality and water quality objectives. The PEIR describes the Permit requirements in Section 1. As individual projects are proposed for implementation, the lead agencies will identify the specific benefits provided by each BMP. If proposed BMPs potentially result in significant impacts, the lead agency for the BMP will assess project alternatives if required to address CEQA compliance on the project level.

Response to Comment 10-S:

The PEIR identifies natural communities within the County in Figure 3.3-7, Natural Communities in Section 3.3, *Biological Resources*. The PEIR acknowledges on pages 3.3-18 through 3.3-32 that BMPs could affect natural communities. Implementation of Mitigation Measures BIO-1 through BIO-9 are proposed to mitigate potential effects to less than significant levels.

Paige Anderson

To: Laura Rocha
Subject: RE: PEIR Comments from City of Malibu

From: Jennifer Brown [mailto:JBrown@malibucity.org]
Sent: Monday, March 16, 2015 5:14 PM
To: Gregg Begell
Subject: PEIR Comments from City of Malibu

Hello Mr. BeGell,

Attached are the support letter and comments from City of Malibu on the subject project. Please contact me if you have any questions.

Kind regards,

Jennifer Brown | Sr. Environmental Programs Coordinator

Environmental Sustainability Department | City of Malibu
23825 Stuart Ranch Road Malibu, CA 90265
310.456.2489 ext. 275

City of Malibu

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Phone (310) 456-2489 · Fax (310) 456-3356 · www.malibucity.org

March 16, 2015

Gregg BeGell, P.E.
County of Los Angeles Department of Public Works
900 South Fremont Avenue, 5th Floor
Alhambra, CA 91803
gbegell@dpw.lacounty.gov

RE: Draft Program Environmental Impact Report (EIR) Support and Comments

To Mr. BeGell:

The City of Malibu supports the development of programs that improve water quality and has historically taken steps to ensure protection of local waters. Therefore, the City of Malibu is committed to such efforts and is actively working with the County of Los Angeles and the Los Angeles County Flood Control District (LACFCD) on the Enhanced Watershed Management Program (EWMP) for the North Santa Monica Bay Coastal Watersheds. The City would like to acknowledge the LACFCD for its efforts to prepare a Program EIR evaluating the proposed EWMPs in Los Angeles County that are being developed to protect water quality.

The Program EIR describes details of the County-wide EWMPs being launched in partnership with municipalities in the County to comply with the 2012 Los Angeles region municipal stormwater permit Order No. R4-2012-0175 (Permit). Such advanced planning improves public awareness and government transparency and provides for a higher level assessment of policy decisions prior to the consideration of individual projects. The City of Malibu reviewed the Draft Program EIR and generally agrees with its conclusions regarding the impacts of the proposed EWMPs on the environment and its proposed mitigation measures. The City also offers the enclosed comments and clarifications for consideration.

The City of Malibu expresses its support for the implementation of EWMPs to achieve compliance with the Permit and to encourage the certification of the Program EIR developed by LACFCD. The City of Malibu appreciates the attention to these issues and the opportunity to partner in the solution to protecting the region's water quality. If you have any questions regarding this letter, please contact me at (310) 456-2489 x 275 or jbrown@malibucity.org.

Sincerely,

[illegible]vn
Senior [illegible] Programs Coordinator

Enclosure

cc: Jim Thorsen, City Manager
Christy Hogin, City Attorney

Recycled Paper

Document Name: **Programmatic EIR for Enhanced Watershed Management Programs**

Doc. Reference			Comments
Page (pdf/section-page)	Parag.	Section	City of Malibu
74/2-18			Re: Wildlife Road project is anticipated to be complete in ~~August 2014~~ early 2015.
81/2-25		Marie Canyon project	should be "Flap" not "Flat" gate
87/2-31		Broad Beach Rd Project	"treating stormwater and ~~urban~~ **dry-weather** runoff prior to ~~the entering~~ **flowing** into…"
87/2-31		Broad Beach Rd Project	delete "with potential to incorporate harvest and use systems for Malibu Drains"
87/2-31		Broad Beach Rd Project	~~Three~~ **Two** types of biofilters are ~~contemplated~~ **included**; pre-manufactured and custom designed biofilters.
93/2-37		Legacy Park Pump Station Upgrades	insert: "compliance with **Santa Monica Bay** and Malibu Creek Bacteria TMDL requirements"…
97/2-41	5	2.5	"These watersheds are characterized by lower density development along the coast and the larger creeks with greater open space and park areas inland."
107	Fig 2-1	map	Change asterix note to: "Potential Distributed BMP not shown - predominantly located in ~~urbanized~~ developed areas". Urbanized implies something that the rural and even suburban areas of the NSMB are not.
107	Fig 2-1	map	What are the olive green dots for if not potential projects? Need to be on key.
116/3.12	2		"large acre [insert "and rural"] residential "
116/3.12	4		Even though this is citing to a RWQCB document, it would be helpful to state that "X acres out of Y acres are impervious" for context on both Malibu Creek and Ballona Creek.
130/3.2-1	1	3.2.1	Majority is of the County is highly urbanized [insert: with some adjacent rural areas] and consists of...
161/3.3-2		3.3	"dense residential [insert:immediately] along the coast and less development and greater open space areas [insert: as you move off the shoreline and] inland
178/3.3-19	6		Malibu [insert: Creek] Watershed. This ommission is repeated through the document and could cause confusion to someone not familiar with the area because the majority (approx. 98%) of MC Watershed is outside of the City limits. We attempted to point out al instances as part of this review, but some may have been missed. Please ensure document accurately reflects the name of all watersheds.
179/3.3-20	4		Malibu [insert: Creek] Watershed. See coment 15.
180/3.3-21	4		change "pre-urbanization" to "pre-development"

Doc. Reference			Comments
Page (pdf/section-page)	Parag.	Section	City of Malibu
183/3.3-23			Malibu [insert: Creek] Watershed. See coment 15.
185/3.3-26			Malibu [insert: Creek] Watershed. See coment 15.
295/3.8-4	1		in urbanized areas along the [insert: central and south] Santa Monica Bay
295/3.8-4	1		In [insert: North Santa Monica Bay] including City of Malibu and [insert: County unincorporated]
297/3.8-6	2		change "address" to "prevent possible" bacteria loading
303	fig 3.8-3	map	Change asterix note to: "Potential Distributed BMP not shown - predominantly located in ~~urbanized~~ **developed** areas". Urbanized implies something that the rural and even suburban areas of the NSMB are not.
303	fig 3.8-3	map	What are the olive green dots for? Need to be on key.
318/3.8-27		3.8-27	the ASBS general exception also designates Los Angeles County
318/3.8-27		3.8-27	clarify sentence. Should it end after, "discharges to ASBS."
318/3.8-27		3.8-27	"provided that [delete: and insert: the discharge]...
329/3.8-38	3		fix grammar/clarify: "Drainage patterns would change through implementation of these non-structural institutional BMPs~~,~~. However, implementation of LID strategies, which include on-site infiltration, ~~that~~ would minimize off-site flows as well as the potential for erosion and off-site siltation."
330/3.8-39	1	3.8	The structural BMPs would also provide ~~improvements~~ protections to water quality of receiving waters
330/3.8-39	2	3.8	BMPs but would be designed to improve [insert:runoff] water quality and reduce stormwater flow volumes.
335/3.9-1	2	3.9.1	The majority of the County is highly urbanized [insert: with some adjacent rural areas] and consists of several cities, communities and unincorporated areas.
335/3.9-1	3	3.9.1	jurisdiction over the land that is owned by the State of California (i.e., [insert: California Department of Parks and Recreation], California Department Fish and Wildlife, the State Lands Commission, and the California Department of Transportation) or the U.S. Government [insert: (i.e., National Parks Service)]
347	fig 3.9-6	map	Potential Distributed BMP not shown - predominantly located in ~~urbanized~~ developed areas
347	fig 3.9-6	map	What are the olive green dots for? Need to be on key.
360/3.9-26			Discussion about potential ag land. Get statement from Planning about ag designations in Bu
362/3.9-28			make comment about LID Ord requirements
370/3.9-36	2		Malibu [insert: Creek] Watershed. See coment 15.
372/3.9-38	1		because the EWMPs would be implemented in already established ~~urban~~ developed areas

RB-AR 9280

Doc. Reference			Comments
Page (pdf/section-page)	Parag.	Section	City of Malibu
3.9-28, and 442/3.14-10			The document says that LA City and LA County have LID ordinances in place and that some cities may also have LID ordinances. The document should reflect that all EWMP cities are required to have LID ordinances in place that comply with specific MS4 permit requirements by June 28, 2015 (the same date the EWMP's must be submitted for review). For example and not meant as a limitation, see page 3.9-28. Since this is a regulatory requirement under the 2012 permit, the LID requirements that must be included in city ordinances can be accounted for in the analysis and conclusions throughout the document.
3.2-13			Air quality section needs a regulatory setting section for cities.
3.1-1			The City has questions about the conclusion that there is a significant and unavoidable construction noise impact. See Impact 3.10-1 and cumulative discussion. Essentially, the City does not have enough information based on what is written to determine if we agree with the conclusion. The document should explain why it assumes, after mitigation, that there may be circumstances where the construction activities for these types of projects may exceed thresholds, or the basis or for that assumption. We typically assume that projects will follow the law unless there is a specific reason to believe these types of projects will exceed noise standards. If a project does violate any local standards, every city has code enforcement teams and strategies in place to promptly remedy the problem or stop construction until it can be remedied. Thus, it is unlikely that a noise violation would go on long enough to cause a significant, unavoidable impact in the community. Please reconsider this conclusion or provide more information explaining the basis for this conclusion.
general			Some of the projects listed (especially, Wildlife Rd, Broad Beach rd, and Legacy Pumps Upgrade) in the PEIR are projects which were to be completed within 30 months of permit adoption as a condition of EWMP Notice of Intent submittals . . . such projects are either already completed or under construction and have gone through their own CEQA process if needed. The PEIR should make clear that these are included as examples of the types of projects that may be included in the EWMPs but not projects that are covered by the PEIR.
ES-2	1	ES	In the Executive Summary, page ES-2 first full paragraph, second sentence, suggest modifying the second sentence to insert the following: "The EWMPs will identify potential and priority structural and non-structural Best Management Practices (BMPs) within the [drainage areas served by the] region's stormwater collection system to improve runoff water quality." Otherwise it sounds like the PEIR only covers projects actually constructed in the LACFCD easements and it would be of limited use to other agencies who want to tier off of the document.
372/3.9-38	1	3.9	structural BMPs would be implemented largely in ~~urbanized~~ developed areas
393/3.10-19	4	3.1	Given the urbanized environment of [insert: much of] the County, the potential exists…
404/3.11-5	1		the structural BMPs would generally be located within existing ~~urbanized~~ developed areas
412/3.12-1		map	the westernmost HS and elementary school in Malibu/N. Santa Monic Bay EWMP area overlap on the map and make it hard to see there are both. Perhaps offset them a little more.

Doc. Reference			Comments
Page (pdf/section-page)	Parag.	Section	City of Malibu
434/3.14-2		table	There is one additional small district that operates as a retailer for an individual private neighborhood in Malibu- they are from the Valencia/Santa Clarita area and we generally have no contact with them or an understanding how they came to provide service to this neighborhood.
448/3.14-16	last		In areas with natural unimproved streams, such as in the Santa Clara River watershed and Malibu [insert: Creek] watershed where surface water diversions may be more common, stormwater flows are conveyed downstream quickly.
448/3.14-16	last		Re: "In areas with natural unimproved streams, such as in the Santa Clara River watershed and Malibu [insert: Creek] watershed where surface water diversions may be more common, stormwater flows are conveyed downstream quickly."- should the North Santa Monica Bay Coastal Watersheds also be mentioned in this? I'm not sure whether to advocate for that: all but a couple short segments of the streams are unimproved and it is not clear what is intended by "conveyed downstream quickly" and what types of "diversions."{ Please clarify and add NSMBCW as necessary.
450/3.14-18	1		County of Los Angeles, except under unusual circumstances, it is feasible to recycle or reuse at least 50 percent ~~or~~ of construction
458/4-4		table 4-1	Wildlife Rd- Construction was scheduled to begin March 2014 and continue through ~~August 2014~~ early 2015
458/4-4		table 4-1	Broad Beach Rd- Early to mid-~~2014~~ 2015
471/6-5	2		reduce pollutants from dry- and wet-weather ~~urban~~ runoff
476/6-10	1		since green-streets and small-scale grassy swales would be installed that generally would improve local character in urban settings
479/6.2	2nd obj	table 6-2	pollutants from dry- and wet-weather ~~urban~~ runoff in a cost-effective manner

RB-AR 9282

Response to Comment Letter 11 (City of Malibu – March 16, 2015)

Response to Comment 11-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or “Program”). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The commenter’s support for the PEIR is noted.

Response to Comment 11-B:

Page 2-18 of the PEIR has been updated with the correct early 2015 completion date for the Wildlife Road Project. Chapter 12, *Clarifications and Modifications,* outlines the revisions to the Draft PEIR.

Response to Comment 11-C:

Page 2-25 of the PEIR has been updated to change “flat” gate to “flap” gate. Chapter 12, *Clarifications and Modifications,* outlines the revisions to the Draft PEIR.

Response to Comment 11-D:

The commenter states that "treating stormwater and urban runoff prior to the entering into…" should read, “treating stormwater and **dry-weather** runoff prior to **flowing** into…"

Page 2-31 of the PEIR has been updated to change “treating stormwater and urban runoff prior to the entering into…" to “treating stormwater and **dry-weather** runoff prior to **flowing** into.” Chapter 12, *Clarifications and Modifications,* outlines the revisions to the Draft PEIR.

Response to Comment 11-E:

Page 2-31 of the PEIR has been updated to delete “with potential to incorporate harvest and use systems for Malibu Drains.” Chapter 12, *Clarifications and Modifications,* outlines the revisions to the Draft PEIR.

Response to Comment 11-F:

Page 2-31 of the PEIR has been updated to read, “Two types of biofilters are included; pre-manufactured and custom designed biofilters." Chapter 12, Clarifications and Modifications, outlines the revisions to the Draft PEIR.

Response to Comment 11-G:

Page 2-37 of the PEIR has been updated to add "compliance with Santa Monica Bay and Malibu Creek Bacteria TMDL requirements." Chapter 12, Clarifications and Modifications, outlines the revisions to the Draft PEIR.

Response to Comment 11-H:

The comment includes copied text from the Draft PEIR, page 2-41, Section 2.5. However, no suggested text revisions were provided. As a result, no change was identified.

Response to Comment 11-I:

The use of the phrase “predominately urbanized” is appropriate for the figures. The location of BMPs will not be limited to urbanized or developed areas, but will be located wherever water quality improvements are needed to comply with water quality objectives. No revision is necessary.

Response to Comment 11-J:

The green dots on the figures indicate potential locations being considered for regional or centralized projects. If the green dots were indicated in the legend but not shown on the map, the BMP information was not available at the time of publication of the Draft PEIR. Appendix G includes the locations of priority projects shown as red dots on the figures. No revision is necessary.

Response to Comment 11-K:

Page 3.1-2 of the PEIR has been updated to change “large-acre residential properties” to “large-acre and rural residential properties.” Chapter 12, *Clarifications and Modifications,* outlines the revisions to the Draft PEIR.

Response to Comment 11-L:

Page 3.1-2 of the PEIR generalizes the acreage of impervious acres in Ballona Creek and Malibu Creek watersheds, but no precise calculation has been prepared. No revision is necessary.

Response to Comment 11-M:

Page 3.2-1 of the PEIR has been updated to change “the majority of the County is highly urbanized and consists of several cities, communities, and unincorporated areas” to “the majority of the County is highly urbanized with some adjacent rural areas and consists of several cities, communities, and unincorporated areas.” Chapter 12, *Clarifications and Modifications,* outlines the revisions to the Draft PEIR.

Response to Comment 11-N:

Page 3.3-2 of the PEIR has been updated to reflect this change "these watersheds are characterized by dense residential development along the coast and less development and greater open space areas inland" to "these watersheds are characterized by dense residential development immediately along the coast and less development and greater open space areas as you move off the shoreline and head inland." Chapter 12, *Clarifications and Modifications,* outlines the revisions to the Draft PEIR.

Response to Comment 11-O:

Page 3.3-19 of the PEIR has been updated to identify "Creek" in all instances in which "Malibu Creek Watershed" is intended. Additionally, "Creek" has been added to all other appropriate instances in the Draft PEIR. Chapter 12, *Clarifications and Modifications,* outlines the revisions to the Draft PEIR.

Response to Comment 11-P:

Page 3.3-20 of the PEIR has been updated to change "Malibu Watershed" to "Malibu Creek Watershed." Additionally, "Creek" has been added to all other appropriate instances in the Draft PEIR. Chapter 12, *Clarifications and Modifications,* outlines the revisions to the Draft PEIR.

Response to Comment 11-Q:

The use of the phrase "pre-urbanization" is appropriate for the text. And is consistent with the text on Page 3.2-1 of the PEIR, which has been updated to change "the majority of the County is highly urbanized and consists of several cities, communities, and unincorporated areas" to "the majority of the County is highly urbanized with some adjacent rural areas and consists of several cities, communities, and unincorporated areas." No changes are needed.

Response to Comment 11-R:

Page 3.3-24 of the PEIR has been updated to change "Malibu Watershed" to "Malibu Creek Watershed." Additionally, "Creek" has been added to all other appropriate instances. Chapter 12, *Clarifications and Modifications,* outlines the revisions to the Draft PEIR.

Response to Comment 11-S:

Page 3.3-26 of the PEIR has been updated to change "Malibu Watershed" to "Malibu Creek Watershed." Additionally, "Creek" has been added to all other appropriate instances. Chapter 12, *Clarifications and Modifications,* outlines the revisions to the Draft PEIR.

Response to Comment 11-T:

Page 3.8-4 of the PEIR has been updated to change "in urbanized areas along Santa Monica Bay" to "in urbanized areas along central and south Santa Monica Bay." Chapter 12, *Clarifications and Modifications,* outlines the revisions to the Draft PEIR.

Response to Comment 11-U:

The exact original text as described above could not be located in the document. No revision is necessary to page 3.8-4 of the PEIR.

Response to Comment 11-V:

Page 3.8-6 of the PEIR has been updated to change “address bacteria loading” to “prevent possible bacteria loading.” Chapter 12, *Clarifications and Modifications,* outlines the revisions to the Draft PEIR.

Response to Comment 11-W:

The use of the phrase “predominately located in urbanized” is appropriate for the figures. No revision is necessary.

Response to Comment 11-X:

The “Potential (Regional and Centralized) BMPs” symbolized by green circles are located in the key at the bottom left corner of Figure 3.8-3. No revision is necessary to Figure 3.8-3 of the PEIR.

Response to Comment 11-Y:

Page 3.8-27 of the PEIR has been updated to add “including Los Angeles County from certain Ocean Plan ASBS discharge prohibitions” after “which exempts certain listed dischargers.” Chapter 12, *Clarifications and Modifications,* outlines the revisions to the Draft PEIR. The revisions are also

Response to Comment 11-Z:

Page 3.8-27 of the PEIR has been updated to add “California Department of Parks and Recreation” and to add “Laguna Point to Latigo Point,” and to delete “and the California.” Chapter 12, *Clarifications and Modifications,* outlines the revisions to the Draft PEIR.

Response to Comment 11-AA:

Page 3.8-27 of the PEIR has been updated to change “provided that it:” to “the discharge:”. Chapter 12, *Clarifications and Modifications,* outlines the revisions to the Draft PEIR.

Response to Comment 11-BB:

Page 3.8-38 of the PEIR has been updated to change “Drainage patterns would change through implementation of these non-structural institutional BMPs, implementation of LID strategies, which include on-site infiltration, that would minimize off-site flows as well as the potential for erosion and off-site siltation" to “Drainage patterns would change through implementation of these non-structural institutional BMPs**.** However, implementation of LID strategies, which include on-site infiltration,-would minimize off-site flows as well as the potential for erosion and off-site siltation." Chapter 12, *Clarifications and Modifications,* outlines the revisions to the Draft PEIR.

Response to Comment CC:

Page 3.8-39 of the PEIR has been updated to reflect this change “The structural BMPs would also provide improvements to water quality of receiving waters” to “The structural BMPs would also provide protections to water quality of receiving waters.” Chapter 12, *Clarifications and Modifications,* outlines the revisions to the Draft PEIR.

Response to Comment 11-DD:

Page 3.8-39 of the PEIR has been updated to change “BMPs but would be designed to improve water quality and reduce stormwater flow volumes” to “BMPs but would be designed to improve runoff water quality and reduce stormwater flow volumes.” Chapter 12, *Clarifications and Modifications,* outlines the revisions to the Draft PEIR.

Response to Comment 11-EE:

Page 3.9-1of the PEIR has been updated to change “The majority of the County is highly urbanized and consists of several cities, communities and unincorporated areas” to “The majority of the County is highly urbanized with some adjacent rural areas and consists of several cities, communities and unincorporated areas.” Chapter 12, *Clarifications and Modifications,* outlines the revisions to the Draft PEIR.

Response to Comment 11-FF:

Page 3.9-1of the PEIR has been updated to change “The EWMP agencies have no jurisdiction over the land that is owned by the State of California (i.e., California Department of Fish and Wildlife, the State Lands Commission, and the California Department of Transportation) or the U.S. Government” to , “The EWMP agencies have no jurisdiction over the land that is owned by the State of California (i.e., California Department of Parks and Recreation, California Department of Fish and Wildlife, the State Lands Commission, and the California Department of Transportation) or the U.S. Government (i.e., National Parks Service).” Chapter 12, *Clarifications and Modifications,* outlines the revisions to the Draft PEIR.

Response to Comment 11-GG:

The use of the phrase “predominately located in urbanized” is appropriate. No changes are needed.

Response to Comment 11-HH:

The “Potential (Regional and Centralized) BMPs” symbolized by green circles are located in the key at the bottom right corner of Figure 3.9-6 of the PEIR. No revision is necessary.

Response to Comment 11-II:

The numerous cities encompassed by the EWMP area all have their own respective agricultural designations. As implementation of the individual BMP projects proceeds, any agricultural designations within the project area will be identified and evaluated on a project-by-project basis during subsequent CEQA environmental processes. No revision is required on page 3.9-26 of the PEIR.

Response to Comment 11-JJ:

LID standards are required to be in place within the jurisdictions of Permittees that have chosen EWMPs as their form of compliance with the MS4 Permit. Page 3.9-28 of the PEIR has been updated to reflect this change. Chapter 12, *Clarifications and Modifications,* outlines the revisions to the Draft PEIR.

Response to Comment 11-KK:

Page 3.9-36 of the PEIR, has been updated to change "Malibu Watershed" to "Malibu Creek Watershed." Additionally, "Creek" has been added to all other appropriate instances. Chapter 12, *Clarifications and Modifications,* outlines the revisions to the Draft PEIR.

Response to Comment 11-LL:

The use of the phrase "urban areas" is appropriate. No revision is necessary.

Response to Comment 11-MM:

The PEIR identifies LID ordinances as non-structural BMPs that will assist in achieving permit compliance. The statements on page 3.9-38 and 3.14-10 of the PEIR are sufficient and no changes are needed.

Response to Comment 11-NN:

The regulatory summary in Section 3.2, *Air Quality* of the PEIR is sufficient and no changes are needed.

Response to Comment 11-OO:

The PEIR concludes that under worse-case scenarios, noise impacts could be significant and unavoidable. This does not mean that all projects will result in significant noise impacts. No revision is necessary on page 3.10-1 of the PEIR.

Response to Comment 11-PP:

As noted in Chapter 1 of the PEIR, each individual project will undergo subsequent CEQA determination by the lead implementing agency prior to approval. No revision is necessary.

Response to Comment 11-QQ:

The sentence is sufficient and no revision is necessary.

Response to Comment 11-RR:

The use of the word “urbanized” is appropriate. No changes are needed on Page 3.9-38 of the PEIR.

Response to Comment 11-SS:

The sentence is sufficient and no revision is necessary.

Response to Comment 11-TT:

The sentence is sufficient and no revision is necessary.

Response to Comment 11-UU:

Figure 3.12-1 of the PEIR is meant to provide an estimated location for schools. No changes are needed.

Response to Comment 11-VV:

The commenter’s statement that there is an additional water retailer for a private neighborhood in Malibu has been noted for the record. However, no information was provided for this retailer, such as the ‘additional small district’s’ name, therefore, no information was added to page 3.14-1.

Response to Comment 11-WW:

The commenter states that “creek” should be added when referring to Malibu Creek Watershed, such as in the following sentence, “In areas with natural unimproved streams, such as in the Santa Clara River watershed and Malibu **Creek** watershed where surface water diversions may be more common, stormwater flows are conveyed downstream quickly.”

Page 3.14-16 of the PEIR has been updated to add “Creek” in between “Malibu” and “watershed.” Additionally, “Creek” has been added to all other appropriate instances. Chapter 12, *Clarifications and Modifications,* outlines the revisions to the Draft PEIR.

Response to Comment 11-XX:

Although the Santa Monica Bay Coastal Watershed has some natural unimproved streams, the Santa Clara River and Malibu Creek watersheds were used as examples in the sentence mentioned by the commenter since they contain greater numbers of natural unimproved streams. Therefore, the sentence is considered sufficient and no revision was made.

Response to Comment 11-YY:

Page 3.14-18 of the PEIR has been updated to change "it is feasible to recycle or reuse at least 50 percent or construction" to "it is feasible to recycle or reuse at least 50 percent **of** construction." Chapter 12, *Clarifications and Modifications,* outlines the revisions to the Draft PEIR.

Response to Comment 11-ZZ:

Table 4.1 on page 4-4 of the PEIR has been updated to change "early to mid-2014" to "early to mid-**2015**." Chapter 12, *Clarifications and Modifications,* outlines the revisions to the Draft PEIR.

Response to Comment 11-AAA:

Table 4.1 on page 4-4 of the PEIR has been updated to change "early to mid-2014" to "early to mid-**2015**." Chapter 12, *Clarifications and Modifications,* outlines the revisions to the Draft PEIR.

Response to Comment 11-BBB:

Page 6-5 of the PEIR has been updated to change "reduce pollutants from dry- and wet-weather urban runoff" to "reduce pollutants from dry- and wet-weather runoff." Chapter 12, *Clarifications and Modifications,* outlines the revisions to the Draft PEIR.

Response to Comment CCC:

The commenter copied text from the PEIR but suggested no revision. The copied text from the PEIR has been noted for the record.

Response to Comment DDD:

Table 6-2 on page 6-13 of the PEIR has been updated to change "pollutants from dry- and wet-weather urban runoff in a cost-effective manner" to "pollutants from dry- and wet-weather runoff in a cost-effective manner." Chapter 12, *Clarifications and Modifications,* outlines the revisions to the Draft PEIR.

STATE OF CALIFORNIA
GOVERNOR'S OFFICE *of* PLANNING AND RESEARCH
STATE CLEARINGHOUSE AND PLANNING UNIT

EDMUND G. BROWN JR.
GOVERNOR

KEN ALEX
DIRECTOR

March 9, 2015

Gregg BeGell
Los Angeles County Flood Control District
900 South Fremont Avenue, 11th Floor
Alhambra, CA 91803

Subject: Enhanced Watershed Management Programs (EWMP) Program EIR
SCH#: 2014081106

Dear Gregg BeGell:

The State Clearinghouse submitted the above named Draft EIR to selected state agencies for review. The review period closed on March 6, 2015, and no state agencies submitted comments by that date. This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act.

Please call the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process. If you have a question about the above-named project, please refer to the ten-digit State Clearinghouse number when contacting this office.

Sincerely,

Scott Morgan
Director, State Clearinghouse

RECEIVED
MAR 17 2015
DEPT. PUBLIC WORKS
PROJECT MANAGEMENT DIVISION II

1400 10th Street P.O. Box 3044 Sacramento, California 95812-3044
(916) 445-0613 FAX (916) 323-3018 www.opr.ca.gov

Document Details Report
State Clearinghouse Data Base

SCH# 2014081106
Project Title Enhanced Watershed Management Programs (EWMP) Program EIR
Lead Agency Los Angeles County Flood Control District

Type EIR Draft EIR

Description The development of the EWMP will involve the evaluation and selection of multiple watershed control measures or best management practices (BMP) types including non-structural and distributed, centralized and regional structural BMPs. These BMPs will be implemented to meet compliance goals and strategies under the 2014 MS4 Permit. Structural BMPs involve the construction of a physical control measure to alter the hydrology and/or water quality of incoming stormwater or non-stormwater. The three major functions for structural BMPs are infiltration, water quality treatment, and storage. These are three categories of structural BMPs, defined by the runoff area treated by the BMP and the required retention volume in accordance with the Permit.

Lead Agency Contact

Name Gregg BeGell
Agency Los Angeles County Flood Control District
Phone 626 300 3298 **Fax**
email
Address 900 South Fremont Avenue, 11th Floor
City Alhambra **State** CA **Zip** 91803

Project Location

County Los Angeles
City Los Angeles, City of
Region
Lat / Long
Cross Streets Throughout Los Angeles County
Parcel No. Various
Township **Range** **Section** **Base**

Proximity to:

Highways Various
Airports LAX, Burbank
Railways Various
Waterways Various
Schools Various
Land Use Various land uses throughout the County

Project Issues Agricultural Land; Air Quality; Archaeologic-Historic; Biological Resources; Drainage/Absorption; Flood Plain/Flooding; Geologic/Seismic; Minerals; Noise; Population/Housing Balance; Public Services; Recreation/Parks; Soil Erosion/Compaction/Grading; Toxic/Hazardous; Traffic/Circulation; Water Quality; Vegetation; Water Supply; Wetland/Riparian; Wildlife; Cumulative Effects; Other Issues

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Reviewing Agencies Resources Agency; Department of Fish and Wildlife, Region 5; Department of Parks and Recreation; Department of Water Resources; Office of Emergency Services, California; Caltrans, Division of Aeronautics; California Highway Patrol; Caltrans, District 7; Air Resources Board; State Water Resources Control Board, Division of Drinking Water; State Water Resources Control Board, Divison of Financial Assistance; State Water Resources Control Board, Division of Water Rights; Regional Water Quality Control Board, Region 4; Regional Water Quality Control Bd., Region 6 (Victorville); Native American Heritage Commission

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Date Received 01/21/2015 **Start of Review** 01/21/2015 **End of Review** 03/06/2015

Note: Blanks in data fields result from insufficient information provided by lead agency.

Response to Comment Letter 12 (State Clearinghouse– March 17, 2015)

Response to Comment 12-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The commenter's statement that no state agency comments were received and that the Draft PEIR complied with CEQA review requirements has been noted for the record.

Paige Anderson

To: Laura Rocha
Subject: RE: Westwood Neighborhood Greenway - EWMP

From: Marilyn Tusher [mailto:mltusher@att.net]
Sent: Sunday, March 01, 2015 4:28 PM
To: Gregg Begell
Subject: Westwood Neighborhood Greenway - EWMP

Dear Mr. BeGell,
Please see my attached letter in support of this project.
Thank you,
Marilyn Tusher, President
Westwood Gardens Civic Assn.,Inc.

Westwood Gardens Civic Association
Since 1948
P.O. Box 642001 Los Angeles, Ca. 90064
westwoodgardens@gmail.com

Gregg BeGell, PE
County of Los Angeles Department of Public Works
Project Management Division II
900 South Fremont, 5th Floor
Alhambra, California 91803
gbegell@dpw.lacounty.gov

March 1, 2015

RE: Support for Westwood Neighborhood Greenway

Dear Mr. BeGell:

I am writing to you today as the President of Westwood Gardens Civic Association, which is comprised of 620 single family homes situated within the boundaries of Ayres Avenue on the north, National Blvd. on the south, Midvale Avenue on the west and Overland and Dunleer Place on the east. Our HOA has been in existence since 1948, over 66 years, and is one of the longest standing homeowner's association on the west side of Los Angeles. We take great pride in our community and work very hard to preserve and protect it for the peaceful enjoyment of all our homeowners.

On behalf of our Board of Directors, and as a member of the WNG Steering Committee, I am writing in support of the WNG as part of the Enhanced Watershed Management Plan (EWMP) for the Ballona Creek Watershed. This WNG Project will be a multi-benefit project providing not only urban runoff treatment, but also native habitat and public access via transit, bicycle and pedestrian paths.

This will be a unique opportunity for our greater community as it will be adjacent to the busiest station on the Expo Light Rail line, part of the growing Metro transit network.

Our Homeowner's association is the most immediately affected and impacted by this project between Overland and Westwood, as it backs up directly adjacent to our residents' backyards. With your support, along with many others which the Greenway project has already received, this Westwood Neighborhood Greenway may actually come to fruition along with the opening of the Expo II Light Rail Line, for the benefit of everyone.

Sincerely,

Marilyn Tusher

Marilyn Tusher, President
Westwood Gardens Civic Association, Inc.

Response to Comment Letter 13 (Westwood Gardens Civic Association – March 1, 2015)

Response to Comment 13-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The commenter's support for the PEIR is noted.

Response to Comment 13-B:

The commenter's statement that their homeowner's association is the most immediately affected and impacted by the Westwood Neighborhood Greenway project between Overland and Westwood is noted for the record. The PEIR assesses the environmental impacts associated with implementation of EWMPs as a form of compliance with the MS4 Permit. More site investigations are needed to fully vet the proposed Westwood Neighborhood Greenway project and define the project scope needed to satisfy the EWMP's requirements. The City of Los Angeles is the primary agency who will benefit from a water quality project at the Westwood Neighborhood Greenway project. The City of Los Angeles will likely play a major role in the decision to implement an EWMP project at Westwood Neighborhood Greenway project.

ARCADIA
HISTORICAL SOCIETY

March 3, 2015

Mr. Gregg BeGell, P.E.
County of Los Angeles Department of Public Works
Project Management Division II
900 South Fremont, 5th Floor
Alhambra, CA 91803
gbegell@dpw.lacounty.gov

RECEIVED
MAR 04 2015
DEPT. PUBLIC WORKS
PROJECT MANAGEMENT DIVISION II

Dear Mr. BeGell,

On behalf of Arcadia Historical Society, I would like to add our concerns about the Arboretum's Baldwin Lake to the public comments you have been collecting on behalf of the Rio Hondo Watershed Management Plan. The Arboretum is the historic core of the City of Arcadia, and the Society takes seriously all issues that impact both the important structures located there and the natural setting that makes the Arboretum such a significant piece of County property. Baldwin Lake is part of the 'landscape significance' of the National Register of Historic Places listing for both the Queen Anne Cottage and Coach Barn, but more than that notable distinction, Baldwin Lake has played an important role in educating our youth about water and how it attracted settlers over the years.

Arcadia schools regularly visit the Arboretum on field trips (as do countless other schools, many in districts far less affluent than Arcadia Unified), and the impression left on those young minds potentially remains forever. I grew up in Arcadia and personally remember my visits to the Arboretum where lessons taught about both water and wildlife that depend on it remain with me today.

We have all been concerned as we watch the water level in the lake decline, and we understand the need to conserve water wherever possible. Surely this historic body of water can be saved, however. We have seen movie locations dredge parts of the lake, but we have also seen those same large filming units pay little heed as their equipment destabilized the historic perimeter wall of Baldwin Lake. If the lake basin can be deepened sufficiently, and if the historic retaining walls can be restored to their original purpose, perhaps Baldwin Lake can become a "highlight reel" of responsible water management.

Arcadia Historical Society is committed to the mission of preserving and protecting our historic treasures. Baldwin Lake is surely a treasure that has significance far beyond storm water management. One hopes that deepening the basin will help keep storm waters "in Arcadia" rather than flowing freely out to the sea, but perhaps as importantly, preserving the historic integrity of Baldwin Lake means continuing the ongoing role it has played in educating our youth that man originally occupied this land now called Arcadia because of the presence of water.

The Arboretum is an incredible public resource, and Baldwin Lake is the heartbeat. Please add our voice to others who are asking that this historic body of water be part of the important projects that the Enhanced Watershed Management Plan endorses.

Sincerely,

Gene Glasco
President, Arcadia Historical Society

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www.arcadiahistoricalsociety.com • FOLLOW US ON FACEBOOK: arcadiahistoricalsociety

Response to Comment Letter 14 (Arcadia Historical Society – March 3, 2015)

Response to Comment 14-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The PEIR assesses the environmental impacts associated with implementation of EWMPs as a form of compliance with the MS4 Permit. The restoration of Baldwin Lake is shown as a potential priority project to be implemented as part of the Rio Hondo/San Gabriel River EWMP in Figure 2-13 of the PEIR. More site investigations by implementing agencies are needed to fully vet the proposed project and define the project scope needed to satisfy the EWMP's requirements. The City of Arcadia is the primary agency who will benefit from a water quality project at the Baldwin Lake. The City of Arcadia will likely play a major role in the decision to implement an EWMP project at Baldwin Lake.

Paige Anderson

To: Laura Rocha
Subject: RE: Baldwin Lake

From: canonir3035@kelloggarden.com [mailto:canonir3035@kelloggarden.com]
Sent: Wednesday, March 04, 2015 3:17 PM
To: Connie Wiersma
Subject: Scanned Document (DO NOT REPLY)

GARDEN KELLOGG PRODUCTS
A Division of Kellogg Supply, Inc.

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Carson, CA 90745

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Fax 310.835.6174
www.KelloggGarden.com

March 4, 2015

Mr. Gregg BeGell, P.E.
County of Los Angeles Department of Public Works
Project Management Division ll
900 South Fremont, 5th Floor
Alhambra, CA 91803

Dear Gregg,

The restoration of Baldwin Lake will both enhance watershed function and serve the public with exceptional educational, ecological, and scenic benefits. Baldwin Lake is a beloved public resource visited by over 330,000 annual visitors; its inclusion as a high priority project within the Rio Hondo/San Gabriel River Enhanced Watershed Management Plan offers unparalleled public benefit.

Please provide every consideration to including Baldwin Lake restoration in the plan.

Sincerely,

Hap Kellogg
President/CEO
Kellogg Garden Products

Response to Comment Letter 15 (Kellogg Garden Products – March 4, 2015)

Response to Comment 15-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The PEIR assesses the environmental impacts associated with implementation of EWMPs as a form of compliance with the MS4 Permit. The restoration of Baldwin Lake is shown as a potential priority project to be implemented as part of the Rio Hondo/San Gabriel River EWMP in Figure 2-13 of the PEIR. More site investigations are needed to fully vet the proposed project and define the project scope needed to satisfy the EWMP's requirements. The City of Arcadia is the primary agency who will benefit from a water quality project at the Baldwin Lake. The City of Arcadia will likely play a major role in the decision to implement an EWMP project at Baldwin Lake.

Paige Anderson

To: Laura Rocha
Subject: RE: Comments on LACFCD EWMP Draft PEIR

From: Liz Crosson [mailto:liz@lawaterkeeper.org]
Sent: Monday, March 09, 2015 5:38 PM
To: Gregg Begell
Cc: Hayat, Becky; Peter Shellenbarger; 'Steve Fleischli (sfleischli@nrdc.org)'; Tatiana Gaur
Subject: Comments on LACFCD EWMP Draft PEIR

Hi Greg,

Please find comments on the County of Los Angeles Department of Public Works' Draft Program Environmental Impact Report for 12 EWMPs under the 2012 LA MS4 Permit attached, along with two exhibits.

Please let me know if you have any questions.

Best,

Liz Crosson
Executive Director
Los Angeles Waterkeeper
(310) 394-6162 x100

Go Dirty for the Drought. Take the Dirty Car Pledge<http://lawaterkeeper.org/dirtyforthedrought/> now!

[cid:094271DA-5738-4B53-9472-00285AC2313F]

March 9, 2015

Via electronic mail

Gregg BeGell, P.E.
County of Los Angeles Department of Public Works
Project Management Division II
900 South Fremont Avenue, 5th Floor
Alhambra, CA 91803
Email: gbegell@dpw.lacounty.gov

Re: Comments on Los Angeles County Draft Program Environmental Impact Report for Enhanced Watershed Management Programs under the Los Angeles County Municipal Separate Storm Sewer System Permit, NPDES Permit No. CAS004001, Order No. R4-2012-0175

Dear Mr. BeGell:

On behalf of the Natural Resources Defense Council ("NRDC"), Los Angeles Waterkeeper ("Waterkeeper"), and Heal the Bay (collectively, "Environmental Groups"), we are writing with regard to the Draft Program Environmental Impact Report ("PEIR") for the 12 Enhanced Watershed Management Programs ("EWMP") under the 2012 Los Angeles County Municipal Separate Storm Sewer System Permit ("2012 MS4 Permit" or "2012 Permit").[1] We appreciate the opportunity to submit these comments to the Los Angeles County Department of Public Work's Flood Control District. ("LACFCD").

I. Introduction

As an initial matter, Environmental Groups' comments on the EWMP Draft PEIR should not be construed as approval or acceptance of the 2012 Permit terms. We continue to maintain that several provisions of the Permit fail to meet the requirements of the federal Clean Water Act and California Porter Cologne Act, and are otherwise inconsistent with

[1] The Enhanced Watershed Management Programs addressed in the Program Environmental Impact Report ("PEIR") encompass several watersheds of Los Angeles County including the following: Ballona Creek, Beach Cities, Dominguez Channel, Malibu Creek, Marina del Rey, North Santa Monica Bay Coastal Watersheds, Palos Verdes Peninsula, Rio Hondo/San Gabriel River Water Quality Group, Santa Monica Bay, Upper Los Angeles River, Upper San Gabriel River, and Upper Santa Clara River.

both federal and state law. Environmental Groups filed a petition[2] with the State Water Resources Control Board ("State Board"), which demonstrates the ways in which the 2012 Permit violates these legal requirements. The State Board has yet to make a determination on our petition.

Under the 2012 Permit, permittees electing to participate in an EWMP are required to submit a draft EWMP plan by June 2015. (2012 Permit, at VI.C.4.c.iv.) The EWMP Work Plans submitted by permittees in June 2014 presented an opportunity for permittees to demonstrate their commitment to developing EWMPs to meet required Receiving Water Limitations ("RWLs") and Total Maximum Daily Load ("TMDL") provisions. Environmental Groups reviewed the EWMP Work Plans and submitted comments to the Regional Board.[3] As we expressed in our comments, many permittees have made significant progress towards developing their draft EWMPs. However, the Work Plans are in many instances unclear as to what analysis or programs will ultimately be incorporated into final EWMPs to be submitted to the Regional Board in June 2015. In fact, some of the Work Plans clearly indicate that the permittees' management programs, as currently envisioned, will not ensure that discharges from the permittees' MS4 systems do not cause or contribute to exceedances of RWLs, including applicable water quality standards, or TMDL limitations in the 2012 Permit, and otherwise fail to meet Permit requirements.

EWMP Work Plan deficiencies do not bode well for the June 2015 Draft EWMPs, and this CEQA process is an opportunity for LACFCD and EWMP permittees to address our concerns with program development thus far. The Regional Board-approved delay in progress toward compliance with water quality based effluent limits ("WQBELs") and RWLs for EWMP permittees cannot pass lightly—the draft plans submitted by EWMP groups in June 2015 must fully and clearly demonstrate a path to compliance and cleaner waters for the region. To this extent, any identified deficiencies with the EWMP Work Plans must be addressed prior to submission of the draft EWMPs in 2015, and should also be addressed in this PEIR to fully assess the potential environmental impacts of the program.

---

[2] For a full explanation of how the permit violates the law, see Memorandum of Points and Authorities in Support of Petition of NRDC, Los Angeles Waterkeeper and Heal the Bay for Review of Action by the California Regional Water Quality Control Board, Los Angeles Region, in Adopting the Los Angeles County Municipal Separate Stormwater National Pollutant Discharge Elimination System (NPDES) Permit; Order No. R4-2012-0175; NPDES Permit No. CAS004001 (Dec, 10, 2012) ("Environmental Groups' Petition"), SWRCB/OCC File No. A-2236(m), attached as Exhibit A.
[3] *See* Environmental Groups' Comments on Enhanced Watershed Management Work Plans and Monitoring Plans Pursuant to Requirements under the Los Angeles County Municipal Separate Storm Sewer System Permit, NPDES Permit No. CAS004001, Order No. R4-2012-0175, submitted to the Regional Board September 16, 2014, attached as Exhibit B.

II. General Comments

Environmental Groups have categorized comments into general comments about the approach in the PEIR and some specific comments about the PEIR analysis. Because the approach in the Draft PEIR will likely follow to the management programs due in June 2015, LACFCD should take this important opportunity to revise the Draft PEIR to address the concerns articulated below.

A. Inadequate Information Related to Ensuring Compliance with Required Water Quality Limits Undermines the Success of the PEIR

In areas of the permittees' jurisdictions where retention of the 85th percentile, 24-hour storm event is not technically feasible, EWMPs must include other watershed control measures to "ensure that MS4 discharges achieve compliance with all interim and final WQBELs set forth in Part VI.E. . . . and [] ensure that MS4 discharges do not cause or contribute to exceedances of receiving water limitations in Part V.A." (*Id*. at VI.C.1.g.v.) In several instances, the Draft PEIR acknowledges this legal obligation and claims that planning efforts are aimed towards that goal. However, whether the environmental impact of the program will indeed include compliance remains uncertain. In fact, based on Environmental Groups' review of several of the EWMP Work Plans related to the Draft PEIR and the very general information included in the Draft PEIR, the actual environmental impact of the EWMPs is difficult to determine. Deficiencies identified in the EWMP Work Plans potentially undermine statements of intended compliance in the PEIR. Thus, Environmental Groups urge LACFCD to clarify several issues related to assuring ultimate compliance with water quality limits.

First, several EWMP Work Plans related to the Draft PEIR insufficiently prioritize pollutants as required in the 2012 MS4 Permit. Permittees are required to prioritize pollutants into three categories: (1) TMDL pollutants (highest priority), (2) 303(d) listed but no applicable TMDL (high priority), and (3) insufficient data to determine impairment, but exceeds RWLs (medium priority). Category (1) must also include non-TMDL pollutants that have similar fate and transport mechanisms as TMDL pollutants. (2012 Permit, at VI.C.2.a.i.) Prioritization is essential to ensuring compliance with required limits. Some of the deficiencies in prioritization include failing to include priority pollutants,[4] and failing to justify exclusion of some pollutants.[5] Additionally, permittees have set incorrect timelines for TMDL implementation and compliance in

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[4] *See* North Santa Monica Bay Coastal Watersheds EWMP Work Plan, at 18; *see also* Upper Santa Clara River EWMP Work Plan, at 3-4; *see also* Upper Los Angeles River EWMP Work Plan, at Appendix 2.A. (lacks explanation of why Total Aluminum is not included as a priority despite data demonstrating exceedances).
[5] *See* North Santa Monica Bay Coastal Watersheds EWMP Work Plan, at 18.

some cases.[6] Without adequately characterizing each watershed and prioritizing the right pollutants, it is impossible to fully assess the environmental impacts of the proposed programs under CEQA. Environmental Groups understand that the EWMPs are still in development, but this PEIR must include a process and approach that complies with permit terms to fully evaluate the impacts of proposed actions.

B. Green Infrastructure Should Be Prioritized Wherever Feasible

Environmental Groups commend the LACFCD for proposing multi-benefit stormwater projects that emphasize flood risk mitigation, water conservation and water supply. In light of the fact that the LACFCD has a vested interest in increasing opportunities for stormwater capture and groundwater recharge as a means of assisting local water supply and augmentation, we urge the LACFCD to work with Permittees in all 12 EWMP watersheds to prioritize green infrastructure or low-impact development (LID) practices wherever feasible, and provided that such projects do not produce significant adverse impacts.

Environmental Groups have long supported the use of green infrastructure techniques to control urban runoff. Green infrastructure provides multiple benefits to surrounding communities at a higher benefit-cost ratio when compared to grey infrastructure.[7] A 2007 U.S. Environmental Protection Agency (EPA) study found that "in the vast majority of cases . . . implementing well-chosen LID practices saves money for developers, property owners, and communities while protecting and restoring water quality."[8] With only "a few exceptions," the EPA study found that "[t]otal capital cost savings ranged from 15 to 80 percent when LID methods were used" instead of conventional stormwater management techniques.[9] The EPA study is not alone in reaching this conclusion. A report by ECONorthwest concluded that LID methods not only "cost less to install, have lower operations and maintenance (O&M) costs, and provide more cost-effective stormwater management and water-quality than conventional stormwater controls" but they also provide "ecosystem services and associated economic benefits that conventional

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[6] *See* Ballona Creek EWMP Work Plan, at 1-10 (failure to include interim milestones); *see also* Rio Hondo/San Gabriel River EWMP Work Plan, Table 1-2, at 2 (failure to include interim and final compliance deadlines); *see also* Upper Los Angeles River EWMP Work Plan, at 2-7, 2-9 (compliance deadlines exceed allowable deadlines under the Inland Surface Water Plan).
[7] U.S. Environmental Protection Agency, *Case Studies Analyzing the Economic Benefits of Low Impact Development and Green Infrastructure Programs* (August 2013), *available at* http://water.epa.gov/polwaste/green/upload/lid-gi-programs_report_8-6-13_combined.pdf.
[8] U.S. Environmental Protection Agency, *Reducing Stormwater Costs through Low Impact Development (LID) Strategies and Practices*, December 2007, at iii. available at http://water.epa.gov/polwaste/green/upload/2008_01_02_NPS_lid_costs07uments_reducingstormwatercosts-2.pdf.
[9] *Id.* at iv.

stormwater controls do not.[10] Moreover, a survey released by the American Society of Landscape Architects in 2011 found that green infrastructure reduced or did not influence project costs 75 percent of the time."[11]

Given the current severe drought conditions, protecting and augmenting local water supplies is essential for long-term sustainability. A report by the NRDC found that implementing LID practices at new and redeveloped residential and commercial properties in urbanized areas of Southern California and limited portions of San Francisco Bay has the potential to increase local water supplies by up to 405,000 acre-feet of water per year by 2030.[12] This volume of water accounts for roughly two-thirds of all water used by the City of Los Angeles each year.[13] Historically, Southern California has imported approximately 50 percent of its water supply from distant, energy-intensive sources such as the Sacramento-San Joaquin Delta and the Colorado River.[14] Green infrastructure thus has the potential to greatly reduce Los Angeles' dependence on imported water.

Last but not least, Environmental Groups strongly advocate for the implementation of structural BMPs (distributed, centralized, and regional) that capture stormwater and store it for reuse – so long as they do not produce significant adverse impacts – as such practices provide both water quality *and* water supply benefits.

III. Specific Concerns in the PEIR

Section 3.5 – Geologic and Mineral Resources
Impact 3.5-2: "The proposed program could result in substantial soil erosion or the loss of top soil."

The Draft PEIR states environmental impacts associated with substantial soil erosion or loss of top soil are less than significant. Environmental Groups disagree. EWMP projects are encouraged to retain the 85th percentile 24-hour storm event; however, it is unclear that all EWMP BMPs will retain this volume and even if they did, in some instances some volume of runoff will remain untreated. Thus, at least some percentage of stormwater generated, which will vary depending on individual EWMPs, will be treated and discharged into the MS4. Although discharge points from centralized and

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[10] ECONorthwest, *The Economics of Low Impact Development: A Literature Review,* November 2007, at 4, available at http://www.econw.com/media/ap_files/ECONorthwest-Economics-of-LID-Literature-Review_2007.pdf,
[11] Stormwater Case Studies, American Society of Landscape Architects, available at http://www.asla.org/stormwatercasestudies.aspx.
[12] Natural Resources Defense Council, *A Clear Blue Future: How Greening California Cities Can Address Water Resources and Climate Challenges in the 21st Century*, August 2009, at 4, available at http://www.nrdc.org/water/lid/files/lid_hi.pdf ("A Clear Blue Future").
[13] *Id*.
[14] *Id.*, at 18-19.

distributed BMPs would be designed to minimize scour potential, soil erosion and loss of top soil are still likely to occur during precipitation events. Los Angeles County contains over 110 soft bottom reaches – increased scour and loss of top soil could severely affect beneficial uses of these reaches. In addition, the 2012 Permit outlines specific hydromodification requirements – it is unclear if the Draft PEIR is consistent with hydromodification provisions in the 2012 Permit. The Final PEIR needs to address all potential soil erosion and loss of top soil scenarios and needs to reference the hydromodification provisions outlined on pg. 105 of the 2012 Permit.

Impact 3.5-5: "The proposed program could have soils incapable of adequately supporting the use of a septic tank or alternative wastewater treatment systems where sewers are not available for the disposal of wastewater."

Environmental Groups are concerned with wastewater created in areas incapable of adequate disposal options (sewer system or septic tanks). In the event that implemented BMPs generate wastewater and cannot properly dispose of wastes via sewer system or septic tanks, the Final PEIR needs to outline how waste will be managed (i.e. tank, truck, etc.). In addition, the Final PEIR should reference the State Board's Water Quality Control Policy for Siting, Design, Operation, and Maintenance of Onsite Wastewater Treatment Systems and General Waste Discharge Requirements for Small Domestic Wastewater Treatment Systems (Order WQ 2014-0153-DWQ) when soils are capable of supporting the use of septic tanks.

Cumulative Impact/GEO-2: "Prior to installing BMPs designed to recharge local groundwater supplies, the Implementation Agency shall notify local groundwater manager including the Upper Los Angeles River Area Water Master, the Water Replenishment District of Southern California, or the San Gabriel Water Master as well as local water producers such as local municipalities and water companies. The Implementing Agency shall coordinate BMP siting efforts with groundwater managers and producers to mitigate high groundwater levels while increasing local water supplies."

Environmental Groups agree Implementation Agencies should always notify local groundwater managers and producers before stormwater BMPs are implemented; however, the Draft PEIR fails to acknowledge or reference Salt and Nutrient Management Plans being developed and implemented for Los Angeles County groundwater basins. These Plans outline groundwater inputs and exports as well as identify basins' assimilative capacities. We believe the Final PEIR needs to discuss EWMP coordination with Salt and Nutrient Management Plans. In the light of climate change, protecting while simultaneously contributing to Los Angeles' local water supply is essential for long-term water sustainability.

Section 3.7 – Hazards and Hazardous Materials
Impact 3.7-2: "The proposed program could create a significant hazard to the public or the environment through the accumulation of potentially hazardous materials into BMPs."
HAZ-1: "Implementing agencies shall prepare and implement maintenance practices that include periodic removal and replacement of surface soils and media that may accumulate constituents that could result in further migration of constituents to sub-soils and groundwater. A BMP Maintenance Plan shall be prepared by Implementing Agencies upon approval of the individual BMP projects that identifies the frequency and procedures for removal and/or replacement of accumulated debris, surface soils and/or media (to depth where constituent concentrations do not represent a hazardous conditions and/or have the potential to migrate further and impact groundwater) to avoid accumulation of hazardous concentrations and the potential to migrate further to sub-soils and groundwater. The BMP Maintenance Plan may consist of a general maintenance guideline that applies to several types of smaller distributed BMPs. For smaller distributed BMPs on private property, these plans may consist of a maintenance covenant that includes requirements to avoid the accumulation of hazardous concentrations in these BMPs that may impact underlying sub-soils and groundwater. Structural BMPs shall be designed to prevent migration of constituents that may impact groundwater."

Environmental Groups support Implementing Agencies' development of BMP Maintenance Plans outlining BMP maintenance practices as this is necessary to sustain stormwater BMP efficacies. Yet we want to highlight the all-too-common shortcoming Implementing Agencies encounter in operations and maintenance of stormwater BMPs – failure to devote adequate resources. Bolstering of agencies' resources, such as additional staffing, training, and funding mechanisms, is necessary and commonly overlooked in the implementation of BMP maintenance plans. Without acknowledging Implementation Agency resources while implementing BMP Maintenance Plants, it is unlikely EWMPs' discharges will comply with water quality standards in the long-term. The Final PEIR needs to expand HAZ-1 to discuss additional agencies' resources needed to implement BMP Maintenance Plans.

Section 3.8: Hydrology and Water Quality
Impact 3.8-1: "The proposed project would result in higher groundwater levels and could potentially affect groundwater quality"
See Cumulative Impact/GEO-2 response above.

Impact 3.8-2: "The proposed project could substantially alter the existing drainage pattern of a site or area through the alteration of the course of a stream or river, or by other means, in a manner that would result in substantial erosion or siltation on- or off-site."
See Impact 3.5-2 response above.

IV. Conclusion

Environmental Groups appreciate this opportunity to comment on the Draft PEIR submitted by the LACFCD for the 12 EWMP groups. Please feel free to contact us with any questions or concerns you may have.

Sincerely,

Liz Crosson
Executive Director
Los Angeles Waterkeeper

Peter Shellenbarger
Water Resources Manager
Heal the Bay

Becky Hayat
Staff Attorney
Natural Resources Defense Council

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STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

In the Matter of the Petition of NRDC, Los Angeles Waterkeeper, and Heal the Bay, for Review of Action by the California Regional Water Quality Control Board, Los Angeles Region, in Adopting the Los Angeles County Municipal Separate Stormwater National Pollutant Discharge Elimination System (NPDES) Permit; Order No. R4-2012-0175; NPDES Permit No. CAS004001	MEMORANDUM OF POINTS AND AUTHORITIES IN SUPPORT OF PETITION FOR REVIEW OF LOS ANGELES REGIONAL WATER QUALITY CONTROL BOARD ACTION OF ADOPTING ORDER NO. R4-2012-0175

I. INTRODUCTION

This petition seeks review of a pollution discharge permit that is both unlawful and inadequate to protect the region's waters or the public health. The Los Angeles Regional Water Quality Control Board's ("Regional Board" or "Board") permit for Los Angeles County municipal separate storm sewer systems ("MS4s")[1] is the unfortunate result of six years of delay in renewing the previous permit, and of largely ignoring the crucial need to address the region's ongoing legacy of water pollution. The 2012 Permit, and the process the Regional Board followed in adopting it, were both deeply flawed, and impermissibly weaken or "backslide" from the requirements of the previous, 2001 MS4 permit.[2] The critical—but by no means only—flaw of the 2012 Permit is that it often abandons requirements to comply with both narrative and numeric water quality standards in receiving waters as a means of protecting water quality. For the reasons discussed below, Petitioners respectfully request that the State Water Resources Control Board ("State Board") overturn these unlawful provisions of the 2012 Permit, or remand the matter to the Regional Board with specific direction to remedy the provisions of the 2012 Permit that violate state and federal law.

The 2012 Permit is unlawful due to its inclusion of safe harbors from provisions, required by the 2001 Permit, that require that discharges comply with Water Quality Standards. The safe harbors—provisions that excuse compliance with Water Quality Standards in the Permit's Receiving Water Limitations section, are illegal for four principal reasons: 1) the safe harbors violate federal anti-backsliding requirements; 2) the safe harbors violate state and federal antidegradation requirements; 3) the safe harbors violate requirements for incorporation of TMDLs

[1] Regional Board, Waste Discharge Requirements for Municipal Separate Storm Sewer System (MS4) Discharges Within the Coastal Watersheds of Los Angeles County, Except Those Discharges Originating From the City of Long Beach, Order No. R4-2012-0175, NPDES Permit No CAS004001 (Nov. 8, 2012) ("2012 Permit" or "Permit").

[2] Regional Board, Waste Discharge Requirements for Municipal Separate Storm Sewer and Urban Runoff Discharges Within the County of Los Angeles, and the Incorporated Cities Therein, Except the City of Long Beach, Order No. 01-182, NPDES Permit No. CAS004001 (Dec. 13, 2001) ("2001 Permit").

into National Pollutant Discharge Elimination System permits; and, 4) the Regional Board failed to make sufficient findings or provide evidence in the record to support the inclusion of the safe harbors in the 2012 Permit.

These violations of law present compelling reasons for the State Board to exercise its statutory duty to correct the unlawful actions of the Regional Board. These corrections are seriously needed to protect the waters of Los Angeles County and the public health.

A. Factual Background

1. Monitoring Demonstrates That the Los Angeles County MS4s Discharge Pollution to Receiving Waters

The stormwater systems regulated by the 2012 Permit discharge bacteria, metals, and other pollutants at unsafe levels to rivers, lakes, and beaches in Los Angeles County. This pollution causes increased rates of human illness, harm to the environment, and an economic loss of tens to hundreds of millions of dollars every year from public health impacts alone. As the Regional Board itself acknowledges:

> Discharges of storm water and non-storm water from the . . . Los Angeles County [MS4s] convey pollutants to surface waters throughout the Los Angeles Region. . . . the primary pollutants of concern in these discharges . . . are indicator bacteria, total aluminum, copper, lead, zinc, diazanon, and cyanide. Aquatic toxicity, particularly during wet weather, is also a concern. . .
>
> Pollutants in storm water and non-storm water have damaging effects on both human health and aquatic ecosystems. Water quality assessments conducted by the Regional Water Board have identified impairment of beneficial uses of water bodies in the Los Angeles Region caused or contributed to by pollutant loading from municipal storm water and non-storm water discharges.

(2012 Permit, at p. 13, Finding A.)[3,4]

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[3] This comports with the findings of the U.S. Environmental Protection Agency ("EPA"), which considers urban runoff to be "one of the most significant reasons that water quality standards are not being met nationwide." (U.S. General Accounting Office (June 2001) Water Quality: Better Data and Evaluation of Urban Runoff Programs Needed to Assess Effectiveness, Report No. GAO-01-679, at 37.)

The pollutants that impair the region's waters come in large part from the MS4s subject to the permit at issue. Monitoring data from mass emission stations in area streams and rivers demonstrate that the MS4s persistently contribute to violations of Water Quality Standards and cleanup targets (total maximum daily loads or "TMDLs") in Los Angeles area water bodies. Monitoring revealed 1,105 violations since 2003 of water quality limits for fecal bacteria, various heavy metals, ammonia, pH, and cyanide, among other constituents, in Ballona Creek, Malibu Creek, the Los Angeles River, Santa Clara River, Dominguez Channel, and Coyote Creek.[5]

Monitoring conducted by non-profit organizations confirms that MS4s in Los Angeles County pollute in the region. Data collected by these organizations show:

- Malibu Creek routinely exceeded limits for nitrogen, ammonia, phosphate, E.coli, and enterococcus bacteria during wet and dry weather.[6]
- Compton Creek commonly exceeded applicable pollution limits; the highest magnitude of exceedances occurred during storm events at storm drain outfalls.[7]
- 13 of 22 sites sampled in the Los Angeles River watershed during 2005 received an F grade for failing water quality standards for PH, temperature, dissolved solids, nutrients, dissolved oxygen, and turbidity.[8]
- Dry weather discharges from 18 storm drains flowing into Ballona Creek, which is impaired by fecal bacteria, had consistently high levels of bacteria.[9]

---

[4] Unless otherwise noted, all references to documents in this brief are to documents that were timely submitted to the Regional Board and are part of the record in this matter. We include documents originally submitted by Petitioners here for the convenience of the State Water Resources Control Board ("State Board").

[5] Los Angeles County, Dept. of Public Works, Stormwater Monitoring Reports for *2003-2004* (Aug. 15, 2004), *2005-2006* (Aug. 22, 2006), *2006-2007* (Sept. 4, 2007), *2007-2008* (Aug. 20, 2008), *2008-2009* (Aug. 25, 2009), *2009-2010* (Aug. 12, 2010), *2010-2011* (Aug. 11, 2011), (selected data tables attached and full documents available at http://dpw.lacounty.gov/wmd/NPDES/report_directory.cfm, last visited July 19, 2012).

[6] See Exhibit A1: Heal the Bay, Water Quality in Malibu Creek Watershed and Surrounding Reference Sites; Exhibit A2: Heal the Bay, Malibu Watershed Exceedances, Raw Data (1998-2010).

[7] See Exhibit B1: Heal the Bay, Monitoring Plan for Compton Creek; Exhibit B2: Heal the Bay, Sediment Data Analysis – Compton Creek (2006-2011); Exhibit B3: Heal the Bay, Water Data Analysis – Compton Creek (2006-2011).

[8] Friends of the Los Angeles River (2005) The First State of the Los Angeles River Report, at 3.

[9] See Exhibit C: Los Angeles Waterkeeper, Ballona Creek Data (2011-2012).

Receiving water sampling conducted in Ballona Creek, together with dry weather storm drain sampling, as well as monitoring from the City of Malibu, demonstrate a link between polluted storm drain discharges and exceedances of water quality standards, and that the MS4 system is a significant source of this pollution to receiving waters.[10]

Finally, California Ocean Plan standards and fecal bacteria TMDL limits established to protect the health of beachgoers have been exceeded on thousands of occasions. Monitoring identified 3,369 exceedances of beach bacteria TMDL limits at 65 Los Angeles County beach monitoring locations during the April – October dry weather season from 2006 through 2011, exposing the public to various well-documented health risks associated with recreating in polluted water.[11]

2. Stormwater Pollution Threatens Public Health

Polluted urban runoff increases bacteria levels and illness rates among swimmers.[12] Contact with waters contaminated by stormwater runoff can lead to fever, chills, ear infections and discharge, coughing and respiratory ailments, vomiting, diarrhea and other gastrointestinal illness, and skin rashes.[13] Scientists reviewing 22 epidemiological studies found that 19 of them showed that adverse health effects were significantly related to fecal indicator bacteria or bacterial pathogens.[14] One local analysis investigated health risks of people exposed to storm drain runoff

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[10] *Id.*; Exhibit D: Los Angeles Waterkeeper, Malibu 2011-2012 Storm Water Monitoring.
[11] See, Exhibit F: Heal the Bay, Santa Monica Bay Bacteria TMDL Tally; see also Exhibit G: Los Angeles Waterkeeper, Area of Special Biological Significance [ASBS] Malibu Data Revised March 27, 2012; Exhibit H: Los Angeles Waterkeeper, Non-ASBS and Malibu Creek Data Revised March 27, 2012.
[12] Curriero et al. (August 2001) *The Association Between Extreme Precipitation and Waterborne Disease Outbreaks in the United States, 1949-1994,* American Journal of Public Health, 91:8 1194-1199. See also, Letter from Dr. Jennifer Jay to Mr. Sam Unger, Executive Officer and Members of the Board, Regional Board re: MS4 Permit for Los Angeles County, July 23, 2012.
[13] See, e.g., Haile, et al. (1999) *The Health Effects of Swimming in Ocean Water Contaminated by Storm Drain Runoff*, Epidemiology 10(4): 355-63; Haile, R. W. et al (1996) *An Epidemiological Study of Possible Adverse Health Effects of Swimming in Santa Monica Bay,* Santa Monica Bay Restoration Project, 70 pp.
[14] Pruss, A. (1998) *Review of epidemiological studies on health effects from exposure to recreational waters*, International Journal of Epidemiology 27:1-9.

while swimming in Santa Monica Bay and found that swimmers exposed directly in front of a storm drain experienced increased health risks of approximately 50-100 percent compared with people swimming more than 400 yards away from the drain.[15]

The Regional Board itself has acknowledged that the harm to the public from exceeding bacteria standards "is dramatic both in terms of health impacts to exposed beachgoers, and the economic cost to the region associated with related illnesses." (2001 Permit (as amended by Order R4-2009-0130), at p. 16, Finding E.32.) These health impacts come at tremendous cost—one study demonstrated that swimming at polluted beaches in Los Angeles County caused between 427,800 and 993,000 excess cases of gastroenteritis per year, resulting in annual health costs of between $14 and $35 million, or $120 and $278 million per year (depending on whether only market costs or both market and non-market costs, such as willingness-to-pay not to get sick, were considered).[16]

3. Controlling stormwater pollution provides numerous economic benefits, while stormwater pollution creates many economic harms

Controlling pollution from MS4 systems has far-reaching economic and social benefits for the region. According to a report to California's Resources Agency, "California has the largest Ocean Economy in the United States, ranking number one overall for both employment and gross state product. . . ."[17] One study estimated that local beach goers in California spend as much as $9.5 billion annually and the non-market values associated with beach going in California may be as high as $5.8 billion annually.[18]

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[15] Haile, R. W. et al (1996) *An Epidemiological Study of Possible Adverse Health Effects of Swimming in Santa Monica Bay,* Santa Monica Bay Restoration Project, at 54; see also, Haile, et al. (1999) *The Health Effects of Swimming in Ocean Water Contaminated by Storm Drain Runoff*, Epidemiology 10(4): 355-63.

[16] Given, S., et al. (2006) *Regional Public Health Cost Estimates of Contaminated Coastal Waters: A Case Study of Gastroenteritis at Southern California Beaches*, Environmental Science & Technology 40(16): 4851-4858, at 4856.

[17] Kildow, J. and Colgan, C.S. (2005) National Ocean Economics Program, California's Ocean Economy: A Report to the Resources Agency, State of California, at 1.

[18] Pendleton, L. (July 2004) *Harvesting Ocean Observing Technologies to Improve Beach Management: Estimating the Regional Economic Benefits of Improvements in the California*

Unfortunately, stormwater runoff in Los Angeles County's coastal waters causes or contributes to an enormous number of beach closures or advisories each year.[19] Beach closures and advisories result in direct and indirect negative effects on the coastal economy, such as lost revenue.[20] One study estimated that a hypothetical beach closure of Huntington Beach for one day would result in a loss of 1200 beach visits and associated economic losses of $100,000.[21] Conversely, the National Oceanic and Atmospheric Association found that improving water quality in Long Beach from a C grade to the healthier standards of Huntington City Beach (a B grade) would create $8.8 million in economic benefits over a 10-year period.[22]

Moreover, the economic and social benefits of stormwater regulation, such as those achievable through this Permit, far outweigh the costs of implementation. For example, the staff report for the Metals TMDL for the Los Angeles River and its tributaries found that removing metals from the waterways would have benefits of as much as $18 billion (if structural systems were used), in comparison to costs of between $5.7 and $7.4 billion.[23] This would be in addition to "[u]nquantifiable health benefits" associated with implementation.[24]

Coastal Ocean Observing System Arlington, VA: Ocean. Unnumbered Report. July; see also, Chapman, D. and Hanemann, M. (2001) *Environmental Damages in Court: the American Trader Case*, in The Law and Economics of the Environment, (Heyes, edit.), pp. 319-367 (estimating a "consumer surplus" of $8.16 to $60.79 per visit for each beachgoer).

[19] NRDC (2012) Testing the Waters: A Guide to Water Quality at Vacation Beaches, at California Chapter Summary. Los Angeles County reported 2,430 total closing or advisory days in 2011 from all sources. Reported closing or advisory days are for events lasting six consecutive weeks or less. Available at http://www.nrdc.org/water/oceans/ttw/ca.asp.

[20] See, Leeworthy, V.R. and Wiley, P.C. (2000) Southern California Beach Valuation Project: Economic Value and Impact of Water Quality Change for Long Beach in Southern California, National Oceanic and Atmospheric Administration, at 4.

[21] Hanemann, M., et al. (November 2005) Welfare Estimates for Five Scenarios of Water Quality Change in Southern California: A Report from the Southern California Beach Valuation Project, at 7-8.

[22] Leeworthy, V.R. and Wiley, P.C. (2000) Southern California Beach Valuation Project: Economic Value and Impact of Water Quality Change for Long Beach in Southern California, National Oceanic and Atmospheric Administration, at 9, 15.

[23] Regional Board and U.S. EPA Region 9 (June 2, 2005) Total Maximum Daily Loads for Metals Los Angeles River and Tributaries, at 77.

[24] *Id.*; See 2012 Permit, Attachment F ("Fact Sheet"), at 76-77.

B. Legal Background

In 1972, Congress enacted the Clean Water Act ("CWA") to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters." (33 U.S.C. § 1251(a); see also, *NRDC v. U.S.E.P.A.*, 859 F.2d 156, 198 (D.C. Cir. 1988); *NRDC v. Costle,* 568 F.2d 1369, 1373 (D.C. Cir. 1977); *American Frozen Foods Inst. v. Train*, 539 F. 2d 107, 124 (D.C. Cir. 1976).) The Act sought to eliminate the discharge of pollutants into navigable waters by 1985, and to achieve fishable and swimmable conditions, wherever possible, by 1983. (33 U.S.C. § 1251(a)(1)-(2).) Courts have consistently recognized that the CWA is a tough law—"strong medicine." (*Texas Municipal Power Agency v. U.S. EPA* (5th Cir. 1988) 836 F.2d 1482, 1488.)[25]

Overall, the Act prohibits the discharge of any pollutant from a point source into a water of the United States except as in compliance with the Act. (33 U.S.C. §§ 1311(a), 1342.) "Point source" is defined to mean any discrete "conveyance," such as a pipe or channel, (33 U.S.C. § 1362(14)), and thus includes MS4s, which are elaborate networks of such conveyances. (33 U.S.C. §§ 1342(p), 1362(14).)[26] A point source, such as an MS4, can comply with the CWA by obtaining a discharge permit under the National Pollutant Discharge Elimination System ("NPDES") program. (33 U.S.C. § 1342(b), (p).)

The CWA requires each state to adopt Water Quality Standards ("WQSs") for all waters within its boundaries and submit them to the U.S. Environmental Protection Agency ("EPA") for approval. (33 U.S.C. §§ 1311(b)(1)(C), 1313.) WQSs include maximum permissible pollutant levels that must be sufficiently stringent to protect public health and enhance water quality, consistent with the uses for which the water bodies have been designated. (33 U.S.C. §

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[25] "The [Clean Water Act] is strong medicine. . . . Congress explicitly recognized that reduction of the amount of effluents—not merely their dilution or dispersion—is the goal of the [Act]." (*Texas Municipal Power Agency*, 836 F.2d at 1488.)

[26] The discharge of pollutants from an MS4, often called "polluted runoff" or "urban runoff," is a two-part problem. It includes what is often referred to as non-stormwater discharges—typically, landscape irrigation flows, washwater, and other flows not related to precipitation carrying herbicides, bacteria, metals, used motor oil, and other pollutants. And it includes urban stormwater—which is basically what it sounds like—storm flows that contain pollutants from the urban environment. (*See* 33 U.S.C. § 1342(p)(3)(B)(ii)-(iii).)

1313(c)(2)(A).) WQSs provide the reference point "to prevent water quality from falling below acceptable levels." (*PUD No. 1 of Jefferson County v. Washington Dep't of Ecology* (1994) 511 U.S. 700, 704 [quotation omitted].) States also must identify as impaired any water bodies that fail to meet water quality standards. (33 U.S.C. § 1313(d).)

For impaired waters, states must establish TMDLs, which set a daily limit on the discharge of each pollutant necessary to achieve water quality standards. (*Id.* § 1313(d)(1).) The TMDL "assigns a ***waste load allocation (WLA)*** to each point source, which is that portion of the TMDL's total pollutant load, which is allocated to a point source for which a NPDES permit is required." (*Communities for a Better Env't v. State Water Res. Control Bd.* (2005) 132 Cal.App.4th 1313, 1321 (emphasis in original).) Critically, federal law requires that "once a TMDL is developed, effluent limitations in NPDES permits must be consistent with the WLA's in the TMDL." (*Id.*, at 1322 (citing 40 C.F.R. § 122.44(d)(1)(vii)(B).) According to EPA, which overseas implementation of the CWA, "[w]here the TMDL includes WLAs for stormwater sources that provide numeric pollutant load . . . the WLA should, where feasible, be translated into numeric [water quality-based effluent limitations] in the applicable stormwater permits." [27]

Like other NPDES permits, MS4 permits must ensure that discharges from storm sewers do not cause or contribute to a violation of water quality standards. (33 U.S.C. § 1311(a); 1313; 1341(a); 1342(p).)[28] Renewal permits—like the 2012 Permit, at issue—may not contain weaker

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[27] Memorandum from James A. Hanlon and Denise Keehner, U.S. EPA, to Water Management Division Directors, Regions 1 – 10, re: Revisions to the November 22, 2002 Memorandum "Establishing Total Maximum Daily Load (TMDL) Wasteload Allocations (WLAs) for Storm Water Sources and NPDES Permit Requirements Based on Those WLAs, November 12, 2010, ("EPA Hanlon Memo") at 3. (Attached as Request for Notice ("RN") "Exhibit A".)

[28] See, e.g., State Board Order No. WQ 99-05, *Own Motion to Review the Petition of Environmental Health Coalition to Review Waste Discharge Requirements Order No. 96-03*; In addition, permits for discharges from municipal storm sewers "shall require controls to reduce the discharge of pollutants to the maximum extent practicable . . . and such other provisions as the Administrator or the State determines appropriate for the control of such pollutants. (33 U.S.C. § 1342(p)(3)(B)(iii).) This language in section 1342(p) has been held by California courts to grant "the EPA (and/or a state approved to issue the NPDES permit) . . . the discretion to impose 'appropriate' water pollution controls in addition to those that come within the definition of 'maximum extent practicable.'" (*Building Industry Ass'n of San Diego County v. State Water*

standards than those contained in the previous permit, except under limited circumstances. (33 U.S.C. § 1342(o); 40 C.F.R. § 122.44(l).) Federal and state law additionally require implementation of an antidegradation policy, that mandates that existing water quality in navigable waters be maintained unless degradation is justified by specific findings. (See, 40 C.F.R. § 131.12(a)(1).)

1. The 2001 Los Angeles County MS4 Permit

In 2001, the Regional Board adopted an NPDES permit for MS4s in Los Angeles County,[29] which was intended to address the harm caused by pollutants conveyed via storm drains to surface waters in the Los Angeles area. The permit regulated Los Angeles County, the Los Angeles County Flood Control District, and 84 incorporated cities within the County.

Importantly, the 2001 Permit contained Receiving Water Limitations ("RWLs"), which required that "discharges from the MS4 that cause or contribute to the violation of Water Quality Standards or water quality objectives are prohibited." (2001 Permit, at Part 2.1.)[30] The Permittees were directed to begin remedial measures immediately if discharges violate water quality standards. (*Id*., at Part 2.3.) If exceedances of water quality standards persisted, notwithstanding control measures, the Permittees "shall assure compliance" by preparing a compliance report that identifies the violations and adopting more stringent pollution control measures to correct them. (*Id*.)

Complying with the 2001 Permit's iterative process assisted Permittees in meeting water quality goals, but did not excuse violations of water quality standards. An earlier MS4 permit for Orange County, approved by the State Board, had included language stating "the permittees will

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Resources Control Bd. (2004) 124 Cal.App.4th 866, 883 (citing *Defenders of Wildlife v. Browner* (9th Cir. 1999) 191 F.3d 1159, at 1165–1167).)

[29] This was the third such permit issued by the Regional Board to Los Angeles County and local municipalities. Prior permits were adopted in 1990 and 1996. (2001 Permit, p. 1, Finding A.)

[30] "Water Quality Standards and Water Quality Objectives" are defined in the 2001 Permit to mean "water quality criteria contained in the Basin Plan, the California Ocean Plan, . . . the California Toxics Rule, and other state or federally approved surface water quality plans." (2001 Permit, at Part 5, p. 70.)

not be in violation of [receiving water limitations] so long as they are in compliance with [the iterative process set forth in the permit]."[31] EPA objected to that provision, (which MS4 permits for Vallejo and Riverside County had additionally adopted), as a "safe harbor," meaning the provision deemed the permittees in compliance with the permit regardless of whether Water Quality Standards were then met. In response, the State Board directed the Regional Boards to include receiving water limitations language devised by EPA, without a safe harbor provision, into all future MS4 permits.[32]

The Regional Board followed this clear directive in the 2001 Permit. Indeed, when the County and 43 cities challenged the permit in state court, the court ruled that the Regional Board "included Parts 2.1 and 2.2 in the Permit without a 'safe harbor.'" (*Id.*)[33] The Regional Board supports this interpretation: "the plain meaning of these provisions is clear: they prohibit discharges that cause or contribute to a 'violation of Water Quality Standards' [or water quality objectives] or to a condition of nuisance." Put simply, "[t]he Regional Board's position . . . is that the Permit cannot be read to excuse exceedances of water quality standards."[34] Finally, the Ninth Circuit confirmed the state court's interpretation of the 2001 Permit's Receiving Water Limitations, holding that "no such 'safe harbor' is present in this Permit. . . . [there is] no textual

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[31] See, State Board Order No. WQ 98-01, *Own Motion to Review the Petition of Environmental Health Coalition to Review Waste Discharge Requirements Order No. 96-03*, at 6-7.
[32] See, State Board WQ Order 99-05.
[33] *See, In re L.A. County Mun. Storm Water Permit Litigation.*, No. BS 080548 at 4-7 (L.A. Super. Ct. Mar. 24, 2005) ("*L.A. County Mun. Stormwater*"). The court noted that, "the Regional Board acted within its authority when it included Parts 2.1 and 2.2 in the Permit without a 'safe harbor,' whether or not compliance therewith requires efforts that exceed the 'MEP' standard." (*In re L.A. County Mun. Stormwater*, at 7.) But regardless of this authority, as described above, the Court found that "the terms of the Permit taken, as a whole, constitute the Regional Board's definition of MEP, including, but not limited to, the challenged Permit Provisions." (*Id*. at 7-8.)
[34] Brief of Amicus Curiae California Regional Water Quality Control Board, Los Angeles Region, in *Santa Monica Baykeeper v. City of Malibu* No. CV 08-1465-AHM (PLAx) (C.D. Cal.) (filed Feb. 5, 2010), at 9; *see also,id*. at 4.

support for the proposition that compliance with certain provisions shall forgive non-compliance with the discharge prohibitions."[35]

2. The 2012 Permit

On November 8, 2012, the Regional Board adopted a new MS4 permit for Los Angeles County. Like the prior 2001 Permit, the 2012 Permit states that, "Discharges from the MS4 that cause or contribute to the violation of receiving water limitations are prohibited." (2012 Permit, at Part V.A.1.)[36] Rather than maintaining the 2001 Permit's strict prohibition against discharges that cause or contribute to an exceedance of Water Quality Standards, however, the Permit instead incorporates several safe harbors that create broad exemptions to the RWLs section, rendering the limitations inoperative in certain circumstances.

Under the 2012 Permit, Permittees have several different compliance options, two of which trigger application of a safe harbor. In particular, dischargers may elect to develop or participate in a Watershed Management Program ("WMP"), or Enhanced Watershed Management Program ("EWMP"). (2012 Permit, at Part VI.C.) These programs in many aspects allow a permittee to draft their own permit requirements, conditions, and schedules for compliance. Under a WMP, a permittee is required to identify water quality priorities (*id*. at VI.C.5.a), select watershed control measures to be implemented, (*id*. at VI.C.5.b), and establish compliance schedules for addressing water quality priorities. (*Id*. at VI.C.5.c.) For an EWMP, a permittee must, where feasible within a given watershed, retain all storm water runoff from the 85th percentile, 24-hour storm event for the drainage areas tributary to the projects. (*Id*. at VI.C.1.g.) Under both options, Permittees must conduct a "reasonable assurance" analysis to assess whether the programs will result in discharges

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[35] *Natural Resources Defense Council v. County of Los Angeles* (2011) 673 F.3d 880, 897. This portion of the 9th Circuit Court's Opinion is not subject to further review.

[36] The Permit defines "Receiving Water Limitation" as: "Any applicable numeric or narrative water quality objective or criterion, or limitation to implement the applicable water quality objective or criterion, for the receiving water as contained in Chapter 3 or 7 of the Water Quality Control Plan for the Los Angeles Region (Basin Plan), water quality control plans or policies adopted by the State Water Board, or federal regulations, including but not limited to, 40 CFR § 131.38." (Permit, at Attachment A, A-17.)

that achieve water quality based effluent limitations and RWLs in the 2012 Permit. (*Id.* at VI.C.1.g; VI.C.5.b.iv(5).)

Although it is a goal of these programs to ensure that stormwater discharges do not cause or contribute to exceedances of RWLs, (see, e.g., *id.* at VI.C.5.b.ii), and that TMDL WLAs are achieved, it is not a requirement that the programs achieve these results in fact. Permittees are instead given a safe harbor from the prohibition on violations of RWLs, or, in some cases of TMDL limits, if they participate in a WMP or an EWMP. The safe harbors include relief from RWL compliance: 1) during the development of a WMP or an EWMP, before the plan is approved; 2) after a plan is submitted to and approved by the Regional Board; and, 3) when the specific RWL (or combination of water quality standard and waterbody) at issue is already addressed by a TMDL.[37]

More specifically, in the first instance, a safe harbor applies to discharges by a permittee upon notification of its intent to develop a WMP or an EWMP to the Regional Board. During the period of plan development and review (up to 28 months from the 2012 Permit adoption date for a WMP or 40 months from the 2012 Permit adoption date for an EWMP before it may be approved (*Id.* at VI.C.4.a.)), the permittee is excused for violations of the Permit's RWLs:

- "Upon notification of a Permittee's intent to develop a WMP or EWMP and prior to approval of its WMP or EWMP, a Permittee's full compliance with all of the following requirements shall constitute a Permittee's compliance with the receiving water limitations provisions in Part V.A. not otherwise addressed by a TMDL . . . ."[38]

(2012 Permit, at Part VI.C.2.d.)[39] Second, after approval of a Permittee's WMP or EWMP by the Regional Board or the Board's Executive Officer, a safe harbor removes liability for

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[37] In this last case, in some circumstances the 2012 Permit provides a safe harbor for compliance with either interim or final TMDL limits, or both.

[38] We note that the Regional Board lacks authority to exempt state law requirements prohibiting the causation of a condition of nuisance under Part V.A.2.

[39] The Permittee is required to: "i. Provide[] timely notice of its intent to develop a WMP or EWMP, ii. Meet[] all interim and final deadlines for development of a WMP or EWMP, iii. For the area to be covered by the WMP or EWMP, target[] implementation of watershed control measures in its existing storm water management program . . . and iv. Receive[] final approval of

a violation of all RWLs if the WMP or EWMP addresses that pollutant/waterbody combination, regardless of whether or not compliance with the RWL is actually achieved:

- "A Permittee's full compliance with all requirements and dates for their achievement in an approved Watershed Management Program or EWMP shall constitute a Permittee's compliance with the receiving water limitations provisions in Part V.A. of this Order for the specific water body-pollutant combinations addressed by an approved Watershed Management Program or EWMP."

(*Id*. at VI.C.2.b.) Third, the 2012 Permit provides a safe harbor from certain TMDL requirements. Specifically, the 2012 Permit provides a safe harbor for interim TMDL WLAs for permittees indicating their intent to develop a WMP or an EWMP:

- "Upon notification of a Permittee's intent to develop a WMP or EWMP and prior to approval of its WMP or EWMP, a Permittee's full compliance with all of the following requirements[40] shall constitute a Permittee's compliance with provisions pertaining to interim WQBELs with compliance deadlines occurring prior to approval of a WMP or EWMP."

(*Id*. at VI.E.2.d.i(4)(d).) And, for permittees implementing an EWMP, the 2012 Permit provides a safe harbor for all TMDL final limits other than for Trash TMDLs:

- "A Permittee shall be deemed in compliance with an applicable final water quality-based effluent limitation and final receiving water limitation for the pollutant(s) associated with a specific TMDL if. . . . In drainage areas where Permittees are implementing an EWMP, (i) all non-storm water and (ii) all storm water runoff up to and including the volume equivalent to the 85th percentile, 24-hour event is retained for the drainage area tributary to the applicable receiving water."

(*Id*. at VI.E.2.e.i(4).) By allowing these safe harbors, the 2012 Permit excuses compliance with TMDL WLAs, and with its RWLs where the 2001 Permit mandated compliance.

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its WMP or EWMP within 28 or 40 months, respectively." (Permit, at Part VI.C.3.b.i-iv.) The safe harbor does not apply to interim Trash TMDL limits.

[40] The Permittee is required to to: "i. Provide[] timely notice of its intent to develop a WMP or EWMP, ii. Meet[] all interim and final deadlines for development of a WMP or EWMP, iii. For the area to be covered by the WMP or EWMP, target[] implementation of watershed control measures in its existing storm water management program . . . and iv. Receive[] final approval of its WMP or EWMP within 28 or 40 months, respectively." (2012 Permit, at Parts VI.E.2.d.i(4)(d)(1)-(4).)

II. STANDARD OF REVIEW

The State Board must exercise its independent judgment as to whether a Regional Board action is reasonable. (See, *Stinnes-Western Chemical Corp.*, State Board WQ Order No. 86-16 (1986).) Specifically, the State Board's review is equivalent to the standard a reviewing court would apply under California Code of Civil Procedure Section 1094.5, (*id*.), which states "[a]buse of discretion is established if the respondent has not proceeded in the manner required by law, the order or decision is not supported by the findings, or the findings are not supported by the evidence." (Cal. Civ. Proc. Code § 1094.5(b); see also, *Zuniga v. Los Angeles County Civil Serv. Comm'n* (2006) 137 Cal.App.4th 1255, 1258 (applying same statutory standard).) "Where it is claimed that the findings are not supported by the evidence, . . . abuse of discretion is established if the court determines that the findings are not supported by the weight of the evidence." (Cal. Civ. Proc. Code § 1094.5(c).)

The administrative decision must be accompanied by findings that allow the court reviewing the order or decision to "bridge the analytic gap between the raw evidence and ultimate decision or order." (*Topanga Ass'n for a Scenic Cmty. v. County of Los Angeles* (1974) 11 Cal.3d 506, 515.) This requirement "serves to conduce the administrative body to draw legally relevant sub-conclusions supportive of its ultimate decision . . . to facilitate orderly analysis and minimize the likelihood that the agency will randomly leap from evidence to conclusions." (*Id.* at 516.) "Absent such roadsigns, a reviewing court would be forced into unguided and resource-consuming explorations; it would have to grope through the record to determine whether some combination of credible evidentiary items which supported some line of factual and legal conclusions supported the ultimate order or decision of the agency." (*Id.* at 516, n.15.)

III. ARGUMENT

A. The Permit Creates Illegal Safe Harbors in Violation of Federal Anti-Backsliding and Antidegradation Requirements

1. The 2012 Permit Creates Safe Harbors that Exempt Compliance with Receiving Water Limitations in Some Circumstances

Rather than maintaining the 2001 Permit's prohibition against discharges that cause or contribute to an exceedance of water quality standards, the 2012 Permit creates safe harbors that exempt compliance with the Receiving Water Limitations for Permittees that elect to participate in a WMP or an EWMP. These safe harbor provisions violate multiple provisions of the CWA and other federal and state regulations, and render the 2012 Permit unlawful.

The 2012 Permit creates safe harbors by deeming a Permittee to be in compliance with the Permit's RWLs (which was required by the 2001 Permit), both once a WMP or an EWMP has been approved by the Regional Board and during plan development.[41] The Ninth Circuit defined a "safe harbor" as "the proposition that compliance with certain provisions shall forgive non-compliance with the discharge prohibitions." (*Natural Resources Defense Council, Inc. v. County of Los Angeles* (9th Cir. 2011) 673 F.3d 880, 897 (cert. granted on other grounds).) Unfortunately, the new Permit establishes just such a program. If a Permittee meets the program requirements for a WMP or an EWMP, it *legally* complies with the 2012 Permit's RWLs, regardless of whether the RWLs are *actually* achieved.

During the 2012 Permit adoption hearing,[42] the Regional Board's Executive Officer admitted that these provisions provide a safe harbor from liability for RWL violations. While attempting to define each provision as only a "compliance mechanism," Mr. Sam Unger stated, "at best, it's a conditional safe harbor."[43] Similarly, Mr. Unger stated: "Permittees have to be in

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[41] We note that the 2012 Permit's approach is nonsensical in this regard, as it creates a safe harbor from compliance with Receiving Water Limitations (and for interim TMDL limits) prior to approval of a WMP or an EWMP, while the safe harbor is ultimately expressly conditioned on the approval of the TMDL.

[42] Regional Board, In the Matter of the Regional Board Public Meeting/Hearing, Thursday, November 8, 2012. ("November 8 Hearing.")

[43] Mr. Sam Unger, Executive Officer, Regional Board, November 8 Hearing, at 346:25.

compliance with the milestones and the activities set out in developing the plan for the watershed management program. And if they're not, then the operative part of the permit that would take place is these receiving water limitation[s]."[44] Precisely—the effect of this scheme is that if a Permittee is in compliance with the requirements of a WMP or an EWMP, the Receiving Water Limitations are *not* operative. There is simply no defensible argument that these provisions constitute anything other than safe harbors, which violate federal and state law.

2. The 2012 Permit's Safe Harbors Violate Federal Anti-Backsliding Requirements

Clean Water Act and federal regulations prohibit backsliding, or weakening of permit terms, from the previous permit. Section 402(o)(1) of the Clean Water Act requires that, for effluent limitations based on a state standard, "a permit may not be renewed, reissued, or modified to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit," except in circumstances not present here. (33 U.S.C. § 1342(o)(1).) Similarly, federal regulations require that "when a permit is renewed or reissued, interim effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit. . . ." (40 C.F.R. § 122.44(l)(1).) By providing a safe harbor waiving requirements to meet Water Quality Standards, the 2012 Permit flatly violates these federal requirements.

a. The Safe Harbors Render the RWLs Less Stringent Than in the Previous Permit

The Permit allows a Permittee participating in a WMP or an EWMP to comply with Receiving Water Limitations, even if a Permittee's discharges actually cause or contribute to an exceedance of the Receiving Water Limitations, including violations of Water Quality Standards. By contrast, the 2001 Permit required compliance with WQSs. Thus, the 2012 Permit excuses discharges of pollution and violations of WQSs that the previous permit prohibited.

[44] Mr. Sam Unger, Executive Officer, Regional Board, November 8 Hearing, at 324:8-12.

b. The Receiving Water Limitations Cannot be Weakened Unless Consistent With 1313(d)(4) or 402(o)

Section 402(o) of the Clean Water Act (33 U.S.C. § 1342(o)), generally prohibits relaxation of, among other things, an effluent limitation "necessary to meet water quality standards . . . schedules of compliance, established pursuant to any State law or regulations . . . or any other Federal law or regulation, or required to implement any applicable water quality standard established pursuant to" the CWA. (See, 33 U.S.C. § 1342(o)(1); 33 U.S.C. § 1311(b)(1)(C).)[45] Although a permit may contain less stringent requirements if the change is consistent with the requirements of 33 U.S.C. § 1313(d)(4) or the enumerated exceptions in section 402(o)(2).[46] The safe harbors in the 2012 Permit satisfy none of these conditions.

i. The Receiving Water Limitations Are Covered by Anti-Backsliding Requirements as "Effluent Limitations" and "Standards or Conditions" of the 2001 Permit

The Clean Water Act defines the term "effluent limitation" broadly, as "any restriction established by a State or the Administrator on quantities, rates, and concentrations of chemical, physical, biological, and other constituents which are discharged from point sources. . . ." (33 U.S.C. § 1362(11).) By prohibiting the "discharge" of any pollutant in quantities sufficient to cause or contribute to an exceedance of Receiving Water Limitations, the RWLs easily fit within this sweeping definition. (*See also*, *NRDC v. U.S.E.P.A.* (D.C. Cir. 1981) 656 F.2d 768, 775-76 (as a practical matter the limitation restricted the discharge of pollution and consequently was an effluent limitation), *NRDC v. U.S.E.P.A.* (D.C. Cir. 1982) 673 F.2d 400, 403 (33 U.S.C. § 502(11) "defines 'effluent limitation' as 'any restriction', not just numeric limitations").)

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[45] We note that EPA has recognized that providing additional time for compliance for a provision required by the previous permit violates anti-backsliding requirements. (Letter from Jon M. Capacasa, Director Water Protection Division, EPA Region III to Jay Sakai, Maryland Department of the Environment, re: Specific Objection to Prince George's County Phase I Municipal Separate Storm Sewer System (MS4) Permit MD0068284, at 3 (Attached as RN "Exhibit B").) The additional time allotted by the new Permit to achieve compliance with RWLs, required in the 2001 Permit, for Permittees developing a WMP or an EWMP constitutes a less stringent limitation.

[46] See also, U.S. EPA (September 2010) NPDES Permit Writers' Manual ("NPDES Manual), at 7-1 to 7-3. (Attached as RN "Exhibit C".)

In addition, the RWLs constitute "standards" or "conditions" protected by anti-backsliding requirements under 40 C.F.R. § 122.44(l). Board staff have attempted to avoid the plain implications of section 402(o) by saying that the CWA "talks about [anti-backsliding] in terms of effluent limits. And we're talking about receiving water limitations."[47] Yet, even if this were the case, the safe harbors would still be unlawful. EPA's anti-backsliding regulations require that "effluent limitations, *standards or conditions* must be at least as stringent as the final effluent limitations, *standards, or conditions* in the previous permit. . . ." (40 C.F.R. § 122.44(l)(1) (emphasis added).) Thus these requirements "apply to questions regarding non-water quality-based effluent limits," including "backsliding questions regarding permit conditions, (rather than permit limitations) even where the conditions in question are based on water quality considerations."[48] Regional Board staff confirmed at the November 8 Hearing that, at a minimum, the "receiving water limits would be considered a condition[] [of the] permit."[49] As a result, even if section 402(o) were inapplicable, which it is not, the prohibition on anti-backsliding contained in 40 CFR 122.44(l) applies to the RWLs as conditions. Because in either case the 2012 Permit weakens the Receiving Water Limitations as compared with the 2001 Permit, it violates anti-

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[47] Ms. Deborah Smith, Regional Board, November 8 Hearing at 313:5-7.

[48] EPA (1989) Memorandum on Interim Guidance on Implementation of Section 402(o) Anti-Backsliding Rules For Water Quality-Based Permits, from James R. Elder, Director, Office of Water Enforcement and Permits to Water Management Division Directors, Regions I-X, NPDES State Directors, at 2. (Attached as RN "Exhibit D".) ("Section 402(o) is silent on the issue of permit conditions, and only addresses backsliding from permit limitations"); See also, EPA (Sept. 2010) NPDES Permit Writers' Manual, EPA 833-K-10-001, at 7-4. ("NPDES Manual")

[49] Ms. Deborah Smith, Regional Board, November 8 Hearing, at 314:6-7. Earlier draft versions of the Permit had previously acknowledged the application of anti-backsliding requirements in this context, but, inexplicably, staff edited the October 18, 2012 draft of the 2012 Permit to remove reference to "conditions" in its explanation of anti-backsliding requirements. Referring to 40 C.F.R. § 122.44(l), the sentence "anti-backsliding provisions require effluent limitations or other conditions in a reissued permit to be as stringent as those in the previous permit," was revised to read "anti-backsliding provisions require effluent limitations in a reissued permit to be as stringent as those in the previous permit. . . ." (2012 Permit, at p. 25, Finding N.) Thus, the Permit only incompletely states the requirements of federal anti-backsliding regulations it then proceeds to violate.

backsliding requirements. In addition, as discussed below, the exemptions to anti-backsliding do not apply here.

ii. The Safe Harbors do not Qualify Under Section 1313(d)(4) as Exceptions to the Anti-Backsliding Rule

Section 1313(d)(4) restricts what effluent limitations may be revised in a renewal permit. First, where water quality standards are not being attained (see 33 U.S.C. § 1313(d)(4)(A)), a less stringent effluent limitation based on a TMDL or other WLA is allowed in a renewal permit only if "the cumulative effect of all such revised effluent limitations based on such total maximum daily load or waste load allocation will assure the attainment of such water quality standard," or if the designated use is removed. (33. U.S.C. § 1313(d)(4)(A).)[50] Second, for waters that are meeting applicable water quality standards, (under 33 U.S.C. § 1313(d)(4)(B)), a limitation based on a TMDL or Water Quality Standard may only be weakened if it is consistent with the applicable state antidegradation policy. (33 U.S.C. § 1342(o)(1).)[51]

Neither of these conditions has been met. First, for waters that are failing to meet WQSs, the 2012 Permit fails to demonstrate that the revised standards will assure WQSs will be attained. Second, where waters are currently attaining WQSs, the Permit fails to provide required analysis consistent with the state's antidegradation policy. These allowances violate the anti-backsliding requirements both during WMP or EWMP development, before the plan is approved by the Regional Board, and after WMP or EWMP approval, during the plan's implementation.

iii. The Safe Harbors do not Qualify Under Section 402(o)(2) as Exceptions to the Anti-Backsliding Rule

Although section 402(o)(2) lists a series of exceptions to the otherwise applicable anti-backsliding requirements, none applies to this permit. The law's exemptions include:

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[50] See also, EPA, NPDES Permit Writer's Manual, at 7-3.
[51] See also, EPA, NPDES Manual, at 7-2; Exhibit 7-2. For further discussion of antidegradation issues raised by the 2012 Permit, see section III.A.3, below.

> (A) material and substantial alterations or additions to the permitted facility occurred after permit issuance which justify the application of a less stringent effluent limitation; (B)(i) information is available which was not available at the time of permit issuance . . . and which would have justified the application of a less stringent effluent limitation at the time of permit issuance; or (ii) the Administrator determines that technical mistakes or mistaken interpretations of law were made in issuing the permit under section (a)(1)(B) of this section; (C) a less stringent effluent limitation is necessary because of events over which the permittee has no control and for which there is no reasonably available remedy; (D) the permittee has received a permit modification under [various other sections] of this title; or (E) the permittee has installed the treatment facilities required to meet the effluent limitations in the previous permit and has properly operated and maintained the facilities but has nevertheless been unable to achieve the previous effluent limitations. . .

(33 U.S.C. § 1342(o)(2).) None of these exceptions apply to the adoption of the 2012 Permit. Other than an unsupported and insufficient statement by Board counsel at the November 8 Hearing that "Had in 2001 there been 33 [new] TMDLs [incorporated into the Permit] it's possible the Board might have done something very different than what they did" in adopting the 2001 Permit, the Regional Board offered no evidence that these exceptions apply.[52] As a result, the anti-backsliding requirements of section 402(o) prohibit the adoption of safe harbors in the 2012 Permit.

iv. The Safe Harbors Violate Section 402(o)(3)'s Prohibition Against Changes that Would Result in a Violation of Applicable Water Quality Standards

Even if the 2012 Permit's safe harbors complied with the above anti-backsliding requirements, which they do not, they would still be unlawful under section 402(o)(3), which serves as a "*safety clause* that provides an absolute limitation on backsliding."[53] Section 402(o)(3) requires that in no event shall a permit "be renewed, reissued, or modified to contain a less stringent effluent limitation if the implementation of such limitation would result in a violation of a water quality standard" under 33 U.S.C. § 1313. (33 U.S.C. § 1342(o)(3).) Thus, as EPA explains, "even if one or more of the backsliding exceptions outlined in the statute is applicable and met, CWA section 402(o)(3) acts as a floor and restricts the extent to which effluent

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[52] Ms. Jennifer Fordyce, Regional Board Counsel, November 8 Hearing at 317:11-13.
[53] See EPA, NPDES Manual at 7-4.

limitations may be relaxed."[54] The 2012 Permit, by explicitly excusing violations of Receiving Water Limitations which prohibit discharges that cause or contribute to a violation of WQSs, fails to meet this federally mandated minimum level of protection.

3. The 2012 Permit's Safe Harbor Provisions Violate State and Federal Antidegradation Requirements

The overall goal of the Clean Water Act is the complete elimination of the discharge of pollutants into waters of the United States. (33 U.S.C. § 1251(a)(1).) To help meet this goal, states must implement an antidegradation policy. As discussed below, the permit does not comply with applicable antidegradation requirements.

a. The Safe Harbors Violate Antidegradation Requirements that Prohibit Actions that Would Lead to Lower Water Quality

The federal antidegradation policy contains a three "Tier" test for determining when increases in pollutant loadings or adverse changes to water quality may be allowed. (40 C.F.R. § 131.12.) While Tier II and Tier III apply only to high quality waters and "outstanding National resource waters," respectively, Tier I antidegradation analysis applies to *all* waters of the United States, including waters that do not exceed the CWA section 101(a) goals.[55] "Tier One classification applies a minimum level of protection to all waters, which protects even seriously degraded water bodies, by prohibiting any additional pollution that would affect existing uses."[56]

California has established a state antidegradation policy, which incorporates the federal antidegradation policy and establishes additional requirements.[57] NPDES permit renewals or modifications such as the 2001 and 2012 Los Angeles County MS4 Permits are subject to both

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[54] See EPA, NPDES Manual at 7-4.
[55] (64 Fed. Reg. 46058, 46063, *Revisions to the National Pollutant Discharge Elimination System Program and Federal Antidegradation Policy in Support of Revisions to the Water Quality Planning and Management Regulation*.
[56] Brawer, J.M., "Antidegradation Policy and Outstanding Natural Resource Waters in the Northern Rocky Mountain States," 20 Pub. Land & Resources L. Rev. 13, 18 (1999).
[57] See, State Board Resolution 68-16; *see also In the Matter of the Petition of Rimmon C. Fay*, State Board Order No. WQ 86-17 at 16-19 (November 20. 1986).

state and federal antidegradation requirements.[58] The State antidegradation policy specifically addresses only "high quality" waters, or waters of better quality than required by water quality standards for a particular beneficial use (or conversely, those waters not designated as "impaired"). However, the State policy applies to all waters, including surface and groundwater, to changes in water quality since 1968, and to all uses, including existing and potential uses.[59]

Together, state and federal anti-degradation requirements mandate that existing water quality in navigable waters be maintained, unless degradation is justified based on specific findings. In no case may water quality be lowered to a level that would interfere with existing or designated uses. Thus any action by a Regional Board, including permit issuance, that would result in lower water quality—either in high quality or impaired waters—must be analyzed to ensure consistency with state and federal antidegradation policy. Further, because a receiving water can be considered high quality for one beneficial use, and impaired for others, the analysis must be conducted pollutant by pollutant, and beneficial use by beneficial use. (*See, Associacion de Gente Unida for El Agua v. Central Valley Regional Board* (2012) (210 Cal.App.4th 1255) [149 Cal.Rptr.3d 132, 142; 144] (citing "St. Water Res. Control Bd., Guidance Memorandum (Feb. 16, 1995); 40 CFR 131.12(a)(1).)

Accordingly, the Regional Board was required to conduct a Tier I analysis for all waters impacted by the Los Angeles County MS4 systems, and a Tier II analysis for higher quality Los Angeles waters (taking account of water quality for specific pollutant and beneficial use considerations). In past instances when the Regional Board has failed to provide adequate findings to verify that beneficial uses or high-quality waters will be maintained, the State Board has remanded the orders to the Regional Board for further proceedings.[60] The same should be done here.

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[58] *See*, SWRCB Order No. WQ 86-17; EPA, Region IX, *Guidance on Implementing the Antidegradation Provisions of 40 C.F.R. § 131.12,* at 2-4 (June 3, 1987) ("EPA Antidegradation Guidance"). (Attached as RN "Exhibit E".)

[59] State Board Resolution 68-16.

[60] See e.g., State Board Order WQ 86-17, at 28 (State Board remanded Regional Board order due to the Regional Board's failure to make appropriate findings as to whether an increase in

b. The Regional Board did not Conduct Any Required Antidegradation Analysis

As noted in section III.A.1. above, the safe harbor provisions in the 2012 Permit weaken the Receiving Water Limitations compared with the 2001 Permit requirements.[61] However, despite the 2012 Permit's explicit weakening of the prior permit's limits, and the resulting continued degradation of receiving waters, the Regional Board conducted *no* antidegradation analysis. The 2012 Permit's reference to antidegradation is limited to a cursory summary of the legal requirements, and a conclusion that "[t]he permitted discharge is consistent with the anti-degradation provision of [40 CFR] section 131.12 and State Water Board Resolution No. 68-16." (2012 Permit, at p. 25, Finding J.) Simply claiming that no degradation will occur does not satisfy the requirements of the Clean Water Act. (*Associacion de Gente Unida*, 149 Cal.Rptr., at 136.; see also, *American Funeral Concepts-American Cremation Soc'y v. Board of Funeral Directors and Embalmers* (1982) 136 Cal.App.3d 303, 309.)

Even assuming, as the Regional Board claims, that the new Receiving Water Limitations are as stringent as those in the previous Permit, allowing a permit regime that degrades receiving waters to continue triggers antidegradation analysis. At a minimum, the 2012 Permit maintains the existing failed program implementation for 18 or 30 months during WMP or EWMP development and a potentially additional 10 months during Regional Board review of the plans. Such an approach is inconsistent with antidegradation requirements. As the Third Appellate District

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suspended solids and bacteria would violate antidegradation requirements in an area used for body-contact sports.); see also, *Topanga Ass'n for a Scenic Cmty.*, 11 Cal.3d at 515

[61] Board counsel indicated that anti-degradation is not a concern during the planning phase for either WMP or EWMPs, before the plans are either approved or adopted, because "they still have to implement their existing MS4 program. So they're going to keep doing what they're doing right now . . . the water quality is not going to get worse." (Ms. Jennifer Fordyce, Regional Board counsel, November 8 Hearing, at 318:3-7; see also Ms. Renee Purdy, Regional Board, November 8 Hearing, at 318:12-18.) Yet as discussed earlier, under the existing program, monitoring shows persistent violations of water quality standards, including in waters not yet listed as impaired under CWA section 303(d).

pointedly stated in rejecting the Regional Board's argument that because a new dairy permit was no worse than the last:

> Our problem with the Regional Board's reliance on the assertion that no groundwater degradation is allowed is twofold. First, as the order itself recognizes, the groundwater quality has degraded, and dairy operations are partly responsible. To the extent that the Order allows historic practices to continue without change, degradation will continue.

(*Associacion de Gente Unida*, 149 Cal.Rptr., at 145.)

There is no meaningful debate that urban runoff continues to degrade receiving waters in the Los Angeles area, and that the stormwater programs implemented under the prior permit failed to control that degradation. Therefore, because an antidegradation analysis is required, and the 2012 Permit fails to conduct that analysis, the 2012 Permit violates State and Federal Law.

B. The Permit Unlawfully Fails to Incorporate Waste-Load Allocations Consistent With Applicable TMDLs

The Clean Water Act relies on TMDLs to restore water bodies that fail to meet water quality standards. TMDLs establish a clear and scientifically-driven pathway towards protecting beneficial issues for public health and aquatic life. The CWA and its implementing regulations require that NPDES permits are consistent with the assumptions and requirements of TMDL WLAs. (40 C.F.R.§ 122.44(d)(1)(vii)(B).)[62]

Consistent with EPA regulations, the MS4-related WLAs for TMDLs adopted in the Los Angeles Region must be properly reflected in the MS4 Permit. The Permit itself states:

> The Permittees shall comply with the applicable water quality-based effluent limitations and/or receiving water limitations contained in Attachments L through R, consistent with the assumptions and requirements of the WLAs established in the TMDLs, including implementation plans and schedules, where provided for in the State adoption and approval of the TMDL (40 CFR §122.44(d)(1)(vii)(B); Cal.Wat. Code §13263(a)).

(2012 Permit, at Part VI.E.1.c.) However, the Permit fails to properly incorporate the very limitations it acknowledges are necessary. During this renewal, 33 TMDLs were newly incorporated into the 2012 Permit. In violation of the federal requirements, the 2012 Permit fails

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[62] See, EPA Hanlon Memo.

to ensure compliance with all interim and final WLAs for these TMDLs and incorporates illegal compliance schedules as permit terms.

1. The 2012 Permit Illegally Exempts Dischargers from Complying with Interim and Final Numeric Waste Load Allocations Established in TMDLs

Although all permit terms must be consistent with the assumptions and requirements of WLAs established in TMDLs, (40 C.F.R. § 122.44(d)(1)(vii)(B)), the 2012 Permit inexplicably excuses compliance with interim WLAs[63] and eliminates final WLAs in at least two instances.

First, the 2012 Permit specifies that where a Permittee is implementing an EWMP and runoff is retained up to the 85th percentile storm, the Permittee is deemed in compliance with final TMDL WLAs. (2012 Permit, at Part VI.E.2.e.i(4).) The Permit states:

> A Permittee shall be deemed in compliance with an applicable final water quality-based effluent limitation and final receiving water limitation for the pollutant(s) associated with a specific TMDL if… (4)In drainage areas where Permittees are implementing an EWMP, (i) all non-storm water and (ii) all storm water runoff up to and including the volume equivalent to the 85th percentile, 24-hour event is retained for the drainage area tributary to the applicable receiving water.

(*Id*. at Part VI.E.2.e.i.) By providing this alternative means of demonstrating compliance, the Regional Board thus creates a safe harbor from final TMDL requirements and incorporates a provision that is inconsistent with the WLAs. Under this regime, there is no assurance that actual final TMDL limits, established to achieve WQSs and protect beneficial uses, will ever be met in waterbodies throughout Los Angeles County.[64]

Second, for EPA-approved TMDLs, the 2012 Permit removes compliance obligations, again excusing Permittees from complying with final WLAs. Section VI.E.3 provides:

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[63] Where a Permittee engages in either type of watershed management program, the Permit unlawfully eliminates the need to comply with interim WQBELs and RWLs. Indeed, the Permit includes a safe harbor for violations of interim limits that occur during and after WMP or EWMP development rather than actually achieving the interim limits defined in the TMDL. (2012 Permit, at Parts VI.C.3.a, VI.E.2.d.i(4), (4)(d); see also, Section I.B.2., above.)

[64] See discussion on evidence in the record in section III.C., below.

> TMDLs established by the USEPA, to which Permittees are subject, do not contain an implementation plan adopted pursuant to California Water code section 13424. However, USEPA has included implementation *recommendations* as part of these TMDLs. *In lieu of* inclusion of numeric water quality based effluent limitations at this time, this Order requires Permittees subject to WLAs in USEPA established TMDLs to propose and implement best management practices (BMPs) that will be effective in achieving compliance with USEPA established numeric WLAs.

(2012 Permit, at Part VI.E.3 (emphasis added).) This provision is not consistent with existing, applicable WLAs. (40 C.F.R. § 122.44(d)(1)(vii)(B).) Because TMDLs established by EPA include numeric WLAs, the 2012 Permit must include numeric WQBELs consistent with those WLAs.[65] For example, the San Gabriel River Metals and Selenium TMDL, which has been in effect since 2007, sets numeric WLAs based on the California Toxics Rule ("CTR") (40 C.F.R. 131.36(d)(10)) criteria. The MS4 Permit must incorporate the numeric WLAs set forth in the EPA San Gabriel River Metals and Selenium TMDL and other EPA TMDLs to comply with the Clean Water Act. Yet, the safe harbor provisions do not require compliance with these numeric limits, in violation of federal requirements.

2. The Permit Incorporates Illegal Compliance Schedules In Violation of 40 C.F.R. § 122.47

NPDES permits may only include schedules for achieving compliance with permit limits as permit terms when schedules for achieving compliance are authorized, appropriate, and satisfy specific requirements. (*See In the Matter of Star-Kist Caribe, Inc.* (E.A.B. 1989) 1989 EPA App. LEXIS 38, at *7; 33 U.S.C. § 1313(e)(3)(F); 40 C.F.R. § 122.47.)

Any compliance schedules incorporated into the MS4 Permit must lead to compliance "as soon as possible," (40 C.F.R. § 122.47(a)(1)), and must comply with specific requirements including:

> 1) if the compliance schedule exceeds one year, it must include interim compliance deadlines; 2) interim deadlines must be no more than one year apart; and, 3) if the time necessary for completion of any interim requirement is more than one year and is not readily divisible into stages for completion, the permit shall specify interim dates for the submission of reports of progress toward completion of the interim requirements and indicate a projected completion date.

[65] EPA Hanlon Memo

(40 C.F.R. § 122.47(a)(3).) Further, WLAs and compliance schedules in the 2012 Permit must also be consistent with other state water quality control plans and statutory deadlines; a compliance schedule may only be included in an NPDES permit as a permit term when such compliance schedules are authorized. (See *In the Matter of Star-Kist Caribe, Inc.*, 1989 EPA App. LEXIS, at *7; 33 U.S.C. § 1313(e)(3)(F).)

Section IV.A.2.a. of the 2012 Permit does not comply with these federal regulations. It provides that "[e]ach Permittee shall comply with applicable WQBELs as set forth in Part VI.E [TMDL section] of this Order, *pursuant to applicable compliance schedules*." (Emphasis added). The 2012 Permit also references TMDL implementation schedules in several other sections.[66] However, the implementation schedules set out in several of the applicable TMDLs do not satisfy federal laws governing NPDES permit compliance schedules, and therefore cannot be incorporated into the 2012 Permit.

Specifically, any implementation schedule set forth in an applicable TMDL that allows for more than one year to achieve compliance, but lacks interim deadlines, cannot be incorporated into the 2012 Permit as an NPDES compliance schedule. Because the implementation schedules set out in the Malibu Creek Bacteria TMDL, the Santa Monica Bay Beaches Bacteria TMDLs, and the Los Angeles River Indicator Bacteria TMDL do not have such deadlines, the 2012 Permit may not incorporate them without a detailed schedule. The Permit contains no such schedule.

Moreover, WLAs in metals TMDLs in Los Angeles are based on the CTR criteria, and compliance schedules for CTR-based limits are authorized through the Inland Surface Water Plan ("ISWP"). But the ISWP only authorized compliance schedules for a maximum of 10 years from the time CTR criteria were first promulgated and states that no discharger can be given a compliance schedule to meet CTR criteria after May 18, 2010.[67] As a result, any compliance schedules set out in TMDLs implementing the CTR are not authorized.

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[66] See, e.g., Permit, at Parts VI.C.3.c.; VI.E.1.; VI.E.c.ii.; and, VI.e.2.d.i.

[67] State Board Resolution No. 2000-15, *Policy for the Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California*, at 19; see also October 23, 2006 EPA Letter re: California SIP, Compliance Schedule Provisions; State Board Memo dated

C. The Decision to Adopt the 2012 Permit, Including its Safe Harbor Provisions, is not Supported by the Findings or the Evidence in the Administrative Record

The Regional Board's approval of the 2012 Permit violates long-established requirements for agency decision-making. The Regional Board's findings fail to show the Board's mode of analysis to "bridge the analytic gap between the raw evidence and [the] ultimate decision or order." (*See, Topanga Ass'n for a Scenic Cmty*, 11 Cal.3d at 515.) Moreover, in critical aspects the Regional Board's final decision lacks evidentiary support in the record. The absence of adequate findings or evidence renders the Regional Board's decision unlawful. (*See*, Cal. Civ. Proc. Code § 1094.5(b); *see also, Zuniga*, 137 Cal. App. 4th at 1258.)

The 2012 Permit's discussion of anti-backsliding requirements exemplifies the Regional Board's lack of sufficient analysis.[68] Environmental Groups raised significant legal and factual argument before the Regional Board to demonstrate that the safe harbors incorporated in the 2012 Permit violate federal anti-backsliding requirements.[69] In response, the 2012 Permit merely repeats (incompletely) the legal requirements for anti-backsliding, then leaps to the conclusory statement that, "All effluent limitations in this Order are at least as stringent as the effluent limitations in the previous permit." (2012 Permit, at p. 25, Finding N.) However, bare conclusions are impermissible. (*See*, *American Funeral Concepts-American Cremation Soc'y*, 136 Cal.App.3d at 309 ("administrative findings set forth solely in the language of the applicable legislation are insufficient").)

Similarly, there is insufficient evidence to support the Regional Board's decision to adopt the safe harbor provisions allowed for Permittees under an EWMP. Participation in an EWMP

September 15, 2006 Re: CTR Compliance Schedules; State Board Resolution No. 2008-0025 at 4; Final Staff Report, State Board Resolution No. 2008-0025 at 10; Final Response to Written Comments, State Board Resolution No. 2008-0025 at 6, 9, 10, 18-19, 26.

[68] As is discussed in section III.A.3.b., the 2012 Permit's discussion of antidegradation requirements is another stark example of the lack of sufficient findings and evidentiary support.

[69] See Letter from NRDC, Los Angeles Waterkeeper, and Heal the Bay to Regional Board re: Comments on Tentative Order R4-2012-XXXX, Los Angeles County MS4 Permit, June 6, 2012 Draft, July 23, 2012; NRDC, Los Angeles Waterkeeper and Heal the Bay also presented on this issue at the October 4-5 and November 8 Regional Board Hearings on the 2012 Permit.

requires retention of runoff from the 85th percentile, 24-hour storm in exchange for safe harbors. (Permit, at Part VI.E.2.e.i.(4).) Yet there is no evidence in the record for the 2012 Permit's adoption to demonstrate that retention of the 85th percentile storm event will, in fact, achieve compliance with either Water Quality Standards required under the Receiving Water Limitations, or with the numerous TMDL WLAs required to be met in the 2012 Permit. At the November 8, 2012 Hearing, EPA specifically questioned the adequacy of the record on this point:

> [T]he EPA guidance on incorporating TMDLs into . . . MS4 permits that has been around since 2002 talks about when you come up with a BMP-based approach for incorporating a TMDL into a permit—so basically this is a BMP-based approach. You would be retaining the 85th percentile storm—you have to have in the record for the permit the justification for how that gets to those specific wasteload allocations. . . .[70]
>
> We've been very involved with the county's modeling and . . . we don't have that rigorous analysis that's been—that's required by the EPA guidance for saying and showing that that specific retention is going to achieve the numeric wasteload allocation. . . . I haven't seen the support in the administrative record, the fact sheet or otherwise.[71]

Following EPA's observation, the Regional Board Chair asked staff directly if the evidence requested by EPA was in the record.[72] The Board's Executive Officer, Mr. Unger replied:

> Yes. Yes. It was discussed when the county first presented at the last hearing, the enhanced management approach, they discussed their—the watershed modeling system that they would be using to demonstrate a reasonable assurance.[73]

However, the record, including watershed modeling discussed by Los Angeles County, does not anywhere demonstrate that retention of the 85th percentile storm will protect water quality standards or achieve TMDL WLAs as required by the Clean Water Act or EPA guidance.

In fact, the County's presentation demonstrates only that, in its view, the 85th percentile storm represents a cost-effective or "appropriate design storm [size] for use in BMP planning and design" for treatment of stormwater runoff,[74] not, as Regional Board staff appear to indicate, that

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[70] Mr. John Kemmerer, EPA, November 8 Hearing, at 365:24-25 to 366:1-7.
[71] Mr. John Kemmerer, EPA, November 8 Hearing, at 366:10-18; 367:6-8.
[72] See, Ms. Maria Mehranian, Regional Board Chair, November 8 Hearing, at 368:13-14 (stating "So—I'm sorry . . . it is in the record?").
[73] Mr. Sam Unger, at 368:15-19.
[74] Mr. Gary Hildebrand, November 8 Hearing, at 220: 18-19.

retention of the 85th percentile storm will achieve required WLAs for all TMDLs in all watersheds covered by the permit. At both the October 4-5 Hearing and November 8 Hearing, the County discussed the decision to select the 85th percentile storm and acknowledged it was based on cost and treatment considerations:

> This concept involves the identification of a storm of specific size, the intensity, and/or duration for use in design stormwater controls to achieve water quality standards that balances cost with pollutant removal efficiency. . . .[75]
>
> The [projected] graph plots the total cost of BMPs needed throughout LA County to comply with all the TMDLs expected in the new permit against various size storm events. As can be seen, the most optimum storm size is the 85th percentile storm event.[76]

Thus, the County's explanation does not demonstrate a discernible relationship between the 85th percentile retention approach and full achievement of TMDL WLAs—just that the 85th percentile storm is a cost-effective cut-off point for pollution control measures.[77] Nor do the County or the Regional Board provide data, analysis, or in the Regional Board's case, findings to support that this BMP-based approach will achieve applicable WLAs[78] or demonstrate the validity of the County's model.[79] Accordingly, the Regional Board's

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[75] Mr. Gary Hildebrand, November 8 Hearing, at 220: 20-24. Regional Board Staff also indicated their understanding that selection of the 85th percentile storm was a cost consideration, not an independent assessment of the storm size required to be retained to meet applicable TMDL WLAs. See, Mr. Sam Unger, November 8 Hearing, at 360:14-17 ("when you look at that curve, sort of a dollars versus precipitation event occurred, right about that 85th percentile—right at the 85th percentile, the curve trends up very markedly.").

[76] Mr. Gary Hildebrand, October 4 Hearing, at 308:7-12.

[77] The same concern rises for compliance with the Permit's Receiving Water Limitations—retention of the 85th percentile storm represents only, in the County's view, a cost effective upper limit for a design storm. This does not stand for the proposition that retention will then achieve water quality standards for all receiving waters in all conditions.

[78] 40 C.F.R. § 122.44(d)(1)(vii)(B); see also, EPA Hanlon Memo.

[79] We note that to the extent the Regional Board may have relied on additional information submitted by the County related to selection of the 85th percentile storm submitted after July 23, this evidence is not part of the record. In the agenda for the October 4-5 and the November 8 Hearings, the Regional Board stated unequivocally that "No new written materials may be submitted on the Tentative Order . . . Written comments were due by noon on July 23, 2012." (October 4-5 Agenda, at, 2; see also, Notice of Opportunity for Comment, October 18, at 2.

decision to include the EWMP safe harbors in the 2012 Permit was arbitrary and capricious.

IV. CONCLUSION

For all the foregoing reasons, the instant Petition for Review should be GRANTED.

Respectfully submitted,

Dated: December 10, 2012

NATURAL RESOURCES DEFENSE COUNCIL, INC.

Noah Garrison
Steve Fleischli
Attorneys for NATURAL RESOURCES DEFENSE COUNCIL, INC. & HEAL THE BAY

Dated: December 10, 2012

LOS ANGELES WATERKEEPER

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PROOF OF SERVICE

I am employed in the County of Los Angeles, State of California. I am over the age of 18 and not a party to the within action. My business address is: 1314 Second Street, Santa Monica, California 90401.

On December 10, 2012 I served the within document described as MEMORANDUM OF POINTS AND AUTHORITIES IN SUPPORT OF PETITION FOR REVIEW OF LOS ANGELES REGIONAL WATER QUALITY CONTROL BOARD ACTION OF ADOPTING ORDER NO. R4-2012-0175 on the following interested parties in said action by placing a true copy thereof in the United States mail enclosed in a sealed envelope with postage prepaid, addressed as follows:

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I am "readily familiar" with the firm's practice of collection and processing correspondence for mailing. It is deposited with U.S. postal service on that same day in the ordinary course of business. I am aware that on motion of party served, service is presumed invalid if postal cancellation date or postage meter date is more than 1 day after date of deposit for mailing in affidavit.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed on December 10, 2012, at Santa Monica, California.

A Kheyfets

Anna Kheyfets

March 9, 2015

Via electronic mail

Gregg BeGell, P.E.
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Re: Comments on Los Angeles County Draft Program Environmental Impact Report for Enhanced Watershed Management Programs under the Los Angeles County Municipal Separate Storm Sewer System Permit, NPDES Permit No. CAS004001, Order No. R4-2012-0175

Dear Mr. BeGell:

On behalf of the Natural Resources Defense Council ("NRDC"), Los Angeles Waterkeeper ("Waterkeeper"), and Heal the Bay (collectively, "Environmental Groups"), we are writing with regard to the Draft Program Environmental Impact Report ("PEIR") for the 12 Enhanced Watershed Management Programs ("EWMP") under the 2012 Los Angeles County Municipal Separate Storm Sewer System Permit ("2012 MS4 Permit" or "2012 Permit").[1] We appreciate the opportunity to submit these comments to the Los Angeles County Department of Public Work's Flood Control District. ("LACFCD").

I. Introduction

As an initial matter, Environmental Groups' comments on the EWMP Draft PEIR should not be construed as approval or acceptance of the 2012 Permit terms. We continue to maintain that several provisions of the Permit fail to meet the requirements of the federal Clean Water Act and California Porter Cologne Act, and are otherwise inconsistent with

[1] The Enhanced Watershed Management Programs addressed in the Program Environmental Impact Report ("PEIR") encompass several watersheds of Los Angeles County including the following: Ballona Creek, Beach Cities, Dominguez Channel, Malibu Creek, Marina del Rey, North Santa Monica Bay Coastal Watersheds, Palos Verdes Peninsula, Rio Hondo/San Gabriel River Water Quality Group, Santa Monica Bay, Upper Los Angeles River, Upper San Gabriel River, and Upper Santa Clara River.

both federal and state law. Environmental Groups filed a petition[2] with the State Water Resources Control Board ("State Board"), which demonstrates the ways in which the 2012 Permit violates these legal requirements. The State Board has yet to make a determination on our petition.

Under the 2012 Permit, permittees electing to participate in an EWMP are required to submit a draft EWMP plan by June 2015. (2012 Permit, at VI.C.4.c.iv.) The EWMP Work Plans submitted by permittees in June 2014 presented an opportunity for permittees to demonstrate their commitment to developing EWMPs to meet required Receiving Water Limitations ("RWLs") and Total Maximum Daily Load ("TMDL") provisions. Environmental Groups reviewed the EWMP Work Plans and submitted comments to the Regional Board.[3] As we expressed in our comments, many permittees have made significant progress towards developing their draft EWMPs. However, the Work Plans are in many instances unclear as to what analysis or programs will ultimately be incorporated into final EWMPs to be submitted to the Regional Board in June 2015. In fact, some of the Work Plans clearly indicate that the permittees' management programs, as currently envisioned, will not ensure that discharges from the permittees' MS4 systems do not cause or contribute to exceedances of RWLs, including applicable water quality standards, or TMDL limitations in the 2012 Permit, and otherwise fail to meet Permit requirements.

EWMP Work Plan deficiencies do not bode well for the June 2015 Draft EWMPs, and this CEQA process is an opportunity for LACFCD and EWMP permittees to address our concerns with program development thus far. The Regional Board-approved delay in progress toward compliance with water quality based effluent limits ("WQBELs") and RWLs for EWMP permittees cannot pass lightly—the draft plans submitted by EWMP groups in June 2015 must fully and clearly demonstrate a path to compliance and cleaner waters for the region. To this extent, any identified deficiencies with the EWMP Work Plans must be addressed prior to submission of the draft EWMPs in 2015, and should also be addressed in this PEIR to fully assess the potential environmental impacts of the program.

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[2] For a full explanation of how the permit violates the law, see Memorandum of Points and Authorities in Support of Petition of NRDC, Los Angeles Waterkeeper and Heal the Bay for Review of Action by the California Regional Water Quality Control Board, Los Angeles Region, in Adopting the Los Angeles County Municipal Separate Stormwater National Pollutant Discharge Elimination System (NPDES) Permit; Order No. R4-2012-0175; NPDES Permit No. CAS004001 (Dec, 10, 2012) ("Environmental Groups' Petition"), SWRCB/OCC File No. A-2236(m), attached as Exhibit A.
[3] *See* Environmental Groups' Comments on Enhanced Watershed Management Work Plans and Monitoring Plans Pursuant to Requirements under the Los Angeles County Municipal Separate Storm Sewer System Permit, NPDES Permit No. CAS004001, Order No. R4-2012-0175, submitted to the Regional Board September 16, 2014, attached as Exhibit B.

II. General Comments

Environmental Groups have categorized comments into general comments about the approach in the PEIR and some specific comments about the PEIR analysis. Because the approach in the Draft PEIR will likely follow to the management programs due in June 2015, LACFCD should take this important opportunity to revise the Draft PEIR to address the concerns articulated below.

A. Inadequate Information Related to Ensuring Compliance with Required Water Quality Limits Undermines the Success of the PEIR

In areas of the permittees' jurisdictions where retention of the 85th percentile, 24-hour storm event is not technically feasible, EWMPs must include other watershed control measures to "ensure that MS4 discharges achieve compliance with all interim and final WQBELs set forth in Part VI.E. . . . and [] ensure that MS4 discharges do not cause or contribute to exceedances of receiving water limitations in Part V.A." (*Id*. at VI.C.1.g.v.) In several instances, the Draft PEIR acknowledges this legal obligation and claims that planning efforts are aimed towards that goal. However, whether the environmental impact of the program will indeed include compliance remains uncertain. In fact, based on Environmental Groups' review of several of the EWMP Work Plans related to the Draft PEIR and the very general information included in the Draft PEIR, the actual environmental impact of the EWMPs is difficult to determine. Deficiencies identified in the EWMP Work Plans potentially undermine statements of intended compliance in the PEIR. Thus, Environmental Groups urge LACFCD to clarify several issues related to assuring ultimate compliance with water quality limits.

First, several EWMP Work Plans related to the Draft PEIR insufficiently prioritize pollutants as required in the 2012 MS4 Permit. Permittees are required to prioritize pollutants into three categories: (1) TMDL pollutants (highest priority), (2) 303(d) listed but no applicable TMDL (high priority), and (3) insufficient data to determine impairment, but exceeds RWLs (medium priority). Category (1) must also include non-TMDL pollutants that have similar fate and transport mechanisms as TMDL pollutants. (2012 Permit, at VI.C.2.a.i.) Prioritization is essential to ensuring compliance with required limits. Some of the deficiencies in prioritization include failing to include priority pollutants,[4] and failing to justify exclusion of some pollutants.[5] Additionally, permittees have set incorrect timelines for TMDL implementation and compliance in

[4] *See* North Santa Monica Bay Coastal Watersheds EWMP Work Plan, at 18; *see also* Upper Santa Clara River EWMP Work Plan, at 3-4; *see also* Upper Los Angeles River EWMP Work Plan, at Appendix 2.A. (lacks explanation of why Total Aluminum is not included as a priority despite data demonstrating exceedances).

[5] *See* North Santa Monica Bay Coastal Watersheds EWMP Work Plan, at 18.

some cases.[6] Without adequately characterizing each watershed and prioritizing the right pollutants, it is impossible to fully assess the environmental impacts of the proposed programs under CEQA. Environmental Groups understand that the EWMPs are still in development, but this PEIR must include a process and approach that complies with permit terms to fully evaluate the impacts of proposed actions.

B. Green Infrastructure Should Be Prioritized Wherever Feasible

Environmental Groups commend the LACFCD for proposing multi-benefit stormwater projects that emphasize flood risk mitigation, water conservation and water supply. In light of the fact that the LACFCD has a vested interest in increasing opportunities for stormwater capture and groundwater recharge as a means of assisting local water supply and augmentation, we urge the LACFCD to work with Permittees in all 12 EWMP watersheds to prioritize green infrastructure or low-impact development (LID) practices wherever feasible, and provided that such projects do not produce significant adverse impacts.

Environmental Groups have long supported the use of green infrastructure techniques to control urban runoff. Green infrastructure provides multiple benefits to surrounding communities at a higher benefit-cost ratio when compared to grey infrastructure.[7] A 2007 U.S. Environmental Protection Agency (EPA) study found that "in the vast majority of cases . . . implementing well-chosen LID practices saves money for developers, property owners, and communities while protecting and restoring water quality."[8] With only "a few exceptions," the EPA study found that "[t]otal capital cost savings ranged from 15 to 80 percent when LID methods were used" instead of conventional stormwater management techniques.[9] The EPA study is not alone in reaching this conclusion. A report by ECONorthwest concluded that LID methods not only "cost less to install, have lower operations and maintenance (O&M) costs, and provide more cost-effective stormwater management and water-quality than conventional stormwater controls" but they also provide "ecosystem services and associated economic benefits that conventional

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[6] *See* Ballona Creek EWMP Work Plan, at 1-10 (failure to include interim milestones); *see also* Rio Hondo/San Gabriel River EWMP Work Plan, Table 1-2, at 2 (failure to include interim and final compliance deadlines); *see also* Upper Los Angeles River EWMP Work Plan, at 2-7, 2-9 (compliance deadlines exceed allowable deadlines under the Inland Surface Water Plan).
[7] U.S. Environmental Protection Agency, *Case Studies Analyzing the Economic Benefits of Low Impact Development and Green Infrastructure Programs* (August 2013), *available at* http://water.epa.gov/polwaste/green/upload/lid-gi-programs_report_8-6-13_combined.pdf.
[8] U.S. Environmental Protection Agency, *Reducing Stormwater Costs through Low Impact Development (LID) Strategies and Practices,* December 2007, at iii. available at http://water.epa.gov/polwaste/green/upload/2008_01_02_NPS_lid_costs07uments_reducingstormwatercosts-2.pdf.
[9] *Id.* at iv.

stormwater controls do not.[10] Moreover, a survey released by the American Society of Landscape Architects in 2011 found that green infrastructure reduced or did not influence project costs 75 percent of the time."[11]

Given the current severe drought conditions, protecting and augmenting local water supplies is essential for long-term sustainability. A report by the NRDC found that implementing LID practices at new and redeveloped residential and commercial properties in urbanized areas of Southern California and limited portions of San Francisco Bay has the potential to increase local water supplies by up to 405,000 acre-feet of water per year by 2030.[12] This volume of water accounts for roughly two-thirds of all water used by the City of Los Angeles each year.[13] Historically, Southern California has imported approximately 50 percent of its water supply from distant, energy-intensive sources such as the Sacramento-San Joaquin Delta and the Colorado River.[14] Green infrastructure thus has the potential to greatly reduce Los Angeles' dependence on imported water.

Last but not least, Environmental Groups strongly advocate for the implementation of structural BMPs (distributed, centralized, and regional) that capture stormwater and store it for reuse – so long as they do not produce significant adverse impacts – as such practices provide both water quality *and* water supply benefits.

III. Specific Concerns in the PEIR

Section 3.5 – Geologic and Mineral Resources
Impact 3.5-2: "The proposed program could result in substantial soil erosion or the loss of top soil."

The Draft PEIR states environmental impacts associated with substantial soil erosion or loss of top soil are less than significant. Environmental Groups disagree. EWMP projects are encouraged to retain the 85th percentile 24-hour storm event; however, it is unclear that all EWMP BMPs will retain this volume and even if they did, in some instances some volume of runoff will remain untreated. Thus, at least some percentage of stormwater generated, which will vary depending on individual EWMPs, will be treated and discharged into the MS4. Although discharge points from centralized and

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[10] ECONorthwest, *The Economics of Low Impact Development: A Literature Review,* November 2007, at 4, available at http://www.econw.com/media/ap_files/ECONorthwest-Economics-of-LID-Literature-Review_2007.pdf,
[11] Stormwater Case Studies, American Society of Landscape Architects, available at http://www.asla.org/stormwatercasestudies.aspx.
[12] Natural Resources Defense Council, *A Clear Blue Future: How Greening California Cities Can Address Water Resources and Climate Challenges in the 21st Century*, August 2009, at 4, available at http://www.nrdc.org/water/lid/files/lid_hi.pdf ("A Clear Blue Future").
[13] *Id*.
[14] *Id.*, at 18-19.

distributed BMPs would be designed to minimize scour potential, soil erosion and loss of top soil are still likely to occur during precipitation events. Los Angeles County contains over 110 soft bottom reaches – increased scour and loss of top soil could severely affect beneficial uses of these reaches. In addition, the 2012 Permit outlines specific hydromodification requirements – it is unclear if the Draft PEIR is consistent with hydromodification provisions in the 2012 Permit. The Final PEIR needs to address all potential soil erosion and loss of top soil scenarios and needs to reference the hydromodification provisions outlined on pg. 105 of the 2012 Permit.

Impact 3.5-5: "The proposed program could have soils incapable of adequately supporting the use of a septic tank or alternative wastewater treatment systems where sewers are not available for the disposal of wastewater."

Environmental Groups are concerned with wastewater created in areas incapable of adequate disposal options (sewer system or septic tanks). In the event that implemented BMPs generate wastewater and cannot properly dispose of wastes via sewer system or septic tanks, the Final PEIR needs to outline how waste will be managed (i.e. tank, truck, etc.). In addition, the Final PEIR should reference the State Board's Water Quality Control Policy for Siting, Design, Operation, and Maintenance of Onsite Wastewater Treatment Systems and General Waste Discharge Requirements for Small Domestic Wastewater Treatment Systems (Order WQ 2014-0153-DWQ) when soils are capable of supporting the use of septic tanks.

Cumulative Impact/GEO-2: "Prior to installing BMPs designed to recharge local groundwater supplies, the Implementation Agency shall notify local groundwater manager including the Upper Los Angeles River Area Water Master, the Water Replenishment District of Southern California, or the San Gabriel Water Master as well as local water producers such as local municipalities and water companies. The Implementing Agency shall coordinate BMP siting efforts with groundwater managers and producers to mitigate high groundwater levels while increasing local water supplies."

Environmental Groups agree Implementation Agencies should always notify local groundwater managers and producers before stormwater BMPs are implemented; however, the Draft PEIR fails to acknowledge or reference Salt and Nutrient Management Plans being developed and implemented for Los Angeles County groundwater basins. These Plans outline groundwater inputs and exports as well as identify basins' assimilative capacities. We believe the Final PEIR needs to discuss EWMP coordination with Salt and Nutrient Management Plans. In the light of climate change, protecting while simultaneously contributing to Los Angeles' local water supply is essential for long-term water sustainability.

Section 3.7 – Hazards and Hazardous Materials

Impact 3.7-2: "The proposed program could create a significant hazard to the public or the environment through the accumulation of potentially hazardous materials into BMPs."

HAZ-1: "Implementing agencies shall prepare and implement maintenance practices that include periodic removal and replacement of surface soils and media that may accumulate constituents that could result in further migration of constituents to sub-soils and groundwater. A BMP Maintenance Plan shall be prepared by Implementing Agencies upon approval of the individual BMP projects that identifies the frequency and procedures for removal and/or replacement of accumulated debris, surface soils and/or media (to depth where constituent concentrations do not represent a hazardous conditions and/or have the potential to migrate further and impact groundwater) to avoid accumulation of hazardous concentrations and the potential to migrate further to sub-soils and groundwater. The BMP Maintenance Plan may consist of a general maintenance guideline that applies to several types of smaller distributed BMPs. For smaller distributed BMPs on private property, these plans may consist of a maintenance covenant that includes requirements to avoid the accumulation of hazardous concentrations in these BMPs that may impact underlying sub-soils and groundwater. Structural BMPs shall be designed to prevent migration of constituents that may impact groundwater."

Environmental Groups support Implementing Agencies' development of BMP Maintenance Plans outlining BMP maintenance practices as this is necessary to sustain stormwater BMP efficacies. Yet we want to highlight the all-too-common shortcoming Implementing Agencies encounter in operations and maintenance of stormwater BMPs – failure to devote adequate resources. Bolstering of agencies' resources, such as additional staffing, training, and funding mechanisms, is necessary and commonly overlooked in the implementation of BMP maintenance plans. Without acknowledging Implementation Agency resources while implementing BMP Maintenance Plants, it is unlikely EWMPs' discharges will comply with water quality standards in the long-term. The Final PEIR needs to expand HAZ-1 to discuss additional agencies' resources needed to implement BMP Maintenance Plans.

Section 3.8: Hydrology and Water Quality

Impact 3.8-1: "The proposed project would result in higher groundwater levels and could potentially affect groundwater quality"

See Cumulative Impact/GEO-2 response above.

Impact 3.8-2: "The proposed project could substantially alter the existing drainage pattern of a site or area through the alteration of the course of a stream or river, or by other means, in a manner that would result in substantial erosion or siltation on- or off-site."

See Impact 3.5-2 response above.

IV. Conclusion

Environmental Groups appreciate this opportunity to comment on the Draft PEIR submitted by the LACFCD for the 12 EWMP groups. Please feel free to contact us with any questions or concerns you may have.

Sincerely,

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Los Angeles Waterkeeper

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Heal the Bay

Becky Hayat
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Natural Resources Defense Council

Response to Comment Letter 16 (Los Angeles Water Keeper – March 9, 2015)

Response to Comment 16-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

As noted on page 1-1 of the PEIR, the Regional Water Quality Control Board issued Order No. R4-2012-0175; NPDES No. CAS004001 in December 2012 covering discharges from multiple municipalities within the Los Angeles Region. The requirements of the MS4 permit are described in Section 1.2 of the PEIR. A primary objective of the proposed program noted on page 2-2 is to comply with the permit requirements. The EWMPs include a methodology required by the MS4 permit to evaluate the effectiveness of the BMPs as they are implemented. The commenter's opinion about the ability of the permit to meet the requirements of the Clean Water Act does not address the adequacy of the PEIR. The PEIR does not critique the effectiveness of the permit to achieve compliance with the Clean Water Act, but rather it evaluates the potential environmental effects that could result from implementing the types of projects proposed in the EWMPs.

Response to Comment 16-B:

The PEIR acknowledges that most of the projects to be included in the EWMPs are either currently undefined or currently under development. The PEIR explains that EWMPs are being prepared that will contain road maps to permit compliance for each of the 12 watersheds, without yet being fully detailed. The effectiveness of each EWMP to achieve permit compliance will be evaluated by the RWQCB, which may require additional projects or management actions to ensure compliance. The PEIR evaluates typical project types to assess potential impacts of implementing the entire program throughout the region over a long period of time. The use of a PEIR pursuant to CEQA Guidelines Section 15168 is intended to evaluate broad-based impacts early in the planning process and is the appropriate CEQA compliance for the EWMPs at this time.

Response to Comment 16-C:

The permit outlines a required schedule for EWMP preparation that includes project types, priority projects, reasonable assurance analysis, funding prospects, and public review requirements of the EWMPs. The Permittees may be required by the RWQCB to modify the EWMPs as time goes by in order to effectuate compliance. However, the commenter's opinion on the effectiveness of the permit to achieve compliance with the Clean Water Act does not address the adequacy of the PEIR.

RB-AR 9357

Response to Comment 16-D:

The commenter's opinion on the effectiveness of the permit to achieve compliance with the Clean Water Act does not address the adequacy of the PEIR. A PEIR is appropriate when multiple projects are contemplated under a single program that may individually or cumulatively impact the environment. The PEIR compiles reasonably available information on potential projects and environmental conditions over a large geography. Each project is designed to incrementally improve water quality. The PEIR provides preliminary location information in Appendix G for each project currently being contemplated. Although project details are largely incomplete since the EWMPs are being drafted concurrently, each individual project will be subject to a CEQA compliance evaluation prior to approval by the implementing agencies as noted in Section 1. Changes in the EWMPs as they are developed will not undermine the analysis of the overall program. The PEIR as an advanced planning tool provides an early environmental assessment of the overall EWMP compliance approach to assist Permittees in assessing individual projects.

Response to Comment 16-E:

The commenter's opinion on the prioritization of pollutants needed to achieve compliance with the Clean Water Act does not address the adequacy of the PEIR. The PEIR compiles reasonably available information on potential projects and environmental conditions over a large geography. Each project is designed to incrementally improve water quality. The PEIR provides preliminary location information in Appendix G for each project currently being contemplated. Although project details are largely incomplete since the EWMPs are being drafted concurrently, each individual project will be subject to a CEQA compliance evaluation prior to approval by the implementing agencies as noted in Section 1. Changes in the EWMPs as they are developed will not undermine the analysis of the overall program. The PEIR as an advanced planning tool provides an early environmental assessment of the overall EWMP compliance approach to assist Permittees in assessing individual projects.

Response to Comment 16-F:

The PEIR evaluates implementation of BMP types that include green infrastructure and low-impact development practices. The EWMPs include lists of projects each designed to improve surface water quality in the region.

Response to Comment 16-G:

The PEIR evaluates implementation of BMP types that include green infrastructure and low-impact development practices. The EWMPs include lists of projects each designed to improve surface water quality in the region.

Response to Comment 16-H:

The PEIR evaluates implementation of BMP types that include green infrastructure and low-impact development practices. The EWMPs include lists of projects each designed to improve surface water quality in the region.

Response to Comment 16-I:

The PEIR evaluates implementation of distributed, centralized and regional structural BMPs that capture and store stormwater. Potentially significant impacts of BMP implementation are discussed and mitigation measures identified to avoid or reduce potential adverse effects to the environment.

Response to Comment 16-J:

Although the implementation of BMPs will not eliminate soil erosion in the region, each BMP is designed to reduce pollutant loading into receiving waters. These pollutants can often absorb to sediment particles and impair water quality. The PEIR evaluates potential impacts of BMP construction on soil erosion on page 3.8-33. The PEIR notes on page 3.8-37 that implementation of BMPs will assist in reducing erosion and pollutants in the region. Therefore, impacts resulting from program implementation are less than significant since water quality would improve compared with existing conditions. Mitigation Measure HYDRO-4 has been added to the PEIR under Impact discussion 3.8-3 to address potential hydromodification impacts related to the implementation of structural BMPs.

The following modifications have been included in Chapter 12, *Clarifications and Modifications of the Final PEIR*. The Draft EIR discusses potential impacts caused by erosion and sedimentation on page 3.8-37. Mitigation Measure HYDRO-4 has been added to ensure that these impacts remain less than significant. The modification does not identify any new significant impact or trigger the need to recirculate the Draft PEIR under Section 15088.5 of the *CEQA Guidelines*.

Page 3.8-37 has been edited as follows:

Drainage Pattern Alteration Resulting in Erosion or Siltation

Impact 3.8-3: The proposed project could substantially alter the existing drainage pattern of a site or area through the alteration of the course of a stream or river, or by other means, in a manner that would result in substantial erosion or siltation on- or off-site.

Structural (Regional, Centralized, and Distributed) BMPs

The proposed structural BMPs would be designed to minimize off-site discharge of urban runoff pollutants including siltation and sedimentation. Many of the structural BMPs would include on-site infiltration of stormwater runoff which would also be effective in minimizing erosion or transport of sedimentation into receiving waters. Through increased infiltration prior to discharge into receiving waters, flows within existing streams or rivers would receive reduced stormwater flow volumes thereby decreasing flow energies. <u>Therefore, as part of implementation of Mitigation Measure HYDRO-4, implementing agencies would evaluate the potential hydromodification impacts of structural BMPs and include measures to prevent or minimize any identified impacts in the design of the BMPs, including selecting and designing discharge locations to prevent</u>

or minimize erosion and scour. As a result, the potential for erosion or siltation within existing streams or rivers would be reduced and the potential impact less than significant.

Mitigation Measures: ~~None required~~

HYDRO-4: Prior to approving a structural BMP, the implementing agencies shall conduct an evaluation of the potential hydromodification impacts of the project. The evaluation shall recommend design measures necessary to prevent or minimize any identified impacts, including flooding, erosion and/or scour. Design measures could include velocity dissipaters and bank re-enforcement components. Implementing agencies shall include these measures in project designs.

Significance Determination: Less than significant

Page 3.8-38 has been edited as follows:

Drainage Pattern Alteration Resulting in Flooding

Impact 3.8-4: The project could substantially alter the existing drainage pattern of a site or area through the alteration of the course of a stream or river or, by other means, substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site.

Structural (Regional, Centralized, and Distributed) BMPs

The proposed structural BMPs include features that would increase stormwater retention and encourage on-site infiltration to reverse the impacts from urbanization on the natural hydrograph. ~~The widespread implementation of distributed BMPs with these functions in urban areas of all the EWMP groups will significantly reduce stormwater flow volumes especially during peak storm flow events as indicated by the figure shown in Impact 3.8-3.~~ Larger retention and infiltration regional and centralized BMPs would have a beneficial effect on regional hydrology through delayed discharge to avoid the spike in peak flows currently experienced. By retaining stormwater flows and either infiltrating or releasing these flows closer to the natural hydrograph, the change in drainage patterns would result in reduced peak flows and as a result a reduced potential for flooding on- or off-site. ~~Therefore, the potential impact would be less than significant.~~

However, the implementation of structural BMPs could alter the existing drainage patterns in the immediately surrounding area, depending on the type and location of the BMP. Therefore, as part of implementation of Mitigation Measure HYDRO-4, implementing agencies would evaluate the potential hydromodification impacts of structural BMPs and include measures to prevent or minimize any identified impacts in the design of the BMPs, including selecting and designing discharge locations to avoid increasing the flood risk in the surrounding area.

Mitigation Measures: ~~None required~~

Implement Mitigation Measure HYDRO-4.

Significance Determination: Less than significant

Response to Comment 16-K:

The EWMPs are being developed to comply with the 2012 Permit requirements including its hydromodification requirements. Each EWMP includes projects throughout its watershed that would retain, detain, or slow storm flows, reducing downstream peak storm flows. Implementation of EWMPs would be an improvement to existing conditions, and complementary to RWQCB and local hydromodification requirements within the many jurisdictions of the region.

Response to Comment 16-L:

Once constructed, the structural BMPs would not generate wastewater as described on page 3.14-13. Some BMPs may divert dry weather flows to treatment facilities that would be contingent on available capacity. Potential impacts to underground wastewater conveyance systems are discussed on page 3.14-14. Construction activities that generate dewatering water or other wastewater would be subject to SWPPP and WDR requirements. The BMPs would result in improved water quality and would not significantly impact septic tanks or sewer systems.

Response to Comment 16-M:

Once constructed, the structural BMPs would not generate wastewater as described on page 3.14-13. Structural BMPs would not be subject to the referenced discharge requirements. No modifications or references are necessary.

Response to Comment 16-N:

The PEIR discusses potential impacts to groundwater quality on page 3.8-35. The PEIR acknowledges that infiltration projects could adversely affect groundwater quality and identifies mitigation measures to minimize potential impacts. The commenter is correct to reference the on-going Salt and Nutrient Management Plans (SNMPs) currently being prepared in the region. The SNMPs amend the Basin Plan, establishing salt and nutrient loading thresholds for each groundwater basin. The SNMPs include estimates for increased stormwater infiltration in the future as the region increases local water supply opportunities. Stormwater tends to have lower salt and nutrient content than imported water or recycled water. Increased infiltration of stormwater on a large scale as envisioned in the EWMPs assists in diluting salts and nutrients from other recharge sources and is consistent with and incorporated into SNMPs under development in the region. However, the PEIR acknowledges that infiltration can mobilize pollutants including salts and nutrients already in the ground. As a result, the PEIR includes Mitigation Measure HYDRO-2 that requires implementing agencies to evaluate treatment requirements for each BMP to meet Basin Plan water quality objectives; this mitigation measure would reduce potentially significant impacts to less than significant levels.

In response to the comment the following text is added to page 3.8-29 of the Draft PEIR, describing the status of Salt and Nutrient Management Plans in the region.

Salt and Nutrient Management Plans

In February 2009, the State Water Resources Control Board adopted Resolution No. 2009-0011, which established a statewide Recycled Water Policy. The Recycled Water Policy encourages increased use of recycled water and local stormwater, together with enhanced water conservation. It also requires local water and wastewater entities, together with local salt and nutrient (S/N) contributing stakeholders to develop Salt and Nutrient Management Plans (SNMPs) for each groundwater basin in California in a way that optimizes recycled water use while ensuring protection of groundwater supply and beneficial uses, agricultural beneficial uses, and human health. The Recycled Water Policy encourages development of regional S/N management strategies rather than relying on the past local RWQCB approach of imposing requirements on individual recycled water projects with no recognition of the relative and cumulative impacts when all projects and loading sources are considered regionally. Accordingly, the SNMP is intended to provide support and justification for elimination of separate anti-degradation analyses and individual site monitoring requirements for proposed recycled water projects and so that the vast majority of proposed recycled water projects may be streamlined. The intent of this streamlined permitting process is to expedite the implementation of recycled water projects in a manner that complies with State and Federal water quality laws. The SNMPs will be approved by the Regional Water Quality Control Boards (RWQCBs).

The Central and West Coast Basins SNMP was developed by the Water Replenishment District of Southern California (WRD) as the lead agency. The SNMP was submitted to LARWQCB for approval in November 2014, and was approved as a Basin Plan Amendment on February 12, 2015. The Upper Los Angeles River Area (ULARA) SNMP is currently being prepared by the ULARA Watermaster. An SNMP for the Santa Clarita River Valley East Subbasin is being prepared by a group of local stakeholders comprised of Castaic Lake Water Agency (CLWA), City of Santa Clarita, Los Angeles County Flood Control District (LACFCD), Newhall County Water District (NCWD), San Gabriel & Lower Los Angeles Rivers and Mountains Conservancy, Sanitation Districts of Los Angeles County (SDLAC) and Valencia Water Company (VWC).

This modification has been included in Chapter 12, *Clarifications and Modifications of the Final PEIR*. The modification adds background information, but does not identify any new significant impact. The modification does not trigger recirculation of the Draft PEIR under Section 15088.5 of the *CEQA Guidelines*.

Response to Comment 16-O:

The PEIR acknowledges on pages 3.1-12 and 3.7-16 that BMPs will require periodic maintenance to be effective. Mitigation Measures AES-1 and HAZ-1 both require that maintenance plans be prepared for each structural BMP to ensure their long-term effectiveness. The mitigation includes measures to ensure the functionality of the BMPs for the life of the BMP. With implementation of the mitigation measures, the PEIR concludes that impacts to the effectiveness of the BMPs would be less than significant. It should be noted, Mitigation Measure HAZ-1 has been revised as follows:

> **HAZ-1:** Implementing agencies shall prepare and implement maintenance practices that include periodic removal and replacement of surface soils and media that may accumulate constituents that could result in further migration of constituents to sub-soils and groundwater. A BMP Maintenance Plan shall be prepared by Implementing Agencies upon approval of the BMP projects that identifies the frequency and procedures for removal and/or replacement of accumulated debris, surface soils and/or media (to depth where constituent concentrations do not represent a hazardous conditions and/or have the potential to migrate further and impact groundwater) to avoid accumulation of hazardous concentrations and the potential to migrate further to sub-soils and groundwater. <u>The Maintenance Plan shall include vector control requirements.</u> The BMP Maintenance Plan may consist of a general maintenance guideline that applies to several types of smaller distributed BMPs. For smaller distributed BMPs on private property, these plans may consist of a maintenance covenant that includes requirements to avoid the accumulation of hazardous concentrations in these BMPs that may impact underlying sub-soils and groundwater. Structural BMPs shall be designed to prevent migration of constituents that may impact groundwater.

Response to Comment 16-P:

The PEIR discusses potential impacts to groundwater quality on page 3.8-35. The PEIR acknowledges that infiltration projects could adversely affect groundwater quality and identifies mitigation measures to minimize potential impacts. The commenter is correct to reference the on-going Salt and Nutrient Management Plans (SNMPs) currently being prepared in the region. The SNMPs amend the Basin Plan, establishing salt and nutrient loading thresholds for each groundwater basin. The SNMPs include estimates for increased stormwater infiltration in the future as the region increases local water supply opportunities. Stormwater tends to have lower salt and nutrient content than imported water or recycled water. Increased infiltration of stormwater on a large scale as envisioned in the EWMPs assists in diluting salts and nutrients from other recharge sources and is consistent with and incorporated into SNMPs under development in the region. However, the PEIR acknowledges that infiltration can mobilize pollutants including salts and nutrients already in the ground. As a result, the PEIR includes Mitigation Measure HYDRO-2 that requires implementing agencies to evaluate treatment requirements for each BMP to meet Basin Plan water quality objectives; this mitigation measure would reduce potentially significant impacts to less than significant levels.

In response to the comment the following text is added to page 3.8-29 of the Draft PEIR, describing the status of Salt and Nutrient Management Plans in the region.

> **<u>Salt and Nutrient Management Plans</u>**
> <u>In February 2009, the State Water Resources Control Board adopted Resolution No. 2009-0011, which established a statewide Recycled Water Policy. The Recycled Water Policy encourages increased use of recycled water and local stormwater, together with</u>

enhanced water conservation. It also requires local water and wastewater entities, together with local salt and nutrient (S/N) contributing stakeholders to develop Salt and Nutrient Management Plans (SNMPs) for each groundwater basin in California in a way that optimizes recycled water use while ensuring protection of groundwater supply and beneficial uses, agricultural beneficial uses, and human health. The Recycled Water Policy encourages development of regional S/N management strategies rather than relying on the past local RWQCB approach of imposing requirements on individual recycled water projects with no recognition of the relative and cumulative impacts when all projects and loading sources are considered regionally. Accordingly, the SNMP is intended to provide support and justification for elimination of separate anti-degradation analyses and individual site monitoring requirements for proposed recycled water projects and so that the vast majority of proposed recycled water projects may be streamlined. The intent of this streamlined permitting process is to expedite the implementation of recycled water projects in a manner that complies with State and Federal water quality laws. The SNMPs will be approved by the Regional Water Quality Control Boards (RWQCBs).

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This modification has been included in Chapter 12, *Clarifications and Modifications of the Final PEIR*. The modification adds background information, but does not identify any new significant impact. The modification does not trigger recirculation of the Draft PEIR under Section 15088.5 of the *CEQA Guidelines*.

Although the implementation of BMPs will not eliminate soil erosion in the region, each BMP is designed to reduce pollutant loading into receiving waters. These pollutants can often absorb to sediment particles and impair water quality. The PEIR evaluates potential impacts of BMP construction on soil erosion on page 3.8-33. The PEIR notes on page 3.8-37 that implementation of BMPs will assist in reducing erosion and pollutants in the region. Therefore, impacts resulting from program implementation are less than significant since water quality would improve compared with existing conditions. Mitigation Measure HYDRO-4 has been added to the PEIR under Impact discussion 3.8-3 to reduce any hydromodification impacts including those related to erosion and scour.

Page 3.8-37 has been edited as follows:

Structural (Regional, Centralized, and Distributed) BMPs

The proposed structural BMPs would be designed to minimize off-site discharge of urban runoff pollutants including siltation and sedimentation. Many of the structural BMPs would include on-site infiltration of stormwater runoff which would also be effective in minimizing erosion or transport of sedimentation into receiving waters. Through increased infiltration prior to discharge into receiving waters, flows within existing streams or rivers would receive reduced stormwater flow volumes thereby decreasing flow energies. Furthermore, as part of implementation of Mitigation Measure HYDRO-4, implementing agencies would design BMP discharge locations to minimize any hydromodification impacts including erosion and scour. As a result, the potential for erosion or siltation within existing streams or rivers would be reduced and the potential impact less than significant.

Mitigation Measures: ~~None required~~

HYDRO-4: Prior to approving a structural BMP, the implementing agencies shall conduct an evaluation of the potential hydromodification impacts of the project. The evaluation shall recommend design measures necessary to prevent or minimize any identified impacts, including flooding, erosion and/or scour. Design measures could include velocity dissipaters and bank re-enforcement components. Implementing agencies shall include these measures in project designs.

Paige Anderson

To: Laura Rocha
Subject: RE: PEIR Question/Comment

From: Topanga Creek Watershed Committee [mailto:topanga.tcwc@gmail.com]
Sent: Monday, March 09, 2015 7:56 AM
To: Gregg Begell
Cc: Laura Rocha
Subject: Re: PEIR Question/Comment

Thanks very much Gregg. That was helpful. The projects I am interested in are on page 435 of the document. They are described as "Infiltration", Is there another spot in the document where this is explained in more detail? I am trying to understand what kind of infiltration project is proposed for these locations. Sorry to trouble you, I tried to figure this out on my own but could not do it.

Thanks for your help

On Mon, Mar 9, 2015 at 7:37 AM, Gregg Begell <gbegell@dpw.lacounty.gov> wrote:

Ben

You can find more information on the priority projects in the PEIR document in Section 10 – Appendices – subsection G.

The complete PEIR can be found on our website www.lacoh2osheds.com.

The individual sections can be viewed separately.

I hope this helps.

Gregg BeGell P E

Project Manager

Project Management Division II

From: gbegell@dpw.lacounty.gov [mailto:gbegell@dpw.lacounty.gov]
Sent: Friday, March 06, 2015 8:42 PM
To: Gregg Begell; lrocha@esassoc.com
Subject: PEIR Question/Comment

PEIR Question/Comment:
= =

From:topanga.tcwc@gmail.com

Looking at the PEIR I see a bumch of red dots / priority projects in our (Topanga Creek Wateshed Committee) area, the Topanga Creek Watershed (North SM Bay. How do I find out exactly what these projects are? Thanks Ben Allanoff 310 908 5505

--
Ben Allanoff
Chair, Topanga Creek Watershed Committee
21936 Canon Dr. Topanga, CA 90290
(310) 908-5505
topanga.tcwc@gmail.com

Response to Comment Letter 17 (Topanga Creek Watershed Committee – March 9, 2015)

Response to Comment 17-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The proposed EWMP BMPs are under development. Infiltration BMPs are described on pages 2-8 through 2-24. These BMP types capture and infiltrate runoff into underlying soils. Table 2-2 in Chapter 2, *Project Description* describes specific sub-types of infiltration BMPs, which include surface infiltration BMPs (infiltration basins, bioretention, and permeable pavement) and multi-directional infiltration BMPs (dry wells and hybrid bioretention).

Response to Comment 17-B:

The MS4 Permit requires that the EWMPs identify priority projects. The priority projects are identified in Appendix G of the PEIR. The information included in the PEIR is limited to the project name and location. Additional information for the priority projects will be provided in the EWMPs.

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March 3, 2015

Mr. Gregg BeGell, P.E.
County of Los Angeles Dept. of Public Works
Project Management Division II
900 South Fremont, 5th Floor
Alhambra, CA 91803

Dear Mr. BeGell,

I am writing to you in regards to the Enhanced Watershed Management Plan for the San Gabriel and Rio Hondo Watersheds that is presently under development.

I support your efforts to enhance the water supply and achieve water quality goals to help restore the health of our local waterways.

I would urge that you consider the restoration of Baldwin Lake at the Los Angeles County Arboretum in Arcadia, CA in the proposed improvement plan. Baldwin Lake serves as an important collection basin for Arcadia's urban watershed, receiving run-off from over 150 acres of the suburban neighborhood to the north. In its present state the lake cannot adequately serve as a collection point for water run-off from the neighborhoods north of the arboretum.

The restoration of Baldwin Lake will both enhance watershed function and serve the public with exceptional educational, ecological and scenic benefits. Its inclusion as a high priority project within the Rio Hondo/San Gabriel River Enhanced Watershed Management Plan offers unparalled public benefits to our local communities.

Best regards,

Gilbert Resendez

Gilbert Resendez
Managing Director
(800) 999-9321 ext. 1235
gresendez@monrovia.com

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Response to Comment Letter 18 (Monrovia – March 11, 2015)

Response to Comment 18-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The PEIR assesses the environmental impacts associated with implementation of EWMPs as a form of compliance with the MS4 Permit. The restoration of Baldwin Lake is shown as a potential priority project to be implemented as part of the Rio Hondo/San Gabriel River EWMP in Figure 2-13 of the PEIR. More site investigations are needed to fully vet the project and define the project scope needed to satisfy the EWMP's requirements. The City of Arcadia is the primary agency who will benefit from a water quality project at the Baldwin Lake. The City of Arcadia will likely play a major role in the decision to implement an EWMP project at Baldwin Lake.

Paige Anderson

To: Laura Rocha
Subject: RE: Public Comment Submittal: EWMP PEIR

From: Native Conservation [mailto:native.conservation@gmail.com]
Sent: Monday, March 16, 2015 4:17 PM
To: Gregg Begell
Cc: snowdy.dodson@csun.edu
Subject: Public Comment Submittal: EWMP PEIR

Dear Mr BeGell,
Please find attached review respectfully submitted by the Los Angeles/Santa Monica Mountains Chapter of California Native Plant Society. Kindly confirm electronic receipt of the comments at your earliest convenience.
Thank you.

California Native Plant Society

March 16, 2015

Gregg BeGell, P.E.
County of Los Angeles Department of Public Works
900 South Fremont Avenue, 5th Floor
Alhambra, CA 91803

SUBMITTED VIA EMAIL: gbegell@dpw.lacounty.gov

PUBLIC COMMENT SUBMITTAL
LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
***ENHANCED WATERSHED MANAGEMENT PROGRAMS* (EWMP)**
***PROGRAM ENVIRONMENTAL IMPACT REPORT* (PEIR)**

Dear Mr BeGell:

The Los Angeles/Santa Monica Mountains Chapter of California Native Plant Society thanks Los Angeles County Department of Public Works for the opportunity to review and comment on the PEIR. Our organization supports water quality improvements in conjunction with the focus on conservation, protecting habitat and native plants.

California Native Plant Society (CNPS) is a science and policy-based interest group formed a half century ago. CNPS works hard to protect California's native plant heritage and preserve it for future generations. We actively promote use of science in land use and management decisions through our *Online Rare Plant Inventory* and essential reference book: *Manual of California Vegetation*, 2nd Edition, both of which are the most advanced resources available for identifying and managing critical habitat in California. CNPS works closely with decision-makers, scientists, and local planners to advocate for well-informed and environmental friendly policies, regulations, and land management practices.

Please see our following comments organized in numeric context of the PEIR document. Our chapter representatives and scientists can be available to work with Los Angeles County Department of Public Works to advise best siting and design elements as well as best management practices pertinent to native vegetation in conjunction with all Department projects. Kindly confirm receipt of these electronically-submitted comments.

Sincerely,

[signature] for Snowdy Dodson

Snowdy Dodson, Chapter President

PUBLIC COMMENT SUBMITTAL
LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
***ENHANCED WATERSHED MANAGEMENT PROGRAMS* (EWMP)**
***PROGRAM ENVIRONMENTAL IMPACT REPORT* (PEIR)**

3.3.1 Environmental Setting

The PEIR states native habitats still remain 'within mountainous areas and some drainage areas.' CNPS asserts that native plants endemic to this region are significantly more widespread than the document states. Naturally-occurring populations are found in all geographic areas of the County, including urban, disturbed, ruderal areas, engineered channels, and not limited to open space or 'pristine' habitat. All proposed project areas in the PEIR must therefore be considered as having the potential for habitat value and surveyed at times of year appropriate to the vegetation type found on site.

3.3.1.4 Upper Los Angeles River Watershed

The PEIR states that dry-weather flows caused by irrigation run-off and waste water discharges contribute to establishment of native plant habitat. First, we suggest this discussion would be more appropriately addressed in a separate section of the PEIR about existing habitat as native habitat or plant populations are found in all areas of the County including urbanized settings.

Second, it is important to note that Los Angeles County has high numbers of historic and current naturally-occurring water features with surface flows during dry weather such as artesian wells, springs, high water tables, and blue-line streams in almost every region. Native plant habitat is commonly found in these areas.

Third, the PEIR should discuss proposed maintenance measures of existing native habitat at any and all sites.

Fourth, albeit the following permit is not subject to the PEIR, we recommend the PEIR incorporate requirements currently under consideration as part of the *"Los Angeles County Flood Control District, Maintenance Clearing of Engineered Earth-bottom Flood Control Channels; File No. 99-011 WDR"* renewal by the Los Angeles Regional Water Quality Control Board. The PEIR should advise all native habitat management, maintenance, and locations considered for disturbance or removal coordinated at the inter-agency level, and annually reviewed at the appropriate times of year as dictated by plant type by qualified botanists due to the dynamics and important watershed system values of these bio-diverse areas. Native habitat areas or native plant populations should be left *in situ* at all project areas unless for a compelling project-related reason and disturbed only for purposes of thinning and trimming. Non-native and invasive plant removal is recommended for areas with native species habitat.

PUBLIC COMMENT SUBMITTAL
LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
***ENHANCED WATERSHED MANAGEMENT PROGRAMS* (EWMP)**
***PROGRAM ENVIRONMENTAL IMPACT REPORT* (PEIR)**

Project Impact Discussion

The PEIR is well-researched for various sources of special plant species and habitats lists, regulations, ordinances, and CEQA guidelines. CNPS is concerned the PEIR does not more specifically address how or propose guidelines for native habitat and special plant populations in project areas.

Reference is given throughout the section to benefit goal objective of restoring waterways or riparian areas addressed by the PEIR projects to 'pre-historic conditions.' The statement is used when describing projected vegetation changes following installation of structural, non-structural, and passive projects. Pre-historic conditions of Los Angeles County can never be replicated due to gross manipulation and change of the former hydrology. This especially holds true to water features and native vegetation. California Native Plant Society strongly cautions use of this assumption by the County and advises all existing native habitat, regardless of whether its establishment is historic or from nuisance run-off, be protected for long-term beneficial uses and contribution to watershed functionality.

Structural- This section states many project sites are located within disturbed areas, implying those have no potential for sensitive species or habitat values. Your Department understands this is not the case as establishment of relatively pristine native habitat that established in some of the Earth-bottom Flood Control Channels, which are both engineered and routinely disturbed for maintenance. It is therefore recommended for purposes of due diligence that all projects that are part of this PEIR are surveyed for native plant species and habitat.

Impact 3.3-1 BMPs – Mitigation Measures

BIO-5 Habitat values that provide a wide range of nesting opportunities can extend ten months of the year, especially in the coastal Santa Monica Mountains and the Coastal Zone. It is recommended to elongate the requirement for pre-construction surveys from August 31 to October 31 throughout the County. Furthermore, the surveys should include butterflies, bats, and other pollinator species, as required by California Coastal Commission.

BIO-6 Construction, staging, and rights-of-way should be limited to the smallest possible disturbance footprint, even at sites where no special species are identified. This will ensure less biological impact to biota, soils, air, and water quality.

Response Comment Letter 19 (California Native Plant Society – March 16, 2015)

Comment Letter 19 (California Native Plant Society – March 16, 2015)

Response to Comment 19-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The backgrounds and qualifications of the California Native Plant Society have been noted.

Response to Comment 19-B:

Mitigation Measure BIO-7 requires that implementing agencies conduct floristic surveys prior to BMP installation in areas where sensitive plants may occur. The mitigation measure applies to BMP installations in urban areas as well as rural. Implementation of the mitigation measure would ensure that sensitive plants and habitats are not significantly impacted.

Response to Comment 19-C:

The PEIR describes existing habitats within the EWMP watersheds in Section 3.3.1 of the Draft PEIR. A separate description is provided for each watershed. Each watershed contains a variety of habitats.

Response to Comment 19-D:

Mitigation Measure BIO-7 requires that implementing agencies conduct floristic surveys prior to BMP installation in areas where sensitive plants may occur. The mitigation measure applies to BMP installations in urban areas as well as rural. Implementation of the mitigation measure would ensure that sensitive plants and habitats are not significantly impacted.

Response to Comment 19-E:

Mitigation Measure BIO-8 requires that implementing agencies conduct salvage and replanting plans following construction activities where sensitive habitat is impacted, which would reduce potentially significant impacts to less than significant levels.

Response to Comment 19-F:

The EWMP projects would be implemented by Permittees and coordinated with responsible agencies as needed to comply with permit requirements. Projects that would impact earth-bottom channels owned by the LACFCD would require LACFCD approval and compliance with applicable Army Corp of Engineers, RWQCB, and California Department of Fish and Wildlife resource permits including 404, 401, and 1602 permits, respectively. For example, Mitigation

Measure BIO-4 requires that implementing agencies consult with these resource agencies for projects that impact sensitive habitats and drainages. In addition, Mitigation Measure BIO-8 requires that implementing agencies conduct salvage and replanting plans following construction activities where sensitive habitat is impacted. Both mitigation measures would reduce potentially significant impacts to less than significant levels.

Response to Comment 19-G:

The EWMPs are under development. Areas that could be impacted by individual BMP projects would be analyzed on a project-specific basis. The 12 EWMPs cover a large geography that exhibits numerous native habitat and special plant population types. A native habitat and special plant population type assessment within the entire County would not be helpful at the high-level scale of the impact analysis because the level of detail needed for individual BMP projects would not be feasible for all potential BMP locations throughout the County. Habitat and plant types may differ acre-by-acre in potential BMP locations, requiring a site specific analysis that is impractical to employ for the entire County in the PEIR. Mitigation Measures BIO-1 through BIO-9 provides a road map for minimizing impacts to natural resources that could result from BMP installations, and would reduce potentially significant impacts to less than significant levels. Specifically, Mitigation Measures BIO-4, BIO-7 and BIO-8 would apply to special-status plant populations, requiring the avoidance of special-status species, pre-construction surveys, and replanting plans. Mitigation Measure BIO-1 would require the avoidance of native habitat, and Mitigation Measure BIO-8 would require the re-establishment of native vegetation following construction.

Response to Comment 19-H:

Mitigation Measures BIO-1 through BIO-9 provide a road map for minimizing impacts to natural resources that could result from BMP installations, and would reduce potentially significant impacts to less than significant levels.

Response to Comment 19-I:

Mitigation Measure BIO-7 requires that implementing agencies conduct floristic surveys prior to BMP installation in areas where sensitive plants may occur, and would reduce potentially significant impacts to less than significant levels.

Response to Comment 19-J:

The PEIR identifies a typical nesting season for birds in the southern California environments. Actual nesting behavior may be exhibited in certain locations by certain species outside of this typical range, but the February to August range is a typical nesting duration for most birds. Mitigation Measure BIO-5 would require that a pre-construction survey for breeding and nesting birds and raptors be conducted if construction and vegetation removal is proposed between February 1 and August 31. A qualified biologist shall conduct a pre-construction survey for breeding and nesting birds and raptors within 500-feet of the construction limits to determine and map the location and extent of breeding birds that could be affected by the project. Active nest sites located during the pre-construction surveys shall be avoided until the adults and young are no longer reliant on the nest site for survival as determined by a qualified biologist.

Although impacts to migratory birds are unlikely because of the disturbed nature of many project locations, the implementing agencies will be required to either avoid impacts to migratory birds and their nests. Should the nesting of any migratory bird occur on or adjacent to the project site during grading or construction activities, a USFWS-qualified biological monitor would have the authority to halt all work activities and notify the city and corresponding resource agency.

Response to Comment 19-K:

Mitigation Measure BIO-6 requires that staging areas and rights of way are marked and minimized, and would reduce potentially significant impacts to less than significant levels.

Paige Anderson

To: Laura Rocha
Subject: RE: Final NO MORE to Come - BURNED OUT

From: Tom Williams [mailto:ctwilliams2012@yahoo.com]
Sent: Tuesday, March 17, 2015 6:43 AM
To: Gregg Begell
Subject: Final NO MORE to Come - BURNED OUT

See attached
A few additions in sections 2 and 3 by 9am 03/17 or before

I am working on a letter commending the efforts and recommending use of MMRP to get a management plan to control all the cats...

Dr. Tom Williams

March 17, 2015

TO: Gregg BeGell, P.E.
County of Los Angeles Department of Public Works, Project Management Division II
900 South Fremont Avenue, 5th Floor Alhambra, CA 91803
gbegell@dpw.lacounty.gov

FROM: Dr. Tom Williams, Sr. Techn. Advisor
Citizens Coalition for A Safe Community
Sierra Club, Angeles Chapter, Water Committee

Subject: Enhanced Watershed Management Plan
RE: Comments on Programmatic Draft EIR
Final Compiled Supplemental Comments

EWMP - SPECIFIC COMMENTS
Comments, recommendations, and additions are presented in **Bolded *Italics*** following relevant PEIR text specific to the comments are presented in plain text as was in the PEIR. Some specifically relevant PEIR text may be **Bold <u>Underlined</u>**.

NEW SUPPLEMENTAL COMMENTS
p.2-18 **Upper LA River Brandon Street and Green Street Improvements Project**
The project will reconstruct...roadway...design includes...Much of the runoff from the streets and private properties that would have otherwise drained to the Rio Hondo will be directed to the infiltration area.
No estimate or even guess as to how "much" that would be drained has been made. The EWMP and PEIR suffer from lack of rough orders of magnitude estimates of diversion, redirection, and recharge.
2-19 **Upper San Gabriel River Avocado Heights Multiuse Trail Project**
The project will...thereby reducing the amount of impermeable surfaces as well as runoff. Approximately...Combined together, **<u>up to 115 acre-feet of groundwater</u>** will be recharged annually.
Here an estimate as to how "much" is provided but without any supporting calculations and consistent application throughout the EWMP/s. The EWMP and PEIR suffer from inconsistent application of rough orders of magnitude estimates of diversion, redirection, and recharge for all watersheds.

2-26\2 Typical constructed wetland projects require extensive grading of site soils, though excavated soils are often balanced on-site to provide material for
levees,
berms,
ecotones, and
<u>other flood control/habitat features</u>.
2-27/2 **Multi-benefit flood management projects*.*** This category...designed to result in direct or indirect benefits to flood management.
...Tujunga Wash Greenway project that incorporates...detention elements can **<u>improve flood management</u>** by **<u>reducing stormwater flow rates and/or volumes</u>**.
References to multiple benefits may be appropriate but are not supported by any supporting analyses and description of specific conditions in EWMPs or the EWMP.

2-27/3 *Construction Impacts.* **Multi-benefit flood management projects** are typically expansive projects that range from a few to tens of acres in size...Because of their scale, **multi-benefit flood** 2-28/1 **management projects**...

No definitions are provided for "flood management" vs "flood control" (2-26/2), and no supporting information or analyses are provided for quantification of levels of management/control in addition to other beneficial sectors, e.g., groundwater sourcing for suburban and urban water supplies.

2-28/2 ...**centralized** BMPs...presented in **Table 2-4**. The locations of these examples of planned and implemented **centralized** BMP...in **Figure 2-3**.
Table 2-4...the **centralized** BMPs...structural BMPs that **are part** of **the** EWMP....of **potential and priority** BMPs, where data ***are***~~is~~ **available**,...*BMP Implementation Strategies*.

References to centralized BMPs, structural BMPs, and potential and priority BMPs and then "where available" cause confusion for public reviews and clearly indicate that the supporting documents are inadequate if not incomplete..

2-30 TABLE 2-4 EXAMPLES OF PLANNED CENTRALIZED BMP PROJECTS This project will also have educational signage on a riparian zone and the **stormwater cleanup objectives of this project**.

Centralized projects have been designated as priority, potential, and, here, "planned", but no clear comparison is provided. Consistent terms and usage is very important for public review and commenting.

~~*2-30/Table 2-4 Item 2* **Malibu Creek Lindero Parkway Improvements** The project...streetscape improvement project that...this parkway was **originally a flood control maintenance road**...new project,...Stormwater runoff would then be treated in the bio-swale followed by discharge into Westlake Lake...also have educational signage on a riparian zone and the **stormwater cleanup objectives** of this project. *FP*~~
~~*2-31/Table 2-4 Item 4* **Palos Verdes Peninsula San Ramon Canyon Stormwater Flood Reduction Project** The San Ramon Canyon...near Palos Verdes Drive East....landslide induced rock and soil deposits in the canyon bottom are transported during **heavy rainfall events**...creates **flooding** of the roadway, overwhelming existing drainage facilities, endangering nearby roadway integrity and threatening downstream residents...***(SRCSFRP)*** involves significant drainage restoration work to stabilize...~~
~~*2-32/Table 2-4, Item 2* Phase II of the Penmar project...**Replacing this volume of potable water with treated storm water**...provides 34.7 million gallons per year increase to annual runoff diversion capacity...By installing the **reuse option**, the overall project capacity will increase, thereby also increasing the **volume of urban runoff** that can be retained by the project **for use as an alternative source of water to potable water** for landscape irrigation.~~

2-34/1 **2.4.5 Regional Structural BMPs** Regional structural BMPs are those that can **capture the volume of water from an 85th percentile, 24-hr storm in a contributing watershed, known as the *design volume (...*85th percentile storm...0.75 inches over 24 hours**).
The project's BMPs...**alleviate local flooding** by collecting runoff from a 21-acre drainage area...into two underground infiltration galleries...

Design volumes and their analyses are not provided for contributing watersheds, provide runoff coefficients, times of concentration, etc..

~~*2-34/2 Anticipated Construction Activities:* The construction activities...are generally similar to those of their centralized counterparts, with the **exception of regional retention BMPs**,...adequate storage capacity to **hold runoff from the design storm**....Larger, multi-benefit regional BMPs are similar to **centralized multi-benefit regional flood management projects**...~~

2-42/4 The Los Angeles River...natural hydrology of the Los Angeles River watershed has been altered by channelization and the construction of dams and **flood control reservoirs**...Because of the greater extent and number of pollutant priorities, the BMP strategy in the Upper Los Angeles River watershed includes well **over a hundred planned regional and centralized retention and infiltration BMPs** ***[Estimated total unfunded projects: 400]*** that take advantage of the **favorable groundwater recharge characteristics**...BMP strategy also includes distributed smaller BMPs located throughout the urbanized areas of the watershed as retrofits in existing developments and streets. LFDs to comply with dry-weather bacteria TMDLs may also be included.

No quantification of the watersheds, recharge areas, and groundwater storage capacities has been provided. No priority assignment process has been proposed to manage the many options and maximize the uses of favorable recharge areas and storage capacities.

3.1-12/3 BMP **maintenance is also important**...Wet ponds and constructed wetlands can also become **mosquito-breeding grounds**...can usually be **reduced or eliminated through proper design and/or organic controls**.***[=maintenance]***..all BMPs need to have trash and debris removed periodically to prevent odor and preserve aesthetic values. **With proper maintenance...impacts would be less than significant.**

Although mosquitoes are mentioned, projections of potential public health impact of such occurrences are not mentioned nor supporting information provided, while trash and debris are related to odor and aesthetic values.

***3.1-15/*TABLE 3.1-1 SUMMARY OF...IMPACTS REQUIRING MITIGATION MEASURES**

Distributed BMP

LID – Green Infrastructure – Capture and Use – Cisterns, **Rain Barrels**, Green roofs, Planter Boxes

As indicated elsewhere, the LID program limits detention for single family dwellings to two rain barrels, about 100gal, while a typical 1000-2000sqft roof would generate about 450-900 gal. Rain barrels are discussed but given the limits for only single family dwelling (i.e., multi-family dwellings and commercial structures must have more than 450 gal/1000 sqft). The table and other references to rain barrel requires supporting analyses/calculations to demonstrate any significant mitigation during the EWMP implementation.

3.5-19/2 City of Los Angeles Low Impact Development Manual

In November 2011, the City of Los Angeles adopted the Stormwater Low Impact Development (LID) Ordinance #181899) with the stated **purpose** of:

- Requiring the use of LID standards and practices in future developments and redevelopments to encourage the beneficial use of rainwater and urban runoff
- **Reducing stormwater/urban runoff** while improving water quality
- Promoting rainwater harvesting
- **Reducing offsite runoff** and providing increased groundwater recharge
- **Reducing** erosion and **hydrologic impacts downstream**
- Enhancing the recreational and aesthetic values in our communities

3.5-19/3 The City institutionalized the use of LID techniques...adoption of the Stormwater LID Ordinance, the City prepared the *Development Best Management Practices Handbook, Low Impact Development Manual,...*required BMPs (City of Los Angeles, 2011).

3.7-17/2 The LID Standards...provide protocols for designing regional and centralized BMPs that minimize the potential for contaminant loading. For example, the LID Manual requires a certain distance to groundwater to ensure that adequate soil filtration occurs prior to the percolating water reaching a drinking water aquifer.

The manual and references to it fail to demonstrate and support contentions regarding the purpose and significance of a desired level of implementation during the EWMP period or the rate of implementation, especially given the minimal detention required of single family dwellings.

3.8-8/2 5. **Dominguez Channel Watersheds (Figure 3.8-6)** (Dominguez Channel EWMP and Beach Cities EWMP–...Dominquez Channel EWMP and a portion of the Beach Cities EWMP...differentiated by a **larger area** of industrial land use. Because of the **high density**...**large** regional and centralized infiltration-type BMPs will be **limited**. The structural BMP strategy will be more LFDs, both **large** (centralized) and **small** (distributed), located at MS4 outfalls...The other BMP strategy is the use of **smaller distributed BMPs**...low-impact development (LID) type of BMPs, such as green streets and biofiltration BMPs.

Such generalities require quantification, specific parameters, and some criteria and perhaps cost limitations. For this and other sib-watersheds, the EWMP and PEIR-MMRP can provide a more formal process of sizing and capacities of BMPs.

Subsurface infiltration galleries are commonly used in such surface congested areas if suitable alluvium is available.

3.8-20/1 ...these LFDs **could potentially increase** the amount of water available for recycling, reuse, and **groundwater recharge**.

3.8-21/1 ...45 percent are supplied by local groundwater basins that **are recharged naturally**...**through constructed recharge facilities** (MWD, 2010).

3.8-21/1 ...stormwater recharge facilities **currently augment local groundwater supplies** in the region by an estimated 477,000 acre-feet per year (MWD, 2014).

3.8-21/1 **One of the primary goals of the EWMP program**...**increase the amount of stormwater that is recharged**...particularly in portions of the Central Basin that experience a high degree of hydraulic connectivity between surface water and groundwater. Infiltration BMPs proposed within the EWMPs are expected to **increase the rates and amounts of groundwater recharge**...

Although herein discussions focus on the potential benefits of runoff diversion and recharge as related to augmenting local groundwater supplies to water user service areas, the remainder of the PEIR generally disregards the cumulative impacts and growth inducements of increased local water supply sources while retaining all existing capital works supply capabilities.

3.8-31/3 ***County of Los Angeles Low Impact Development Manual***

The County...prepared the 2014 Low Impact Development Standards Manual (LID Standards Manual, County of Los Angeles, 2014b) to comply with the requirements of the 2012 MS4 Permit...provides guidance for the implementation of stormwater quality control measures in new development and redevelopment projects in unincorporated areas of the County with the intention of improving water quality and mitigating potential water quality impacts from stormwater and non-stormwater discharges.

LACo may have LID requirements for future developments and redevelopments; however, the LACo recently proposed and gained voter approval for a "hauled water" initiative for existing developable areas without piped or well-sourced water supplies. Increased local groundwater recharge and additional "surplus" water supply system capacities can promote or induce such developments which were previously restricted. The cumulative effect of increased local supplies and available infrastructure capacities can directly support and induce development of the "Hauled Water" developments and their impacts on local drainages.

3.8-31/4 The LID Standards Manual addresses...**objectives and goals**:

- **Lessen** the adverse impacts of stormwater runoff from development and urban runoff on natural drainage systems, receiving waters, and other water bodies.

- **Minimize** **pollutant loadings from impervious surfaces** by requiring development projects to incorporate properly-designed, technically-appropriate BMPs and other LID strategies.
- **Minimize** erosion and other hydrologic impacts on natural drainage systems by requiring development projects to incorporate properly-designed, technically appropriate **hydromodification control development principles and technologies**.

The manual contains only generalized statements - Goals - not quantified and scheduled objectives. LIDs do not provide requirements for agencies to deal with existing and future streets and sidewalks and do not provide for capital and long-term O&M funding sources. Without quantification and definitions, "lessen" and "minimize" become irrelevant and can be attained without reference to LID.

City of Los Angeles Low Impact Development Manual

3.8-31/5 In November 2011, the City of Los Angeles adopted the Stormwater Low Impact Development Ordinance #181899 with the stated purpose of:

- Requiring the use of LID standards and practices in future developments and redevelopments to encourage the beneficial use of rainwater and urban runoff
- Reducing stormwater/urban runoff while improving water quality
- Promoting rainwater harvesting
- Reducing off-site runoff and providing increased groundwater recharge
- Reducing erosion and hydrologic impacts downstream
- Enhancing the recreational and aesthetic values in our communities

3.8-31/6 The City of Los Angeles institutionalized the use of LID techniques...Subsequent to the adoption of the Stormwater LID Ordinance, the City prepared the *Development Best Management Practices Handbook, Low Impact Development Manual,* dated June 2011, to describes the required BMPs (City of Los Angeles, 2011).

LID provisions for rain barrels for single family dwellings are only 10-20% of the total detention required for the design storm.

The EWMP and the PEIR have not provided basic supporting documentation and analyses for:

Use of the 85%ile 24-hr rainfall event;

Sufficiency of detention containers (SFD with two 50gal barrels for 450+gal runoff;

Importance of rainfall harvesting of 1000sqft on a 5000sqft lot with driveways, sidewalks, etc..

Reference to beneficial use, harvesting, enhancements, and recharge generally relate to reduce demands by existing and future users and thereby freeing up existing water supply capacity for other future developments or expanding base populations in the service areas, infrastructure support of expanded developments - growth inducements.

3.8-35/2 **Mitigation Measure HYDRO-1** requires Permittees to evaluate the suitability of BMP locations for groundwater **recharge**. **Infiltration BMP**s would not be suitable in areas of low permeability where subsurface structures could be adversely affected by groundwater mounding.

No supporting information is provided regarding recharge capability, local groundwater storage capacities and flow regimes, and potentially affected infrastructure. No process, parameters, nor criteria for "evaluations" are provided as part of EWMP and PEIR.

3.8-41/5 **Cumulative Impact Discussion Structural (Regional, Centralized, and Distributed) BMPs** **...**Implementation of the proposed structural BMPs,...**other reasonably**

foreseeable future projects...result in improved stormwater quality and reduced non storm flows....will experience reduced dry-weather runoff, a more natural hydrology, and improved receiving water 3.8-42/1 quality. In addition, new infiltration projects will incrementally augment groundwater drinking water supplies. Although the increased infiltration projects may increase pollutant loads to groundwater aquifers, pretreatment systems **coupled with regional groundwater management lead by the local Watermasters** will ensure that the beneficial uses of **groundwater basins are not significantly impaired.** ...EWMPs will beneficially impact local surface water quality and groundwater supplies. **Mitigation Measures:** None required **Significance Determination:** Less than significant

The EWMP does not provide parameters and criteria or selection of "future projects".

No management program of "coupling" between LACo, other watershed agencies, and the "Watermasters" is proposed nor committed to in the EWMP to deal with cumulative impacts.

***3.8-43*/TABLE 3.8-3 SUMMARY OF HYDROLOGICAL RESOURCE IMPACTS REQUIRING MITIGATION MEASURES Cumulative Impacts, No mitigation required**

Without a hydrologic model and analyses especially for the "design storm", no objective assessment of impacts can be made and no supporting information is provided for the absence of mitigation requirements.

Paige Anderson

To: Laura Rocha
Subject: RE: Most-Near Final additions by 9am tomorrow

From: Tom Williams [mailto:ctwilliams2012@yahoo.com]
Sent: Monday, March 16, 2015 1:43 PM
To: Gregg Begell
Subject: Most-Near Final additions by 9am tomorrow

See attached

A few additions in sections 2 and 3 by 9am 03/17 or before

Dr. Tom Williams

March 16, 2015

TO: Gregg BeGell, P.E.
County of Los Angeles Department of Public Works, Project Management Division II
900 South Fremont Avenue, 5th Floor Alhambra, CA 91803
gbegell@dpw.lacounty.gov

FROM: Dr. Tom Williams, Sr. Techn. Advisor
Citizens Coalition for A Safe Community
Sierra Club, Angeles Chapter, Water Committee

Subject: Enhanced Watershed Management Plan
RE: Comments on Programmatic Draft EIR
Final Compiled Comments 1-4/4

Following provides a brief review of the CEQA/P-DEIR (PEIR) documents of almost 70MB/1000 pages. We thank the LACo Department of Public Works and Flood Control District for this opportunity to review and comment on the PEIR and greatly appreciate the deadline extension for doing such.

Overall review is that the document(s) are inadequate, incomplete, and virtually inaccessible for the general educated public due to the volume, technical character, overly-broad statements, lack of documentation and support of statements, and lack of definitions and consistency of terms and usage,

The proposed Program does not provide a plan for tiered project CEQA considerations by the other permittees nor the County itself. No plan for the Program or the projects has been established for the Enhanced Watershed Management Plan to achieve and comply with the LA Regional Water Quality Control Board's permit requirements. A program may be more generalized but still must provide a plan of actions for both the lead and responsible agencies.

The Program does not provide even the requirements, process, and procedures for subsequent CEQA compliance by other permittees and some projection as to whether EIRs, MNDs, ND, or CE will be used to tier down from this P-DEIR/P-FEIR. Conditions for Program Compliance by tiered projects have not been listed or even referenced other than some ill-defined listing of BMPs.

No current listing of all planned and funded Projects has been provided and incorporated into a scheduled and quantified plan for submission in June 2015.

Although research has been underway for five-plus years, the EWMP and this PEIR does not use nor even reference use of computerized modeling of the appropriate basins (Ballona Creek, Upper LA River, Middle LA River and Arroyo Seco, Lower LA River and San Gabriel River, and LA River Mouth/Estuary-Dominguez Channel), although the federal agencies (BLM, USGS, ACoE, etc.) and perhaps local agencies (some permittees and the Water Board) have some local or watershed models . Without a model and its components, the impacts and their significance of detention, retention, recharge, and flood protection cannot be assessed nor mitigated adequately or completely.

Three goals are provided but no objectives (sub-tiered from goals) are provided with/without defined schedules and other quantitative parameters for program monitoring. Confusion is introduced in later text when both flood control and water supply "augmentation" are also introduced as "goals" and as "objectives".

Specific goals are only to meet the MS4 Permit requirements in June 2015 and after and related water quality conditions and to meet them in a "Cost-Effectiveness" manner. However, costs, financial support, revenue, capital bonding, or economic effectiveness or efficiency are not provided, and thereby achievement of the cost effectiveness cannot be judged nor compared and appears to be presumed by submission of any proposed project.

Growth inducement is mentioned primarily with regard to direct housing construction and employment and incomes while dismissing potential effects of recharged (diverted storm flows) water supplies.

Additional benefits primarily for flood protection are mentioned in some statements while it is not supported by any text or analyses under water resources. No assessment of beneficial and adverse effects are provided for raising base flow levels from program-augmented/diverted-stormwater groundwater resources and their effects upon subsequent pollutant concentrations and flood flows.

I am retired from 30 years in water and environmental resources with Parson Corp., Pasadena and URS San Francisco and over 10 years with Dubai (UAE) government and local water and environmental companies. I have prepared sections and entire documents for more than 300 EIRs, EISs, and EAs worldwide for local agencies, cities, counties, states, federal, and international agencies and organizations and have reviewed more than 100 additional assessments. During work for URS, I was involved in the development and environmental considerations for the 1970s EPA's Santa Ana and Santa Marguerita/San Luis Rey basins plans. My reviews have included the LACity's Recycled Water Management Plan and Stormwater Capture Management Plan, and I am currently vice chair of the Steering Committee forthe LA City's Floodplain Management Plan. I am also the Senior Technical Advisor for the CCSC and a member of the Sierra Club, Angeles Chapter, Water Committee

Dr. Tom Williams

MAJOR ISSUES:
Comments regarding deficiencies have an implied request for additional information and appropriate revisions to be added in the PEIR, and especially the formal Mitigation, Monitoring, and Reporting Program.

<u>LACo Water Computer Model</u>
No model has been used or referenced.

<u>Project Storm</u>
References are made to the Project Storm event of 85th-percentile for 24-hour (not = daily) rainfall and estimated at 0.75 inches, but no primary references or sources for the storm distributions are provided. Choice of this particular criterion is not described but may be related to the permit requirements without any further considerations or its appropriateness. Provide references and demonstration that the storm precipitation applies to the entire southern LACo or where it does apply.

<u>Increased Water Supply and Growth Inducements</u>
Many statements of the use of diverted stormwater and other waters for recharge is not carried through to the ultimate effects of such recharge on base flow (exfiltration) from shallow groundwater into channels or on the available safe yields for potable water supplies. The entire PEIR is incomplete and totally inadequate for the discussion of the volumes, recharge areas, and pumping areas and uses for increased local water supplies either as a means of substitution for imported with the same population or to assure adequate total supplies for increasing or re-distributed populations.

<u>Environmental Justice for Water Supply Sources</u>
Also as an environmental justice issue, the PEIR does not address the distribution of recharge areas for both local stormwater and treated recycled waters (also part of LACo and LACity plans and projects), compared to those areas receiving the higher water quality and lower total delivered costs of imported waters. As both areas would presumably pay the same, or similar, water supply rates, they must get the same quality water (e.g., TDS, nitrates, metals, etc.), else wise an environmental justice issue appears to exist. Provide the expected water quality and any treatment related to recharged storm and treated wastewater and to imported water (e.g., northern San Fernando Valley-Santa Clarita vs Torrance-Compton-Whittier.

<u>Public Health</u>
Retention, detention, and recharge facilities create good habitats for mosquitoes and other vectors but the PEIR mention mosquito and other water related vectors four times. No discussion is presented regarding the public health issues for water- and water-logged soil related habitats for disease vectors, especially give the concerns regarding West Nile and Dengue Fever vectors. Having suffered malaria, the reviewer may be overly concerned, but some assessment and mitigation measures must be included. As a long term operations and maintenance issue, demonstration of ongoing revenue sources, and appropriate O&M funding and activities are vital to any assessment of water related projects in a dense board urban environment.
Fungi-Mold (Valley Fever) are/is would be expected to expand especially in those areas with high soil moisture and perhaps overlying near surface mounded groundwater.
Accumulations of metals and hydrocarbons may occur due to treatment by soil-based systems and stabilization of metals in project basin soils and vegetation.
Watershed health is mentioned but only as this health relates to the presence or removal of contaminants from the dry-/wet-weather runoffs.
Provide discussion regarding any stormwater-related diseases.

<u>Operations and Maintenance and Revenues</u>
Proposed facilities would be expected to have high manual maintenance.

Provide requirements for coordination/compliance with scheduled maintenance that must be incorporated into a thorough scheduled and quantified Mitigation Monitoring and Reporting Plan/Program for all facilities and operations.

Revenues and Stormwater Fees

Sources of revenues are not provided to support capital construction and replacement, financing, and long term operations and maintenance, especially any changes in the LACo Storm Water Fees on annual property tax rolls.

No provision is made for revenues based on per-parcel or per-area assessments and fees.

No assignment and delineations are made for benefits and effects/risks to the public and land owners for water quality, flood control, or recharged water supplies.

No comparisons are offered to compare abilities for overall or percentile economic groups to pay for both owners and residents.

Provide full description and assignments of revenues, life-of-project costs, and ability to pay for revenue sources.

Revenues from Groundwater Production

Groundwater resources will be increased, but it is unreported as to the ownership and allocation of the recharged water and to the process of recovery of increased local groundwater resources beyond the immediate vicinity of the recharge areas.

Flood Control, Protection, Diversion, and Other Related Issues

Flood protection, control, and management are mentioned as a goal/objective of the program but without delineation and definition, and significance to other related concerns (e.g., Growth inducement).

Provide estimated changes of wet- and dry-weather flows.

Effects of Increased Base Flow (levels and flows)

No meaningful discussion (two-2 mentions of base flows in all 504 pages) is presented as to both the beneficial and detrimental effects of higher base flow volumes and levels resulting indirectly from rising/mounding groundwater resources downslope of stormwater and recycled water recharge basins/projects.

Increased low flow volumes for pollution dilution of existing and other permitted discharges are not considered.

Increased low flow levels for increased total flood level and expanded flood area are not considered.

Special Issue: LACity - EWMP 400+ projects (BMPs) and PEIR

Inquiries, internet searches, and requests for public documents have been submitted to the Department/Board of Public Works, City of Los Angeles for documents, reports, and other materials pertaining to the reported 400+ storm water related projects, BMPs, etc., that presumably would be part of the 12 EWMPs for the permittees to submit to the LAWQCB in June 2015 and which is referenced in the LACo EWMP and this PEIR. As of 3pm-16 March, 2015, more than ten days after submission of the request to LACi-BPW, no contact has been made by the LACi-BPW or LACiDPW.

This indicates that such EWMPs' projects may be erroneously reported herein or that they are not part of the PEIR and not available to the public. This is a clear example of importance of having all information prior to preparation of the LACo EWMP and this PEIR. as the total number of stormwater related projects probably exceeds the total numbers of other permittees we must assume that the EWMP-PEIR is incomplete and inadequate for public review and meaningful comments.

Please withdraw the current PEIR and recirculate at a later date when all relevant information is available for public review and comment.

EWMP - SPECIFIC COMMENTS
Comments, recommendations, and additions are presented in **Bolded *Italics*** following relevant PEIR text specific to the comments are presented in plain text as was in the PEIR. Some specifically relevant PEIR text may be **Bold <u>Underlined</u>**.

Apdx. A, NOP, p.9/4 **4.1.1 Regional Structural BMPs** "Regional EWMP projects" are defined by the MS4 Permit as multi-benefit regional projects that, wherever feasible, retain all non-stormwater runoff and all **<u>stormwater runoff</u>** from the **<u>85th percentile, 24-hour storm event</u>** for the contributing drainage area, while also achieving other benefits such as flood control and/or water supply.

The PEIR states consistently that the project storm is the 85th percentile/24-hour/approximately 0.75inch (some up to 1 inch). However no documentation/derivation of the 24 hr storm analyses has been provided. The 24-hour storm event is not equal to a daily storm event (any 24-hr vs a 12:01:01am-11:59:59pm) and can be quite different based on moving 24-hour totals and frequency compared to that for calendar day.

Similarly the runoff from a 0.75inch rainfall would not be expected to be the same as the amount of rain falling on the ground (467gals/1000sqft vs 0.9x467gals= say 420gals) but no provision is made regarding runoff coefficients..

The PEIR is inadequate with regard to the absence of documentation/analyses demonstrating the total distribution from say 50%-100% of 24hr storm event. Furthermore no assumed runoff coefficient(s) has been provided for estimating the likely detention capacities required.

Executive Summary
The Executive Summary (ES) has not been thoroughly reviewed as the ES supposedly represents a limited version of the P-DEIR text content and cannot be assessed for adequacy and completeness as a stand-alone item. Some issues warrant some review and comments.

ES-2/2 The EWMPs **<u>will</u>** identify **<u>potential and priority</u>** **<u>structural and non-structural</u>** Best Management Practices (BMPs) within the region's stormwater collection system to improve runoff water quality.

As indicated, this EWMP has no direct factual contributions from the individual EWMPs of other permittees within LACo. No formal organization and definitions of the EWMP, EWMPs, and all the "BMPs" has been provided and consistently applied throughout the document. As the statement refers to a future condition, not in evidence, such statements here and throughout the document must be verified and suported by commitments on the part of the other permittees.

Potential and priority BMPs are referred to but are not adequately related to the EWMPs and the EWMP/PEIR and as indicated herein they ARE BEING developed, they are not developed. The EWMP and PEIR are not definitive at even a programmatic or conceptual design level.

ES-2/5 A few of the BMPs are currently **<u>well defined</u>** but most **<u>are yet to be fully developed</u>** under the EWMPs....priority BMPs...detailed in each of the EWMPs; these **<u>are being developed in parallel with the PEIR</u>**....describes the details **<u>that are available</u>** for each of the EWMPs currently...by the EWMP working groups.

1-3/3 A set of **<u>priority BMPs</u>** will be detailed in each of the EWMPs; these are being developed in parallel with the PEIR. The PEIR describes the details that are available for each of the EWMPs currently under preparation by the EWMP working groups.

As indicated, this EWMP has no direct factual contributions from the individual EWMPs of other permittees within LACo.

No definition of "Fully" or "Well" is provided for the PEIR and as they are being developed at the same time as this PEIR their entire discussion is so general as to render assessment impossible and open to any combination of current or future "projects" and BMPs as desired by the agencies. No reliable discretionary decision can be made and funded based on the PEIR.

ES-3/3 **ES.3 Project Objectives**
The primary goals and objectives of the EWMPs are:

- To **collaborate among agencies**...to promote more **cost-effective** and multi-beneficial water quality improvement projects **to comply** with the MS4 Permit.
- To develop watershed-wide EWMPs that will...**remove or reduce pollutants** from dry- and wet-weather urban runoff in a **cost-effective manner**.
- To reduce the impact of stormwater and non-stormwater on **receiving water quality**.

Elsewhere goals and objectives are mentioned and then supposed objectives are provided. Here these are largely "goals" as they have no specification of schedule or quantification.

As these are stated as "primary" with no mention of secondary or tertiary goals or objectives, the entire EWMP is without adequate or complete goals and objectives and various statement totally confuse the basis for the "project" and related " alternatives" and their compparisons and assessments.

Report is unclear as to definition and has inconsistent usage of Goals and Objectives of the Program.

These are Goals only, while objectives must have specifics as to schedule and quantitative indicators of compliance (e.g., acre-feet/year recharged, return rate changes by 2020, etc.

ES-3/5 The LACFCD has a **vested interest in increasing opportunities** for stormwater capture and groundwater recharge as a means of assisting **local water supply augmentation**.

Direct reference to increased water supply without delineation as to where augmentation and local supplies may be augmented.

Without removal of existing facilities in order to reduce existing water supply flow capacities, increased local sources can increase and must be considered as increased total water supply and appropriate assessment of growth inducement.

Local augmentation, in general, would be at lower elevations than imported water supplies would serve due to the State Water Project and Colorado River Project source elevations of imported supplies and those of most probable recharge areas and down-flow groundwater wells. Service areas of recharged stormwater and recycled waters are generally of lower elevations and of different economic status from those at higher elevations and served by imported water supplies..

1-1/3 The MS4 Permit gives Permittees the option of implementing an innovative approach to permit compliance through development of an Enhanced Watershed Management Program (EWMP)....**will identify potential and priority structural and non-structural Best Management Practices (BMPs)** within the region's stormwater collection system to improve runoff water quality. The LACFCD, along with participating Permittees, has opted to exercise this option and has submitted to the LARWQCB 12 separate Notices of Intent (NOIs) for the development of EWMPs within 12 distinct watershed groups...Implementation of the EMWPs would be the responsibility of each Permittee and would occur following approval of the EWMPs by the LARWQCB.

BMPs, groups of BMPs, and Projects are not defined at any engineering levels so as to determine cost-effectiveness, capabilities to achieve any project/program goal involving water quality or flows and their effects and impacts.

p.1-3/2 ...timeline...in the MS4 Permit requires that Permittees submit the ***12*** EWMP***s*** to the LARWQCB by June 28, 2015, in order to be in compliance with the permit conditions.

Should have started earlier. Mid March - Late June, 105 days, is a very tight, aggressive schedule and should have been better scheduled and implemented. Public participation should not be sacrificed for untimely agency coordination. Some issues may be resolved through tiering and MMRP in the Final PEIR.

LACo EWMP vs 12 additional EWMPs in 90 days following LACo BOS approval and certification may be in jeopardy.

12 EWMPs are required and presumably requires local jurisdictions to have discretionary actions by city councils. Presumably the cities will reference the LACo EWMP-PEIR as CEQA compliance but must have the project specific and local BMP EIRs/MNDs processed to be in compliance with this PEIR and CEQA. As stated herein this PEIR, the PEIR does not complete the CEQA compliance for the 12 EWMPs and their CEQA considerations.

p.1-3/2 As a result, the LACFCD has prepared this Program Environmental Impact Report (PEIR) in compliance with the California Environmental Quality Act (CEQA) to provide the public and the responsible and trustee agencies with information about the potential effects on the local and regional environment associated with implementation of the ***12*** **EWMPs**.

Relationship and contents of the master PEIR and tiered EIRs/MNDs and other CEQA documents are not clearly provided. The statement and others promote confusion between the EWMP and the EWMPs and between the PEIR and CEQA considerations for the 12 EWMPs to be tiered off of the PEIR and documented separately.

p.1-3/2 The LACFCD will submit the PEIR to its governing body, the Los Angeles County Board of Supervisors, for approval prior to submittal of the EWMPs. The **EWMPs** will be submitted by each EWMP group to the LARWQCB.

Discretionary actions by the BOS do not substitute for the discretionary actions by the 12 jurisdictions of the "EWMP Groups" (cities) to approve the 12 local EWMPs and their incorporate BMP projects.

What is an "EWMP Group"? Presumably one or more cities who will agree on an EWMP and vote to approve the EWMP before submission the the LARWCBrd. CEQA requires environmental considerations other than referencing this PEIR for the 12 local EWMPs.

p.1-3/3 **This PEIR describes and evaluates each of the EWMPs being prepared by the Permittees collectively.**

This statement suggests that this PEIR covers all EWMPs prepared by an "EWMP Groups" and that they have been prepared and incorporated herein. No documentation is provided as to whether cities approved and authorized any local EWMP and its inclusion herein. Presumably one or more cities who will agree on an EWMP and vote to approve the EWMP before submission the the LACo for inclusion in the PEIR and submission to the LARWCBrd. CEQA requires environmental considerations of the local discretionary actions other than referencing this PEIR for the 12 local EWMPs.

p.1-3/3 The discretionary action prompting the need for CEQA compliance is the **submittal** of the completed EWMPs to the LARWQCB.

Submission is not a discretionary action but a ministerial action on the part of a department following the discretionary action of a Board of Supervisors, city council, or other public elected body to approve the local EWMP and its shcedule and funding.

p.1-3/3 A few of the BMPs ***[=Projects]*** are currently well defined but most are yet to be fully developed under the ***12 local*** EWMPs. A set of **priority BMPs *[=Projects]*** will be detailed in each of the EWMPs; these are **being developed** in parallel with the PEIR. The PEIR describes the **details that are available** for each of the ***12 local*** EWMPs **currently under preparation** by the **EWMP working groups**.

Confused and demonstrates that this PEIR may be incorporating projects, BMPs (if different), some portions of the other 12 EWMPs, and the LACo EWMP which has not been approved by the LACo BOS.

Is it EWMP group, EWMP Working Group, or Permittees? Are they the same or different? Have any been approved and funded by a council in a discretionary action? Clarification is needed.

1-3/3 The EWMPs will identify **management strategies** including **hundreds of structural Best Management Practices** (BMPs) that **may be** designed and implemented by the Permittees to meet **permit compliance objectives** ***[Only one of the Program objectives]***.

Clearly indicates that this RAA model for water quality is not completed prior to its assessment and that the assessment cannot adequately assure that even the water quality goals and objectives cannot be realized.

Water quality and flow models and proposed BMP depend on diversion or reduction of flows during both dry- and wet-weather flows, and therefore the RAA must be based on a hyrdologic/hydraulic model which has not bee referenced or mentioned.

This EWMP and PEIR must provide the programmatic management strategy guidelines for those of the tiered-down EWMPs-strategies and related CEQA documents. Use of the conditional: "may be" voids following verbs and leaves the statement as irrelevant to the Program and Project EIRs.

p.1-4/par.3 The EWMPs...discussion of the environmental documents, assessments, and permitting required for the implementation of the **priority projects**. The PEIR **can provide** a basis for this discussion...PEIR in the development and implementation of the EWMPs is further discussed in this chapter in the *Purpose of the Program Environmental Impact Report*.
Priority BMPs were discussed but have not been distinguished from "Priority Projects".
A "priority project(s)" are not defined and therefore the statement is rendered meaningless.
Throughout the referenced section 1.3 (p.1-9 - 1-10), statements are made as to "can" rather "shall" and thereby the PEIR does not establish a procedure for the tiered environmental documents shall assess their environmental impacts and provide mitigation.
The PEIR does not discuss the process of tiering to projects or to specific BMPs and whether Mitigated Negative Declarations will be tiered down from this PEIR or whether the project must require tiered/focused EIRs for full and adequate CEQA compliance.
The PEIR must provide a procedural context for most if not all elements for the Project EIR/MND by the local agencies as the LACo shall be a responsible if not a lead agency for each Project. As provided the PEIR is incomplete and inadequate for establishing an expected or required procedure and process for preparation of a project specific CEQA document.

1-5/3 **Watershed Management Programs** The MS4 Permit Section VI.C (page 47) includes provisions that allow Permittees to **voluntarily choose to implement** a Watershed Management Program (WMP). The **purpose of this program** is to “allow Permittees the flexibility to develop Watershed Management Programs to implement the requirements of [the] Order on a watershed scale through customized strategies, control measures, and BMPs.” The permit states that “participation in a Watershed Management Program is **voluntary** and allows a Permittee to address the **highest watershed priorities**.”
CEQA is not voluntary and the "Program" must provide the structure for the tiered CEQA process to operate and satisfy CEQA for each project or tiered PEIR.
The permittee is not the department but the City or County. Provide a listing of all councils which have approved development and submission of an EWMP to the Regional Board.
As a program, provide all documentation as to whether the subsidiary agencies have committed to the Watershed program or whether they have voluntarily chosen not to participate.
No priorities are provided - references are made to conservation priorities, pollutant priorities, renewable priorities water quality priorities, and watershed priorities (and highest watershed pr...), but only some water quality priorities are discussed.

1-7/1

- Other Receiving Water Considerations (**second category**):
  - The second highest priority shall be considered controlling pollutants for which data indicate impairment of exceedances of receiving water limitations and the findings from the source assessment implicates discharges from the MS4.

As no hydrologic model for flows and concentrations has been provided even for the TMDL constituents, references to secondary pollutants appears totally inappropriate and purposefully attempts to elevate the credibility of compliance with the TMDL, which has not been achieved.

1-7/2 The **EWMP prioritization process** includes
identifying the priority pollutants and...
schedule for implementing BMPs to meet the following criteria:

- For pollutants...same class as TMDLs,...consider these pollutants within...same time frame as...TMDLs.
- For...303(d) list...EWMPs develop a schedule to address these pollutants **as soon as possible** with milestones.

Priority pollutants have already been prioritized and identified, and the prioritization process has not been described although referred to, and no schedule for prioritization, definition of priority projects or priority BMPs has been provided.
Prioritization process and schedule are rendered totally inadequate when modified by whenever "possible". MMRPlan must include a full and scheduled prioritization process for ALL EWMPs.

HYDROLOGICAL MODEL References to hydrological "Model"
1-8/1 **Reasonable Assurance Analysis ...**(RAA) is...to demonstrate "that the activities and control measures will achieve applicable **water-quality-based effluent limitations** and/or RWLs with compliance deadlines..."...as a **quantitative demonstration** that **control measures (such as BMPs) will be effective**, the RAA also provides an **opportunity to use a modeling process** to identify and prioritize potential control measures. The RAA for each EWMP uses a **model to simulate a critical storm (design storm)** and...achieve compliance with the TMDLs and water-quality-based effluent limitations.
1-8/2 The RAA **is being performed** as part of the preparation of the EWMPs, and **in parallel with...this PEIR.** The RAA...primary goal of the EWMP...meet the **water quality goals**. The **modeling being performed**...will determine...number and distribution of the BMP types and specific projects identified in the EWMP Work Plans will meet the water quality goals. This PEIR will assess the types of BMPs that **may be implemented** to meet **these** ***WATER QUALITY*** **goals**.
As indicated in the PEIR text and appendices, the PEIR lacks any quantified Hydrologic Model for watershed controls and has focused the only "modeling" on meeting the water quality requirements of the MS4 at discharges, not watershed controls.
Management strategies (MSs) presumably are different from the BMPs and the EWMPs which they maybe be parts of, but MSs are not defined nor associated with BMPs and EWMPs.
The RAA and a supporting/integrated Hydrologic Model must be provided in a final form to be incorporated, not be performed in parallel, with full integration/incorporation. The MMRPlan must include a final RAA.
Apdx A NOP 8/5 In accordance with the provisions of the MS4 permit, the work plans describe the following steps to EWMP development:

2. Characterization of existing and potential control measures within the watershed
3. Addressing the approach to incorporate **reasonable assurance analysis (RAA)** in the **optimization of watershed control measures**

3.2 Air Resources and 3.6 GHGs
These sections reference many air-related models and modeled/modeling results and comparable to requirements for surface, recharging, and ground waters.
Apdx A. Comment Letter to the LACFCD: Draft PEIR p.16/Item 56: Foothill Municipal Water District Recycled Water Project ... Cal Poly Pomona has partnered with FMWD and **is developing a model** that will also capture stormwater for recharge using the same infiltration galleries.
pdf-254 Comments - Model ...**no cost/benefit analysis** or any **modeling** completed to substantiate the "cost-effectiveness" of these methods. Please identify any additional documentation supporting this claim. Enrique Huerta Downey, CA ehuerta28@gmail.com
Scoping Comment Letter indicated that minor agencies/permittees may have conducted some form of hydrological model but not the EWMP or the PEIR.

1-9/1 The LACFCD will **consider** the information presented in this PEIR, along with **other factors**, **in the development and implementation of the EWMPs**. The EWMPs are to include a discussion of the environmental documents, assessments and permitting required for the implementation of the **priority projects**. The PEIR **can provide** a basis for this discussion.
1-10/2 The EWMPs are to include a discussion of the environmental documents, assessments, and permitting required for the implementation of the **priority projects**. ***Repeated***
Consider and other factors are not defined and as such allow the entire PEIR process to be set-aside.
The PEIR does not fully define the roles and participations of the LACFCD in the development of tiered EWMPs and their CEQA documents.
Again "priority projects" are mentioned and not defined with regard to "priority and potential BMPs."

CEQA texts must recognize differences between "can/could provide" and "will/would provide" and require clarity as to what will occur in the teiring of projects and CEQA documents.

1-9/3 Purpose of the Program Environmental Impact Report The LACFCD determined that implementation of the **12 EWMPs** could have a significant effect on the environment and therefore required preparation of a PEIR...-

to provide...information about...significant environmental effects of the **proposed program** ***[=EWMP]***,
to identify possible ways to minimize potentially significant effects ***[=PEIR/EIR Mitigation measures]***, and
to describe and evaluate feasible alternatives to the proposed program ***[=EIR Alternatives]***.

Use of EWMP, EWMPs, and Program causes confusion as to what is what and what will be presented in each. PEIR and EWMP/s must be revised for consistency.

1-9/4 This document has been prepared as a PEIR...one type of environmental review document that may be used to evaluate a plan or program that has multiple components (projects and actions) or to address a series of actions that are related in any of the following ways:

Geographically. As **logical parts in the chain of contemplated actions**.

- ...issuance of rules, regulations, plans, or other general criteria to govern the conduct of a continuing program.
- As **individual activities** carried out under the same authorizing statutory or regulatory authority and having **generally similar environmental effects** that can be **mitigated in similar ways**.

No logical chain has been graphically depicted/modeled and arranged to demonstrate and monitor progress to and through the permit and compliance process for such a wide variety and mammoth scale of the projects and their components (e.g., diversion-transmission-spreading-recharging-production).

1-11/1 Maps identifying **potential and priority BMP locations** are provided in Chapter 2...with the overall EWMP **watershed characteristics** and **BMP implementation strategy**.

No definition or specificity of potential and the subgroup priority BMPs and locations nor details are provided within the tables and generalized maps. No watershed characteristics are provided regarding runoff coefficients, design rainfall amounts, times of concentrations, are estimated flow levels are provided for any watershed, not even a ranking of highest to lowest flows or highest-lowest dry- and wet weather water qualities.

1-11/1 The PEIR **focuses** its assessment on **construction and operation** of these potential and priority BMPs to be installed throughout the watersheds—but primarily within urbanized areas where the **pollutant loading is greatest** and where these **BMPs can be most cost-effective** in **meeting water quality goals**.

No focused information is given regarding the BMP operations and their effectiveness in removing pollutants and meeting water quality goals (not objectives).

No information is provided regarding the degree of urbanization for each watershed, nor the assumed "loadings" being greater, median, or least.

Herein "priority" and "potential" BMPs are equated while in other statements there are implied "priority" and "non-priority" "potential BMPs".

BMPs are presumed as cost effective without documentation and analyses as to pollutant - present/removed per 100 acft or any other quantified parameter and as to achievement of current reductions down to desired goals.

Clarify and apply consistently BMPs assignments.

1-11/2 Scoping Period ...A Notice of Preparation (NOP)...was circulated to...**other interested parties**...discussed the purpose of the EWMPs and their management strategies, identified the EWMP Study Areas, and provided a brief and preliminary list of environmental issue areas that **could be impacted**.

As indicated in Scoping Comments, the PEIR does not reflect comments provided during the Scoping period and for the Initial Study and Notice.

-Socio-economics and revenue sources to assure operations and maintenance,
- Environmental justice

- Water models or Other Quantitative Estimates/Flowcharts

ly

1-18/2 **Chapter 1.0,** ***Introduction*****.** This chapter discusses...the background and **purpose** of the PEIR for the proposed program.

The PEIR does not provide the objective, full disclosure, complete, and adequate purposes of the EWMP, and therefore the purposes of the PEIR cannot be satisfied. Similarly, the PEIR is suppose to be publicly understandable/accessible which it is not.

Issue-Water Supply

2-1/ The structural watershed control measures that will be implemented by the LACFCD will be multi-benefit **stormwater projects** that emphasize **flood risk mitigation**...

Control [=BMPs] measures refers to stormwater/flood risk mitigation = Flood Control which is not developed and is not part of the Program Goals. EWMP/s may claim multiple benefits but must provide documentation and analyses in order adequate support such claims.

p.2-1/par.3 This Project Description describes types of BMPs...to illustrate the function, type of construction, and general locations of the BMP types for the **purpose** of the environmental assessment of the BMP types identified in the EWMPs.

As indicated elsewhere, the local conditions govern where the optimal locations for BMP would be and general assessments cease to be appropirate for CEQA compliance unless the forms and procedures are provided to reflect the local assessment in the project EIRs/MNDs.

2-2/2 **2.2** ***Project*** **Goals ~~and Objectives~~**

The **primary** **goals and objectives** of the EWMPs are:

- To **collaborate among agencies** (Permittee jurisdictions)...to **promote more cost-effective** and **multi-beneficial water quality improvement projects** to **comply with the MS4 Permit**.
- To develop watershed-wide EWMPs...remove or reduce pollutants from dry- and wet-weather urban runoff in a **cost-effective manner**.
- To reduce the **impact of stormwater and non-stormwater on receiving water quality**. ***[#2 and #3 are virtually identical and only differ by the "terms" used: Wet vs Dry Weather Flow vs Stormwater and Non-Stormwater, which would be defined the same]***

[In #1 and #2, references are made to cost-effectiveness although never discussed and compared.]

Reference to costs requires a description, assessment of impacts, and provisions for the life of the project - at least 25 years. Most importantly are provisions sufficient annual funding for operations and maintenance of all facilities through and beyond 2040.

Assessment must include best-available information and projections economic, financial, bonding, costs (both capital and O&M), and ability to pay by the service populations.

This is particularly important as the LACo and associated cities are promoting changes of "Storm Water Fees on the LACo annual property taxes and fees.

This deficiency and conflict clearly indicate that the entire PEIR is incomplete and inadequate with regard to costs and other related issues for the proposed program.

Table 2-3 **Project Feature - Flood Protection**

No description of flood protection is developed for the EWMP and thereby must not be included, or mentioned, without development and assessment of benefits and impacts. No coordination/collaboration has been referenced or known in the LACity Floodplain Management Plan.

2-5/1 Additional information and figures on the location and distribution of potential and priority BMPs based on available data at the time of publication of this PEIR, are presented in Section 2.5*, EWMP Watershed Characteristics and BMP Implementation Strategies*.

No additional information is provided regarding the City of Los Angeles array of 400+ projects/BMPs.

Public Health and BMP Maintenance (ongoing annual costs)

2-9/1 Wet detention ponds may require **engineering**...to ensure that the permanent pool does not become stagnant and a magnet for **mosquito production (must be emptied within 72 hours)**.

"Wet detention ponds" and dry ponds are not characterized and compared. No engineering mitigation measures are provided to mitigate this important potential impact in the urban/suburbanized areas in the vicinity of such "ponds".

Rain Barrels

2-13/2 **Planter Boxes.** Planter boxes are bioretention systems...where space constraints limit the implementation of other LID elements...designed to both filter and store runoff...used in combination with **rain barrels and cisterns** that store the runoff and then direct it ***into*** these boxes to filter the runoff.

2-14/2 **Rainfall Harvest.** Rainfall harvesting improves water quality by intercepting rooftop runoff...**rain barrels** are storage tanks used to intercept and store rooftop runoff for **nonpotable use** such as landscape irrigation or gradual infiltration.

Rain barrels and planter boxes can suffer from the same public health issues as "detention ponds".

Rain barrels are important components of the LID programs but most if not all LID ordinances require only two barrels (e.g., 100 gal storage) for a typical 1000-2000sqft roof on single family dwellings which would generate 450-900 gal of roof runoff for the design storm. Revise the entire LID write-up.

2-15/2 ***Source Control BMPs.*** Source control structural BMPs are commercial products designed to treat runoff in highly urbanized environments. Mechanical separation, or more complex physicochemical processes, provides separation of gross solids and other pollutants...**designed to sequester hydrocarbons and other pollutants**.

Residual pollutants and their disposition is not mentioned nor provided any where in the PEIR. No discussion is included regarding the soil sequestering of hydrocarbons, metals, and other pollutants in the ground materials (especially in/on clays). No estimate is provided as to anticipated sequestering per year and probable long-term removal of soil materrials before they achieve "hazardous" levels.

2-16/2 Specific examples of **distributed** BMPs that are in various stages of planning and implementation and part of a possible EWMP are presented in **Table 2-3**. The locations of these examples of planned **distributed** BMPs are shown in **Figure 2-2**. Table 2-3 presents the locations, project description, and key elements of the **distributed** BMPs to further illustrate these types of structural BMPs that **may be part** of **an** EWMP. Additional information and figures on the location and distribution of potential and priority BMPs, where data ***are***~~is~~ available, are presented in Section 2.5, *EWMP Watershed Characteristics and BMP Implementation Strategies*.

Centralized and Regional BMP discussions repetitive from 2-16/2 except as highlighted.

TO BE SUBMITTED

p.2-18 **Upper LA River Brandon Street and Green Street Improvements Project**

The project will reconstruct...roadway...design includes...Much of the runoff from the streets and private properties that would have otherwise drained to the Rio Hondo will be directed to the infiltration area.

How much

2-19 **Upper San Gabriel River Avocado Heights Multiuse Trail Project**

The project will...thereby reducing the amount of impermeable surfaces as well as runoff.
Approximately...Combined together, **up to 115 acre-feet of groundwater** will be recharged annually.

2-22/1 ***Infiltration BMPs.*** Infiltration facilities are designed to **decrease runoff volume through groundwater recharge** and improve water quality through filtration and sorption.

No discussion of beneficial effects is provided for rising base flow
providing greater dilution volumes assuming that discharges remain constant, or
providing higher water levels when stormwater arrives at downstream locations and thereby elevating the flood water levels and inundation extent.

2-26\3 **Creek/River/Floodplain/Estuary Restoration*.*** This category includes multi-benefit projects that typically combine elements of **habitat restoration**...as **flood management** and water quality improvement.

Project components such as...setback levees, floodplain bench excavation, levee breaches, and other actions can **increase...flood storage capacity**...
...This project restored 1.2 miles of natural bottomed creek habitats, which are capable of infiltrating up to 118...million gallons of stormwater from the wash into the local groundwater aquifer.
Plants in the wash also aid the biogeochemical removal of pollutants such as nitrogen.
Actually bacteria and fungi attached to the cellousic stems and leaves that are periodically submerged. Few emergent plants can absorb or treat any aqueous pollutants.

TO BE SUBMITTED
2-28/2 ...**centralized** BMPs...presented in **Table 2-4**. The locations of these examples of planned and implemented **centralized** BMP...in **Figure 2-3**.
Table 2-4...the **centralized** BMPs...structural BMPs that **are part** of **the** EWMP....of potential and priority BMPs, where data ***are***~~is~~ available,...*BMP Implementation Strategies*.
.

2-26\2 Typical constructed wetland projects require extensive grading of site soils, though excavated soils are often balanced on-site to provide material for
levees,
berms,
ecotones, and
other flood control/habitat features.
.

2-27/2 **Multi-benefit flood management projects.** This category...designed to result in direct or indirect benefits to flood management.
...Tujunga Wash Greenway project that incorporates...detention elements can **improve flood management** by **reducing stormwater flow rates and/or volumes**.
.

2-27/3 *Construction Impacts.* **Multi-benefit flood management projects** are typically expansive projects that range from a few to tens of acres in size...Because of their scale, **multi-benefit flood** 2-28/1 **management projects**...
.

2-30 TABLE 2-4 EXAMPLES OF PLANNED CENTRALIZED BMP PROJECTS This project will also have educational signage on a riparian zone and the **stormwater cleanup objectives of this project**.
.

2-30/Table 2-4 Item 2 **Malibu Creek Lindero Parkway Improvements** The project...streetscape improvement project that...this parkway was **originally a flood control maintenance road**...new project,...Stormwater runoff would then be treated in the bio-swale followed by discharge into Westlake Lake...also have educational signage on a riparian zone and the **stormwater cleanup objectives** of this project. ***FP***
.

2-31/Table 2-4 Item 4 **Palos Verdes Peninsula San Ramon Canyon Stormwater Flood Reduction Project** The San Ramon Canyon...near Palos Verdes Drive East....landslide induced rock and soil deposits in the canyon bottom are transported during **heavy rainfall events**...creates **flooding** of the roadway, overwhelming existing drainage facilities, endangering nearby roadway integrity and threatening downstream residents...***(SRCSFRP)*** involves significant drainage restoration work to stabilize... ***FP***
.

2-32/Table 2-4, Item 2 Phase II of the Penmar project...Replacing this volume of potable water with treated storm water...provides 34.7 million gallons per year increase to annual runoff diversion capacity...By installing the reuse option, the overall project capacity will increase, thereby also increasing the volume of urban runoff that can be retained by the project **for use as an alternative source of water to potable water** for landscape irrigation.
.

2-34/1 **2.4.5 Regional Structural BMPs** Regional structural BMPs are those that can **capture the volume of water from an 85th percentile, 24-hr storm in a contributing watershed, known as the *design volume (...*85th percentile storm...0.75 inches over 24 hours**).
The project's BMPs...**alleviate local flooding** by collecting runoff from a 21-acre drainage area...into two underground infiltration galleries...
.

2-34/2 *Anticipated Construction Activities:* The construction activities...are generally similar to those of their centralized counterparts, with the **exception of regional retention BMPs**,...adequate storage capacity to **hold runoff from the design storm**....Larger, multi-benefit regional BMPs are similar to **centralized multi-benefit regional flood management projects**...
.

2-35/1 ...**regional** BMPs...of planning ***and implementation and*** **that are part** of the EWMP are presented in **Table 2-5.** The locations of these examples of **regional** BMPs are shown in **Figure 2-5**. Table 2-5...of the **regional** BMPs to further illustrate these types of structural BMPs **that are concepts being developed through the EWMP process**. ...of potential and priority BMPs, where data ***are***~~is~~ available...*BMP Implementation Strategies*.

The complex repetitive wording and slight but several differences in these texts cause considerable confusion for the public review and participation in this CEQA process. Without clear table-ed presentation meaning and clarity are lost, rending these important issues inadequately treated in this PEIR.

2-40/1 Summarized below are the general characteristics of the watersheds within the **EWMP Groups** and the overall strategies for BMP implementation...twelve **EWMPs** are consolidated to **six watershed areas**...summary provides additional detail on the distribution and location of **potential and priority BMPs**, **where data is available**,...for each EWMP and show the location and distribution of **planned and priority regional/centralized BMPs** for which **data are available at the time of publication of this PEIR**. The **priority BMPs**...subset of the potential BMPs that have undergone a site review and project evaluation that has identified these BMPs as a priority. These **priority projects** are shown based upon **available data at the time of publication of this PEIR**.

EWMP groups, EWMPs, and watershed areas are inadequately associated and defined; presumably 12 EWMPs may be associated into 6 EWMP Groups based on watershed associations.

Similarly designations as to:

Potential, Planned, and Priority BMPs - Priority BMPs are part of Potential BMPs

Regional and centralized BMPs - excluding distributed

Priority projects or BMPs

require clear definitions and ordering in order to have adequate clarity for public review.

2-40/1 **Appendix G** provides the location and general description of the **priority BMPs**...**Distributed BMPs** are planned to be implemented throughout the urbanized areas of each EWMP.

2-43/3 ...Figures 2-5 through 2-16, each of the **EWMPs**...wide distribution of BMPs to achieve permit compliance. **Appendix G** provides the locations and general descriptions of the **priority BMPs** (**where data is available)**,...**Priority Projects** are **projects that have been identified through the EWMP process** as **targeted for implementation** within the first years following the EWMPs approval by the LARWQCB. **Identification of Priority Projects is underway** and **has not been completed by all EWMPs at this time**. ***[For any??]...*****PEIR is being prepared in parallel to the EWMPs**. **Priority Projects** ***[proper noun]*** **will be defined** in all the EWMPs **to be submitted for public comment in June 2015**. Priority Projects that have been identified at this time through the EWMP process are shown on the following figures. **Priority Projects may be regional, centralized or distributed type BMPs**. For **potential projects**...location of potential regional and centralized **BMPs** are shown. Distributed BMP will be distributed throughout the urbanized areas and are not shown on the following figures ...***2-44/1***...

No "general description" is provided for the program, projects, and BMPs, as summarized below, only listings and figures found in the Vol.1. Apdx. G EWMP Proposed BMP and Priority Project Data and Figures A-L, pages unnumbered items renders the entire appendix confusing and un-reviewable for the general public and the only "General Description" is APN numbers.

2-41/7 This watershed is further differentiated by the **importance of groundwater recharge basins** that are supplied by a **series of reservoirs further upstream**...

No information is provided regarding the basins, total projected annual recharge flows, and relationships between "reservoirs" and "recharge basins" presumably the augmented groundwater storage basins, rather than basins used for recharge.

TO BE SUBMITTED

2-42/4 The Los Angeles River...natural hydrology of the Los Angeles River watershed has been altered by channelization and the construction of dams and **flood control reservoirs**...Because of the greater extent and number of pollutant priorities, the BMP strategy in the Upper Los Angeles River watershed includes well over a hundred planned regional and centralized retention and infiltration BMPs ***[Estimated unfunded projects: 400]*** that take advantage of the **favorable groundwater recharge**

characteristics...BMP strategy also includes distributed smaller BMPs located throughout the urbanized areas of the watershed as retrofits in existing developments and streets. LFDs to comply with dry-weather bacteria TMDLs may also be included.
.

2-42/4 ...BMP strategy in the Upper Los Angeles River watershed includes well **over a hundred planned regional and centralized retention and infiltration BMPs** that take advantage of the **favorable groundwater recharge characteristics**....
No definition of BMPs has been applied to the projects proposed.
No map or other descriptive information of the 100+ retention/infiltration BMPs have not been provided.
No comparison or prioritization or even definition of favorability or recharge characterization have been provided.

2-57/1 **2.6 EWMP BMP Implementation Schedule** The EWMPs that are **being prepared in parallel** to the PEIR will provide a **timeline for the implementation** of the BMPs ***[as define in MS4/TMDLs]***...**priority BMPs**...that have undergone a site review and project evaluation and...based on available data at the time of publication of this PEIR...**Implementation of priority BMPs will begin following approval of the EWMPs by the LARWQCB...depend on the approval of the EWMPs, *1)* further environmental assessment, *2)* permitting, and *3)* availability of funding sources**.
The EWMPs will be submitted to the LARWQCB in June 2015.
The entire process of LACo-EWMP, EWMPs, BMPs, etc. and implementation of "Priority BMPs" have not been fully provided nor adequately documented.
As indicated above, a fully scheduled/timed EWMP/EWMPs implementation schedule for all BMP and for further - annual - updating must be included in the Final PEIR perhaps as part of the MMRPlan for PEIR and within each EWMPs' CEQA documents.
Statements as to the submittal dates in less than three months clearly indicates that undue pressure is being attempted in order to force the CEQA and project development processes through without due consideration as to the completeness and adequacy of project, program, and CEQA documents and processes.

2-57/4 Each EWMP will **define** priority projects, and **installation** of these projects will move forward depending on the **availability of funding** and **outcome of further project-specific CEQA review**. Funding options for implementing agencies would include obtaining **grant funds, low-interest loans, tax-based general funds, or special assessments**. Each **jurisdiction** will be responsible for securing the necessary funds over time to achieve permit compliance.
References to but absence of information regarding funding, funds, and other related economic/financial elements and their pivotal importance to any "Project" renders continued discussion of projects inadequate and incomplete and subject to major changes of any PEIR referenced "project between now and July 1, 2015 and thereafter.
Introduction of "jurisdiction" renders the discussion meaningless, incomplete and inadequate.

TO BE SUBMITTED
3.1-12/3 BMP **maintenance is also important**...Wet ponds and constructed wetlands can also become **mosquito-breeding grounds**...can usually be **reduced or eliminated through proper design and/or organic controls**.***[=maintenance]***..all BMPs need to have trash and debris removed periodically to prevent odor and preserve aesthetic values. **With proper maintenance...impacts would be less than significant.**
Nothing about public health
Public Health not well discussed at Program levels
PH not discussion
Odor
Disease vector Mosquito

3.1-15/**TABLE 3.1-1 SUMMARY OF...IMPACTS REQUIRING MITIGATION MEASURES**
Distributed BMP
LID – Green Infrastructure – Capture and Use – Cisterns, Rain Barrels, Green roofs, Planter Boxes
.

3.5-19/2 ***City of Los Angeles Low Impact Development Manual***

In November 2011, the City of Los Angeles adopted the Stormwater Low Impact Development (LID) Ordinance #181899) with the stated **purpose** of:

- Requiring the use of LID standards and practices in future developments and redevelopments to encourage the beneficial use of rainwater and urban runoff
- **Reducing stormwater/urban runoff** while improving water quality
- Promoting rainwater harvesting
- **Reducing offsite runoff** and providing increased groundwater recharge
- **Reducing** erosion and **hydrologic impacts downstream**
- Enhancing the recreational and aesthetic values in our communities

.

3.5-19/3 The City institutionalized the use of LID techniques...adoption of the Stormwater LID Ordinance, the City prepared the *Development Best Management Practices Handbook, Low Impact Development Manual,...*required BMPs (City of Los Angeles, 2011).

.

3.7-17/2 The LID Standards...provide protocols for designing regional and centralized BMPs that minimize the potential for contaminant loading. For example, the LID Manual requires a certain distance to groundwater to ensure that adequate soil filtration occurs prior to the percolating water reaching a drinking water aquifer.

.

3.8-1/3 Annual precipitation can vary significantly between drought and flood conditions; periodic and occasionally severe droughts and floods within the area are well-documented (LARWQCB, 1994), and the potential for extreme precipitation (maximum intensity of precipitation for periods of 12 hours or longer which might be expected at intervals of ten to 100 years) is greater in portions of the San Gabriel Mountains than practically anywhere else in the continental United States (WERC, 2014). Average annual rainfall within the Los Angeles Basin is approximately 14.5 inches, though local averages can vary considerably depending on location within the basin (WERC, 2012).

No adequate stormwater flow forecast 85%ile
No forecast as to effects Climate changes is provided.

TO BE SUBMITTED

3.8-8/2 5. **Dominguez Channel Watersheds (Figure 3.8-6)** (Dominguez Channel EWMP and Beach Cities EWMP– ...Dominquez Channel EWMP and a portion of the Beach Cities EWMP...differentiated by a larger area of industrial land use. Because of the high density...large regional and centralized infiltration-type BMPs will be limited. The structural BMP strategy will be more LFDs, both large (centralized) and small (distributed), located at MS4 outfalls...The other BMP strategy is the use of **smaller distributed BMPs**...low-impact development (LID) type of BMPs, such as green streets and biofiltration BMPs.

.

3.8-4/3 EWMP Groups The proposed program has been divided into 12 EWMP Areas that have been organized by watershed groups that **share comparable conditions**.

The 12 EWMPs are consolidated into six watershed areas that are grouped **by similar watershed characteristics**...and also provide hydrologic features and the locations and distribution of planned and priority regional/centralized BMPs.

No comparable, similar, or differing watershed conditions or characteristics have been identified other than physical channel connections.

3.8-4/3 The **priority BMPs** are a **subset of the planned BMPs** and have been selected as **priority projects** based on a **screening assessment** of the planned projects.

Priority projects will be implemented before additional **planned projects**.

Define and compare priority, planned, and potential BMPs and projects.
Referenced "screening assessment" has not been described.

3.8-4/3 Distributed BMPs are **planned to be implemented** throughout the urbanized areas of the EWMPs.

No plan provided for distributed BMPs within the EWMP or available EWMPs.
No designation as to whether distributed BMPs/Projects will be priority, potential, or just planned projects; as provide after the priority projects.

TO BE SUBMITTED

3.8-20/1 ...these LFDs could potentially increase the amount of water available for recycling, reuse, and **groundwater recharge**.

3.8-21/1 ...45 percent are supplied by local groundwater basins that **are recharged naturally**...**through constructed recharge facilities** (MWD, 2010).
.

3.8-21/1 ...stormwater recharge facilities **currently augment local groundwater supplies** in the region by an estimated 477,000 acre-feet per year (MWD, 2014).
.

3.8-21/1 **One of the primary goals of the EWMP program**...**increase the amount of stormwater that is recharged**...particularly in portions of the Central Basin that experience a high degree of hydraulic connectivity between surface water and groundwater. Infiltration BMPs proposed within the EWMPs are expected to **increase the rates and amounts of groundwater recharge**...
.

3.8-31/3 ***County of Los Angeles Low Impact Development Manual***
The County...prepared the 2014 Low Impact Development Standards Manual (LID Standards Manual, County of Los Angeles, 2014b) to comply with the requirements of the 2012 MS4 Permit...provides guidance for the implementation of stormwater quality control measures in new development and redevelopment projects in unincorporated areas of the County with the intention of improving water quality and mitigating potential water quality impacts from stormwater and non-stormwater discharges.
.

3.8-31/4 The LID Standards Manual addresses...objectives and goals:

- Lessen the adverse impacts of stormwater runoff from development and urban runoff on natural drainage systems, receiving waters, and other water bodies.
- Minimize **pollutant loadings from impervious surfaces** by requiring development projects to incorporate properly-designed, technically-appropriate BMPs and other LID strategies.
- Minimize erosion and other hydrologic impacts on natural drainage systems by requiring development projects to incorporate properly-designed, technically appropriate **hydromodification control development principles and technologies**.

Not objective - goals yes.

City of Los Angeles Low Impact Development Manual
3.8-31/5 In November 2011, the City of Los Angeles adopted the Stormwater Low Impact Development Ordinance #181899 with the stated purpose of:

- Requiring the use of LID standards and practices in future developments and redevelopments to encourage the beneficial use of rainwater and urban runoff
- Reducing stormwater/urban runoff while improving water quality
- Promoting rainwater harvesting
- Reducing off-site runoff and providing increased groundwater recharge
- Reducing erosion and hydrologic impacts downstream
- Enhancing the recreational and aesthetic values in our communities

3.8-31/6 The City of Los Angeles institutionalized the use of LID techniques...Subsequent to the adoption of the Stormwater LID Ordinance, the City prepared the *Development Best Management Practices Handbook, Low Impact Development Manual,* dated June 2011, to describes the required BMPs (City of Los Angeles, 2011).

LID provisions for rain barrels for single family dwellings are only 10-20% of the total detention required for the design storm.

TO BE SUBMITTED
3.8-35/2 **Mitigation Measure HYDRO-1** requires Permittees to evaluate the suitability of BMP locations for groundwater **recharge**. **Infiltration BMP**s would not be suitable in areas of low permeability where subsurface structures could be adversely affected by groundwater mounding.
.

3.8-41/5 **Cumulative Impact Discussion Structural (Regional, Centralized, and Distributed) BMPs ...**Implementation of the proposed structural BMPs,...other reasonably foreseeable future projects...result in improved stormwater quality and reduced non storm flows....will experience reduced dry-weather runoff, a more natural hydrology, and improved receiving water 3.8-42/1 quality. In addition, new infiltration projects will incrementally augment groundwater drinking water supplies. **Although the increased infiltration projects may increase pollutant loads to groundwater aquifers, pretreatment systems coupled with regional groundwater management lead by the local Watermasters will ensure that the beneficial uses of groundwater basins are not significantly impaired.** ...EWMPs will beneficially impact local surface water quality and groundwater supplies. **Mitigation Measures:** None required **Significance Determination:** Less than significant
.

***3.8-43*/TABLE 3.8-3 SUMMARY OF HYDROLOGICAL RESOURCE IMPACTS REQUIRING MITIGATION MEASURES**
Cumulative Impacts, No mitigation required
Without a hydrologic model and analyses especially for the "design storm" no objective assessment of.

3.14-15/5 *Water Supply* Impact 3.14-3: The proposed program ***[=EWMP]*** **could require new or expanded water supply resources or entitlements** or require or result in the construction...could cause significant environmental effects.
Given the general purpose of the EWMP is to recharge groundwater in a urban-suburban context where groundwater is used for water supply, such "conditional-could" appears totally inappropriate and must be technically defined/determined in order to fully and adequately discussed environmental, cost-effectiveness, and compliance with discharge water quality limits over the life of the projects.

5-3/1 The proposed program is not a **land use project** and its implementation would not introduce new...or any other growth-inducing land uses. The structural BMPs would augment the physical structure of established communities,...and enhancing the water quality of existing communities. As a result, the proposed program would not induce population growth.
Most infrastructure projects do not involve much in the way of direct structured development; however, operations of such facilities support development of user structures especially where water and other service may be constraining support factors.

5-3/2 The **nature of the proposed program** is to increase stormwater recharge and improve stormwater quality;...**would not result in increased economic activity or population growth** in the EWMP areas...water recharged...**is anticipated to support existing water supply needs and reduce dependence on imported water supplies**.
Mechanisms or rules are NOT provided as to how various project waters would be assigned to only reducing imported water dependence while others may be used for supporting growth.

5-3/3 **5.4 Secondary Effects of Growth**
Implementation...would not result in a direct or indirect increase in population or employment. The proposed program itself, therefore, is **not growth-inducing and would not induce secondary effects of growth**.
Such a broad reaching statement cannot be justified as implementation (?=construction) and presumed operations (say 10% of total capital costs annually) would generate new employment within the project area and would divert funds for imported water sources outside the project area to the more local based water sources and operators employed therein.

5-3/3 While one of the main goals of the EWMPs is to **increase infiltration and potentially increase recharge of stormwater**...**the amount of water potentially recharged would not be enough to indirectly support population growth** and is intended to **support existing water supply needs**. This potential additional **recharge would contribute to local water supply needs** but would not alter population demographics. Therefore, there would be no secondary effects of growth.
Mechanisms or rules are NOT provided as to how various project waters would be assigned to only reducing imported water dependence while others may be used for supporting growth.
Again, such a statement cannot be justified as local sources can easily augment existing or future distribution without specific assignment to service areas.

6-1/1 ...Environmental Impact Report (EIR) must describe...
reasonable range of alternatives to a proposed project...
could **feasibly** attain most of the basic project objectives...
would avoid or substantially lessen...proposed project's significant environmental effects.
6-2/2 Alternatives may be eliminated...
if they **fail to meet most** of the **project objectives**,
are infeasible, or
do not avoid any significant environmental effects.

"Feasibly" is not clearly defined nor established as to whether the BMPs, EWMPs, or this EWMP can be done in technical and practical (=ECONOMIC) terms as required by the objectives and criteria for the program, the local programs/projects and BMPs. As technical feasibility is not at issue, the actual meaning of feasibly must relate to two of three goals having phrases of "cost-effectiveness". Therefore this use of feasibly and project objectives (not objectives but goal) are the costs and presumably capital and operations/maintenance. As no information is provided for costs and their fundings, these statements become totally inadequate and incomplete as no information is provided nor compared to demonstrate the alternatives compliance or lack of compliance with the MS4 permit conditions..

As two expressed "objectives" out of three include reference to "cost-effectiveness" the absence of demonstrated "cost-effectiveness" renders any comparison incomplete and inadequate for justifying an alternative discussion. The two objectives have no quantification nor scheduling and therefore are NOT OBJECTIVES but may remain as goals but without any supporting information as to costs and sources of revenues to support such costs.

6-1/3 "Feasible" means capable of being accomplished in a successful manner within a reasonable period of time, taking into account **economic**, environmental, legal, social, and technological factors.

No economic factors have been provided in the PEIR, including sources of revenues and abilities for LACo and all permittees. Therefore, the PEIR is incomplete and inadequate.

6-2/5 **6.2 Review of Proposed Program Goals and Objectives**

The alternatives presented in this chapter were analyzed for their abilities to reduce significant program impacts and meet the objectives of the proposed program, which are:

- To **collaborate** among agencies (Permittee jurisdictions) across the watershed **to promote more cost-effective** and multi-beneficial water quality improvement projects to **comply with the Municipal Separate Storm Sewer System (MS4) Permit.**
- To develop watershed-wide Enhanced Watershed Management Programs (EWMPs) that would, once implemented, remove or reduce pollutants from dry- and wet-weather urban runoff in a **cost-effective** manner.
- To **reduce the impact** of stormwater and non-stormwater on receiving water quality.

Discussion starts with a title of Goals and Objectives then switches to objectives. These are goals not objectives as they are not quantified nor scheduled in any manner.

Since two "objectives" refer to "cost-effectiveness" and no costs, revenues, economics, or financial information or assessment are not provided, all discussions of the achievements of goals and objectives becomes mute and the PEIR totally incomplete with regard to the "project" or "program" and its alternatives.

Similarly reference to collaboration becomes mute as all related agencies and those in the county have already collaborated and therefore any "collaboration" discussion must be quantified which they have not been.

As to compliance with permit conditions and reduction of impacts are only presumed without documentation which is under parallel preparation for June 2015 and without any hydrological modeling or calculations to support such contentions and comparisons amongst alternatives.

Goals are not mentioned only objectives above. The entire PEIR appears incomplete without a clear statement as to typical goals and objectives - recharge dry and wet weather runoff and 20% recharge every five years for next 25 years.

Total confusion as to goals and objectives renders the entire alternatives chapter totally inadequate. Absence of any costs/revenue information renders achievement of goals or objectives totally incomplete for both the development of the alternatives and their comparisons.

The entire Alternatives section is incomplete and totally inadequate.

6-3/3 In accordance with the CEQA "rule of reason," an EIR is required to consider a range of alternatives that permit a **reasoned choice** and that are "limited to ones that would avoid or substantially lessen any of the significant effects of the project" (CEQA Guidelines Section 5126.6(f)). The Lead Agency conducted an alternatives screening process to identify feasible alternatives to the proposed program. The screening process for identifying viable alternatives included consideration of the **following criteria**:

- Ability to meet the **program objectives**
- Ability to reduce significant environmental effects of the proposed program
- **Economic and engineering feasibility**

Since the program objectives require 2 of 3 items of "cost-effectiveness" and here a criterion requires meeting the program objectives, the PEIR appears inadequate and incomplete without the presence of and achievement of cost-effectiveness and economic feasibility-ability to pay for both vapital and O&M costs for at least 25 years.

As no economic feasibility analyses and comparisons are provided, and no jurisdictional funding is provided throughout the PEIR, no reasoned or reasonable achievements of one of three criteria can be assessed or compared.

6-3/4 The Lead Agency **conducted an alternatives screening process** to identify **feasible** alternatives to the proposed program. The screening process for identifying viable alternatives included consideration of the following criteria:

- Ability to meet the program **objectives** ***[presumes meet objectives or not considered]***
- Ability to reduce significant environmental effects of the proposed program
- **Economic** and engineering feasibility ***[presumes to meet economic feasibility parameters and criteria not presents]***

Introduction of "Lead Agency" at this point would imply some agencies other than LACoDPW, perhaps LACoFCD (??); while reference to an "alternative screening process" indicates some formal process rather than that documented in the PEIR.

Discussion of environmental effects or water-related compliance of flow and quality for a Water Resources project or program without a quantified and presumably computerized complex model for each watershed element is totally inadequate and incomplete at any level.

Introduction of "feasible" and economics without definitions and the objectives which 2/3 include costs and therefore economics strongly distorts any screening or comparisons toward costs, economics, and financial for which no information is provided or believed to be even remotely available for the PEIR, the EWMP, and most if not all of the EWMPs.

Such inadequacies and incompleteness renders Sec.6 irrelevant to the CEQA process with regard to the project, any alternatives, and any designation as to an "Environmentally Superior Alternative" compared to an "economically superior alternative".

Presumptions and unsupported statement are not with the goals of CEQA to provide a complete, adequate, objective, and quantified review and assessment of a program's or project's effects and appropriate mitigation and alternatives to such.

6-3/5 Based on these **criteria**, the **Lead Agency** has identified the following alternatives:

Introduction of "Lead Agency" at this point would imply some agencies other than LACoDPW, perhaps LACoFCD (??); while reference to an "alternative screening process" indicates some formal process rather than that documented in the PEIR.

Identifications are not supported in comparisons primarily with regard to collaboration and presumed economies of scale and cost-effectiveness.

6-9/9 **Ability to Meet Program Objectives**

The Distributed Structural BMPs Only Program Alternative would meet the **objectives** of the proposed program to collaborate among agencies to promote more cost-effective and multibeneficial water quality improvement projects. However, because distributed structural BMPs **tend to be smaller** in nature and typically are distributed widely throughout the watershed, **more BMPs** may be necessary to meet water quality objectives in the MS4 Permit. The **ability to meet** 6-10/1 the water quality objectives would be **less certain** under this alternative.

This statement indicates that distributed BMPs are cost-effective for the program although they are smaller (may disagreed based on economies of scale and information provided by LACiDWP).

"Less certain" is not defined nor is the statement supported; 100 times more sites may be sufficient and available but no presumption can be supported either way based on the PEIR.

6-12/3 **6.6 Alternatives Suggested in Scoping**

...comment letter...suggested that the PEIR include an assessment of several funding mechanism alternatives, including: Single Parcel Fee Assessment, Parcel Area Fee Assessment, Hybrid Parcel Area Fee Assessment, Zero Discharge Assessment, and Large Parcel Assessment. These suggested alternatives **would not lessen any significant environmental impacts of the Program** and were therefore not considered in this PEIR. Although CEQA allows for discussion of economic impacts and project costs as measures of feasibility, the funding mechanisms required to implement projects are **generally not susceptible to environmental analysis**.

As the program objectives and criteria for alternatives both include economics and costs and as all BMPs require both capital and operation and maintenance costs to be effective, a full documentation using the above mentions financing package must be incorporated into the project description and alternatives, especially those presented to the LARWQCB in June 2015.

Adequately funded projects within the ability to pay of the service population would assure continue environmental compliance and support of a wide array of mitigation measures compared to capital intensity project requiring longer term bonding and expensive project management.

Comparisons of large projects with high capital costs to program of lots of small projects with low capital costs but with higher operating costs have been alluded to in discussions of other alternatives but without any documentation.

As all publicly funded projects to be submitted to LARWQCB in June 2015 must be funded n have not been demonstrated at this time to be funded, any inclusion of projects in this program can not be assumed to have long-term funding to assure mitigation of impacts.

6-12/4 ...comment...Full Capture and Recharge of Flows Greater than 100 cfs Alternative...rejected...because of the **infeasibility** of capturing all storm flows...unrealistic, requiring most of the **developed land in the County to be accomplished**...

...suggesting full capture of **all flows less than 100 cfs**...was rejected from further consideration for the same reason...would require enormous areas of...currently developed...recharge is **only feasible** in certain areas of the County because of the poor percolation capacity of surficial soils...accumulation of **subsurface clay lenses** creates recharge barriers in **many places of the County**, making retention and recharge of large quantities of stormwater **infeasible** in these locations.

PEIR total lacks definitions for "feasibility" and "infeasibility" as to technically, financially, administrative, or politically aspects.

As no surface or subsurface hydrologic model is available or referenced, and supporting documentation is not provided nor apparently available for either flow capture alternative dismissal.

The PEIR does not provide maps of locations with clay lenses and their extents/depths and thereby barrier effects.

6-13/1 **6.7 Environmentally Superior Alternative** CEQA requires that an EIR identify the environmentally superior alternative(s) of a project other than the proposed program or the “no project” alternative (CEQA Guidelines Section 15126.6 (e)(2)). As stated at the beginning of this chapter, the purpose of this alternatives analysis is to consider a reasonable range of alternatives that could feasibly attain most of the basic project objectives and avoid or substantially lessen significant program impacts.

Since no information is provided as to the actual cost-effectiveness of any projects or groups of project the requirement cannot be achieved, reviewed, or commented on with the currently available information. Based on DWP information distributed small projects could achieve the economy-of-scale that larger one could and therefore any plot-by-plot LID projects. If 10,000 single family dwellings would theoretically detain 460gal/1000sf roof, one design storm would generate 4.6M gal for direct use (about one day piped water supply); however, cities do not require 460gal of rain barrels but generally only require two rain barrels of 100gal capacity.

The PEIR does not provide the basis for development of the Environmentally Superior Stormwater Alternative and those with recognized "least worst" environmental effect could not meet two of the three goals of the Program, cost effectiveness with or without real requirements for the 85%ile rainfall event.

6-13/Table 6-2 Ability of Project Alternatives to Meet **Project Objectives** Project Objectives

1. To Collaborate Among Agencies (Permittee Jurisdictions) Across the Watershed
To **Promote more cost-effective** and multi-beneficial water quality improvement projects
To comply with the MS4 Permit. ***[=portions of Objective 2 & 3]***
2. To develop watershed-wide EWMPs that will, once implemented, **remove or reduce pollutants from dry- and wet-weather urban runoff** ***[= Objective 1.]*** in a **cost-effective manner.**
3. To reduce the impact of stormwater and nonstormwater on receiving water quality. ***[=Objective 1.]***
Comparisons of alternatives and "abilities" of Project GOALS and objectives without cost-effectiveness and any hydrological model for wet/storm and dry/storm water flows render all as totally inadequate and incomplete.
As written, the objectives must be referred to as "Goals"; objectives must be measurable/monitorable with schedules and quantified levels of achievement, e.g., 4Qtr2016 and $100/ppm reduction.

6-14/3 The Non-Structural BMPs Only Alternative would avoid all of the significant and unavoidable impacts associated with construction of the structural BMPs....However, since the ability to achieve compliance with MS4 Permit water quality objectives would be substantially reduced, impacts to water quality would be greater under this alternative, and compliance with the MS4 Permit would be unlikely.
Even if it could achieve permit compliance, the Program goals of cost-effectiveness most likely could not be achieved as the disperse detention could not attain any significant economies of scale and would require vastly greater plot-by-plot compliance which is beyond the typical new, additions, or replacement linkages with structured improvements.

6-14/4 As a result, since the proposed alternative would provide the best chance of **achieving regional water quality objectives**, it is considered the environmentally superior alternative.
The conclusion is not based on any documentation or projected/estimate successful implementation and does not include any comparisons and development of cost-effectiveness or revenue sources for a much larger implementation phase. The preparers have assumed a development condition without any concept of reality and without documentation as to implementability in order to have an "Environmentally Superior Alternative", which is incomplete and inadequate.

Apdx A Appendix A Comment Letter to the LACFCD: Draft PEIR 18/#61(pdf-p.244) The overarching goal of the GRIP Recycled Water Project is to **offset the current use of imported water by providing up to 21,000 acre-feet per year (AFY)** of recycled water as a **reliable supply source for groundwater basin replenishment via the Montebello Forebay** within a reasonable timeframe.
Although the watershed channel are well known and studies for almost 100 years, no hydrologic model has been developed and incorporated into the EWMP or its component EWMPs. The current efforts therefore cannot provide a factual and quantitative basis for assessing the environmental effects of existing water resources and their future states for water supply availability and locations, flood control, and water chemistry dilutions or reductions.

ApdxA/NOP 2/2 The LACFCD, as a regional agency charged with **conserving stormwater for use in our local water supply,** has a **vested interest in increasing opportunities for stormwater capture and groundwater recharge**. The LACFCD has flood control infrastructure...LACFCD will be an implementing agency only on those projects for which it has been identified in an EWMP as a responsible implementing party.
Water supply reference without acknowledgement of growth stimulation.

Apdx A Appendix A Comment Letter to the LACFCD: Draft PEIR 18/#61(pdf-p.244) The overarching goal of the GRIP Recycled Water Project is to **offset the current use of imported water by providing up to 21,000 acre-feet per year (AFY)** of recycled water as a **reliable supply source for groundwater basin replenishment via the Montebello Forebay** within a reasonable timeframe.
Although the watershed channel are well known and studies for almost 100 years, no hydrologic model has been developed and incorporated into the EWMP or its component EWMPs. The current efforts therefore cannot provide a factual and quantitative basis for assessing the

environmental effects of existing water resources and their future states for water supply availability and locations, flood control, and water chemistry dilutions or reductions.

As indicated elsewhere, this NOP and letter statements clearly indicate the anticipated development of water supply resources which goes beyond the water quality and flood protection benefits and relates the EWMP to growth inducements for future populations needs for greater water resources without adding new imported water supply facilities.

ApdxF 7/2 The Los Angeles River is approximately 55 miles long, and five of six reaches lie within the Upper Los Angeles River EWMP Area. The natural hydrology of the Los Angeles River watershed has been significantly altered by urbanization, channelization, and the construction of dams and flood control reservoirs. The river and many of its tributaries are lined with concrete for most or all of their length. Soft-bottom segments of the river occur where groundwater upwelling prevents armoring of the river bottom.

Although the watershed channel are well known and studies for almost 100 years, no hydrologic model has been developed and incorporated into the EWMP or its component EWMPs. The current efforts therefore cannot provide a factual and quantitative basis for assessing the environmental effects of existing water resources and their future states for water supply availability and locations, flood control, and water chemistry dilutions or reductions.

Paige Anderson

To: Laura Rocha
Subject: RE: EWMP-PEIR Comments 2/4

From: Tom Williams [mailto:ctwilliams2012@yahoo.com]
Sent: Friday, March 13, 2015 1:00 PM
To: Gregg Begell
Cc: Liz Crosson
Subject: Re: Fwd: EWMP-PEIR Comments 2/4

FYI
#3/4
03/13/15

As of this morning sadly, nine/9 days have passed without contact from the City of LA-BrdPubWrks/DptPubWrks regarding their EWMP - BMPs - infamous 400+...as such I have incorporated pertinent comments into the PEIR comments.... Recirculate ....
It is all draft today - but monday will be final....

I will also be circulating my comments to appropriate stakeholders.

Tom Wms.

On Wednesday, March 11, 2015 10:11 PM, Clyde Williams <ctwilliams2012@yahoo.com> wrote:
FYI
#2/4

Sent from my iPhone
Begin forwarded message:

> **From:** Gregg Begell <gbegell@dpw.lacounty.gov>
> **Date:** March 11, 2015 2:20:22 PM PDT
> **To:** Tom Williams <ctwilliams2012@yahoo.com>
> **Subject: RE: EWMP-PEIR Comments 2/4**
>
> Thanks Tom
>
> This helps get us started on reviewing your comments.
>
> Gregg BeGell P E
> Project Manager
> Project Management Division II
>
> **From:** Tom Williams [mailto:ctwilliams2012@yahoo.com]
> **Sent:** Wednesday, March 11, 2015 2:00 PM
> **To:** Gregg Begell
> **Subject:** EWMP-PEIR Comments 2/4
>
> See attached

03/11/15 #2 of 4 Comments

Will be integrated for final submission on 03/16/15 12-3pm

Thanks

Tom

March 13, 2015

TO: Gregg BeGell, P.E.
County of Los Angeles Department of Public Works, Project Management Division II
900 South Fremont Avenue, 5th Floor Alhambra, CA 91803
gbegell@dpw.lacounty.gov

FROM: Dr. Tom Williams, Sr. Techn. Advisor
Citizens Coalition for A Safe Community
Sierra Club, Angeles Chapter, Water Committee

Subject: Enhanced Watershed Management Plan
RE: Comments on Programmatic Draft EIR
Specific Comments #3/4, 03/13 (16)/15.

NEW
Special Issue: LACity - EWMP 400+ projects (BMPs) and PEIR
Inquiries, internet searches, and requests for public documents have been submitted to the Department/Board of Public Works, City of Los Angeles for documents, reports, and other materials pertaining to the reported 400+ storm water related projects, BMPs, etc., that presumably would be part of the 12 EWMPs for the permittees to submit to the LAWQCB in June 2015 and which is referenced in the LACo EWMP and this PEIR. As of close-of-business 13 March, 2015, nine days after submission of the request to LACi-BPW, no contact has been made by the LACi-BPW or LACiDPW.
This indicates that such EWMPs' projects may be erroneously reported herein or that they are not part of the PEIR and not available to the public. This is a clear example of importance of having all information prior to preparation of the LACo EWMP and this PEIR. as the total number of stormwater related projects probably exceeds the total numbers of other permittees we must assume that the EWMP-PEIR is incomplete and inadequate for public review and meaningful comments.
Please withdraw the current PEIR and recirculate at a later date when all relevant information is available for public review and comment.

As a 40 year professional water resources specialist (now retired), I appreciate the physical, technical, and administrative complexity of the LA surface and ground water basins and the supply issues for 9+ million people. However, having participated in EPA Basin Studies in southern California, I also recognize that this is the first major attempt to update such earlier studies (in 40+ years) and only brought about because of regulatory issues and the drought which may be the foreword for more long term climate and hydrologic changes. As such I consider the Enhanced Watershed Management Plan (EWMP) and Draft Program Environmental Impact Report (D-PEIR or PEIR) as an important preliminary compilation requiring major updating and implementation of a comprehensive, computerized hydrologic model for the technical, administrative, and public stakeholders of the County Of Los Angeles (LACo) and as a "Work in Progress".

Central to this issue, CCSC and some members of the Sierra Club, Angeles Chapter, Water Committee request that as part of the overall revision of the D-PEIR and the LACo EWMP that:

- the LACo-EWMP/PEIR become the base online document for all storm, surface, and groundwater resources within LACo and that all related EWMPs and other water resources efforts of all permittees and preparers of EWMPs/Project EIR fully coordinate with and support integrate of teired efforts within the context and documentation of the LACo EWMP;
- the LACo become the computerized online Watershed Model (WSM or LAWSM, or "Water-One" Model, WOM) for integrating all water resources within LACo for any administrative and regulatory purposes;
- the Los Angeles Water Quality Control Board (LAWQCB) only consider as complete and adequate submissions, permits, and monitoring that has been coordinated and integrated through the WSM;
- all tiered projects (EWMPs), best-management-practices (BMPs), and any other water-related projects (e.g., flows of greater than one acre-foot per year, >1acft/yr)

More to Come
SAME as 03/09/15

The following provides a brief review of the CEQA/D-PEIR documents of almost 70MB/1000 pages. We thank the LACo Department of Public Works and Flood Control District for this opportunity to review and comment on the PEIR and greatly appreciate the deadline extension for doing such. I will be submitting detailed comments during 03/13-03/16, and these final overall comments on 03/16/15.

The overall CEQA review is that the documents are inadequate, incomplete, mostly inaccessibility and confusing for the general educated public due to the volume, technical character, overly-broad statements, lack of documentation and support of statements, and lack of consistency of terms and usage,

The proposed Program does not provide a plan for tiered project CEQA considerations by the other permittees nor the County itself. No plan for the Program or the projects has been established for the Enhanced Watershed Management Plan to achieve and comply with the LA Regional Water Quality Control Board's permit requirements. A program may be more generalized but still must provide a plan of actions for both the lead and responsible agencies.

The Program does not provide even the requirements, process, and procedures for subsequent CEQA compliance by other permittees and some projection as to whether EIRs, MNDs, ND, or CE will be used to tier down from this P-DEIR/P-FEIR. Conditions for Program Compliance by tiered projects have not been listed or even referenced other than some ill-defined listing of BMPs.

No current listing of all planned and funded Projects has been provided and incorporated into a scheduled and quantified plan for submission in June.

Although research has been underway for five-plus years, the EWMP and this EIR does not use nor even reference use of computerized modeling of the appropriate basins (Ballona Creek, Upper LA River, Middle LA River and Arroyo Seco, Lower LA River and San Gabriel River, and LA River Mouth/Estuary-Dominguez Channel) although the federal agencies (BLM, USGS, ACoE, etc.) and perhaps local agencies (some permittees and the Water Board) have some local or watershed models . Without a model and its components, the impacts and their significance of detention, retention, recharge, and flood protection cannot be assessed nor mitigated adequately or completely.

Three goals are provided but no objectives (sub-tiered from goals) are provided with/without defined schedules and other quantitative parameters for program monitoring. Confusion is introduced in later text when both flood control and water supply "augmentation" are also introduced as "goals" and as "objectives".

Specific goals are only to meet the MS4 Permit requirements and related water quality conditions and to meet them in a "Cost-Effectiveness" manner. However, costs, financial support, revenue, capital bonding, or economic effectiveness or efficiency are not provided, and thereby achievement of the cost effectiveness cannot be judged nor compared and must presumed by submission of any proposed project.

Growth inducement is mentioned primarily with regard to direct housing construction and employment and incomes while dismissing potential effectts of recharged (diverted storm flows) water supplies.

Additional benefits primarily for flood protection are mentioned in some statements while it is not supported by any text or analyses under water resources. No assessment of beneficial and adverse effects are provided for raising base flow levels from program-augmented/diverted-stormwater groundwater resources and their effects upon subsequent pollutant concentrations and flood flows.

I am retired from 30 years in water and environmental resources with Parson Corp., Pasadena and URS San Francisco and over 10 years with Dubai (UAE) government and local water and environmental companies. I have prepared sections and entire documents for more than 300 EIRs, EISs, and EAs worldwide for local agencies, cities, counties, states, federal, and international agencies and organizations and have reviewed more than 100 additional assessments. During work for URS, I was involved in the development and environmental considerations for the 1970s EPA's Santa Ana and Santa Marguerita/San Luis Rey basins plans. My reviews have included the LACity's Recycled Water Management Plan and Stormwater Capture Management Plan, and I am currently vice chair of the LA City's Floodplain Management Plan.

Dr. Tom Williams

NEW - NOT INCLUDING THOSE OF 03/09-11/15

EWMP - SPECIFIC COMMENTS
Comments, recommendations, and additions are presented in **Bolded *Italics***
PEIR text specific to the comments are presented in plain text as was in the PEIR. Some specifically relevant PEIR text may be **Bold Underlined**.

The Executive Summary (ES) has not been thoroughly reviewed as the ES supposedly represents a limited version of the P-DEIR text content and cannot be assessed for adequacy and completeness as a stand-alone item.

ES-2/2 The EWMPs **will** identify **potential and priority** **structural and non-structural** Best Management Practices (BMPs) within the region's stormwater collection system to improve runoff water quality.

As indicated, this EWMP has no direct factual contributions from the individual EWMPs of other permittees within LACo. No formal organization and definitions of the EWMP, EWMPs, and all the "BMPs" has been provided and consistently applied throughout the document. As the statement refers to a future condition, not in evidence, such statements here and throughout the document must be verified and suported by commitments on the part of the other permittees.

Potential and priority BMPs are referred to but are not adequately related to the EWMPs and the EWMP/PEIR and as indicated herein they ARE BEING developed, they are not developed. The EWMP and PEIR are not definitive at even a programmatic or conceptual deign level.

ES-2/5 A few of the BMPs are currently **well defined** but most **are yet to be fully developed** under the EWMPs....priority BMPs...detailed in each of the EWMPs; these **are being developed in parallel with the PEIR**....describes the details **that are available** for each of the EWMPs currently...by the EWMP working groups.

1-3/3 A set of **priority BMPs** **will** be detailed in each of the EWMPs; these are being developed in parallel with the PEIR. The PEIR describes the details that are available for each of the EWMPs currently under preparation by the EWMP working groups.

As indicated, this EWMP has no direct factual contributions from the individual EWMPs of other permittees within LACo.

No definition of "Fully" or "Well" is provided for the PEIR and as they are being developed at the same time as this PEIR their entire discussion is so general as to render assessment impossible and open to any combination of current or future "projects" and BMPs as desired by the agencies. No reliable discretionary decision can be made and funded based on the PEIR.

1-1/3 The MS4 Permit gives Permittees the option of implementing an innovative approach to permit compliance through development of an Enhanced Watershed Management Program (EWMP)....**will identify potential and priority structural and non-structural Best Management Practices (BMPs)** within the region's stormwater collection system to improve runoff water quality. The LACFCD, along with participating Permittees, has opted to exercise this option and has submitted to the LARWQCB 12 separate Notices of Intent (NOIs) for the development of EWMPs within 12 distinct watershed groups...Implementation of the EMWPs would be the responsibility of each Permittee and would occur following approval of the EWMPs by the LARWQCB.

BMPs, groups of BMPs, and Projects are not defined at any engineering levels so as to determine cost-effectiveness, capabilities to achieve any project/program goal involving water quality or flows and their effects and impacts.

1-3/3 The EWMPs **will** identify **management strategies** including **hundreds of structural Best Management Practices** (BMPs) that **may be** designed and implemented by the Permittees to meet **permit compliance objectives** ***[Only one of the Program objectives]***.

As indicated, this EWMP has no direct factual contributions from the individual EWMPs of other permittees within LACo.

This clearly indicates that this document and tiered documents are NOT based on any quantitative model (RAA, discussed below) for water quality and is not completed prior to its CEQA assessment and that this assessment cannot adequately assure that even the water quality goals, objectives, and regulatory requirements can be realized.

Water quality and flow models and proposed BMP depend on diversion or reduction of flows during both dry- and wet-weather flows, and therefore the RAA must be based on a hydrologic/hydraulic model which has not bee referenced or mentioned.

This EWMP and PEIR must provide the programmatic management strategy guidelines for those of the tiered-down EWMPs-strategies and related CEQA documents. Use of the conditional: "may be" voids following verbs and leaves the statement as irrelevant to the Program and Project EIRs.

1-4/3 The EWMPs **are to** include a discussion of the environmental documents, assessments, and permitting required for the implementation of the **priority projects**. The PEIR can provide a basis for this discussion. The use of the PEIR in the development and implementation of the EWMPs is further discussed in this chapter in the *Purpose of the Program Environmental Impact Report*.

As indicated, this EWMP has no direct factual contributions from the individual EWMPs of other permittees within LACo.

Priority BMPs were discussed but have not been distinguished from "Priority Projects".

The PEIR does not discuss the process of tiering to projects or to specific BMPs and whether Mitigated Negative Declarations will be tiered down from this PEIR or whether the project must require tiered/focused EIRs for full and adequate CEQA compliance.

1-7/1

- Other Receiving Water Considerations (**second category**):
  - The second highest priority shall be considered controlling pollutants for which data indicate impairment of exceedances of receiving water limitations and the findings from the source assessment implicates discharges from the MS4.

As no hydrologic model for flows and concentrations has been provided even for the TMDL constituents, references to secondary pollutants appears totally inappropriate and purposefully attempts to elevate the credibility of compliance with the TMDL, which has not been achieved.

1-7/2 The **EWMP prioritization process** includes
identifying the priority pollutants and...
schedule for implementing BMPs to meet the following criteria:

- For pollutants...same class as TMDLs,...consider these pollutants within...same time frame as...TMDLs.
- For...303(d) list...EWMPs develop a schedule to address these pollutants **as soon as possible** with milestones.

Priority pollutants have already been prioritized and identified, and the prioritization process has not been described although referred to, and no schedule for prioritization, definition of priority projects or priority BMPs has been provided.

Prioritization process and schedule are rendered totally inadequate when modified by whenever "possible". MMRPlan must include a full and scheduled prioritization process for ALL EWMPs.

1-8/2 The RAA **is being performed** as part of the preparation of the EWMPs, and **in parallel with...this PEIR.** The RAA...primary goal of the EWMP...meet the **water quality goals**. The **modeling being performed**...will determine...number and distribution of the BMP types and specific projects identified in the EWMP Work Plans will meet the water quality goals. This PEIR will assess the types of BMPs that **may be implemented** to meet **these** *WATER QUALITY* **goals**.

As indicated, this EWMP and any related RAA performance has no direct factual contributions from the individual EWMPs of other permittees within LACo.

Management strategies (MSs) presumably are different from the BMPs and the EWMPs which they maybe be parts of, but MSs are not defined nor associated with BMPs and EWMPs.

The RAA and a supporting/integrated Hydrologic Model must be provided in a final form to be incorporated, not be performed in parallel, with full integration/incorporation. The MMRPlan must include a final RAA.

1-9/1 The LACFCD will **consider** the information presented in this PEIR, along with **other factors**, **in the development and implementation of the EWMPs**. The EWMPs are to include a discussion of the environmental documents, assessments and permitting required for the implementation of the **priority projects**. The PEIR **can provide** a basis for this discussion.
1-10/2 The EWMPs are to include a discussion of the environmental documents, assessments, and permitting required for the implementation of the **priority projects**. ***Repeated***
Consider and other factors are not defined and as such allow the entire PEIR process to be set-aside.
The PEIR does not fully define the roles and participations of the LACFCD in the development of tiered EWMPs and their CEQA documents.
Again "priority projects" are mentioned and not defined with regard to "priority and potential BMPs."
CEQA texts must recognize differences between "can/could provide" and "will/would provide" and require clarity as to what will occur in the teiring of projects and CEQA documents.

1-11/1 Maps identifying **potential and priority BMP locations** are provided in Chapter 2...with the overall EWMP **watershed characteristics** and **BMP implementation strategy**.
No definition or specificity of potential and the subgroup priority BMPs and locations nor details are provided within the tables and generalized maps. No watershed characteristics are provided regarding runoff coefficients, design rainfall amounts, times of concentrations, are estimated flow levels are provided for any watershed, not even a ranking of highest to lowest flows or highest-lowest dry- and wet weather water qualities.

1-11/1 The PEIR **focuses** its assessment on **construction and operation** of these potential and priority BMPs to be installed throughout the watersheds—but primarily within urbanized areas where the **pollutant loading is greatest** and where these **BMPs can be most cost-effective** in **meeting water quality goals**.
No focused information is given regarding the BMP operations and their effectiveness in removing pollutants and meeting water quality goals (not objectives).
No information is provided regarding the degree of urbanization for each watershed, nor the assumed "loadings" being greater, median, or least.
BMPs are presumed as cost effective without documentation and analyses as to pollutant - present/removed per 100 acft or any other quantified parameter and as to achievement of current reductions down to desired goals.

2-5/1 Additional information and figures on the location and distribution of potential and priority BMPs based on available data at the time of publication of this PEIR, are presented in Section 2.5, *EWMP Watershed Characteristics and BMP Implementation Strategies*.
.

2-15/2 Source Control BMPs. Source control structural BMPs are commercial products designed to treat runoff in highly urbanized environments. Mechanical separation, or more complex physicochemical processes, provides separation of gross solids and other pollutants...**designed to sequester hydrocarbons and other pollutants**.
Residual pollutants and their disposition is not mentioned nor provided any where in the PEIR. No discussion is included regarding the soil sequestering of hydrocarbons, metals, and other pollutants in the ground materials (especially in/on clays). No estimate is provided as to anticipated sequestering per year and probable long-term removal of soil materrials before they achieve "hazardous" levels.

2-16/2 Specific examples of **distributed** BMPs that are in various stages of planning and implementation and part of a possible EWMP are presented in **Table 2-3**. The locations of these examples of planned

distributed BMPs are shown in **Figure 2-2**. Table 2-3 presents the locations, project description, and key elements of the **distributed** BMPs to further illustrate these types of structural BMPs that **may be part** of **an** EWMP. Additional information and figures on the location and distribution of potential and priority BMPs, where data ***are***~~is~~ available, are presented in Section 2.5, *EWMP Watershed Characteristics and BMP Implementation Strategies*.

Centralied and Regional BMP discussions repetitive from 2-16/2 except as highlighted.

2-28/2 ...**centralized** BMPs...presented in **Table 2-4**. The locations of these examples of planned and implemented **centralized** BMP...in **Figure 2-3**.
Table 2-4...the **centralized** BMPs...structural BMPs that **are part** of **the** EWMP....of potential and priority BMPs, where data ***are***~~is~~ available,...*BMP Implementation Strategies*.

2-35/1 ...**regional** BMPs...of planning ***and implementation and*** **that are part** of the EWMP are presented in **Table 2-5.** The locations of these examples of **regional** BMPs are shown in **Figure 2-5**.
Table 2-5...of the **regional** BMPs to further illustrate these types of structural BMPs **that are concepts being developed through the EWMP process**. ...of potential and priority BMPs, where data ***are***~~is~~ available...*BMP Implementation Strategies*.
The complex repetitive wording and slight but several differences in these texts cause considerable confusion for the public review and participation in this CEQA process. Without clear table-ed presentation meaning and clarity are lost, rending these important issues inadequately treated in this PEIR.

2-40/1 Summarized below are the general characteristics of the watersheds within the **EWMP Groups** and the overall strategies for BMP implementation...twelve **EWMPs** are consolidated to **six watershed areas**...summary provides additional detail on the distribution and location of **potential and priority BMPs**, **where data is available**,...for each EWMP and show the location and distribution of **planned and priority regional/centralized BMPs** for which **data are available at the time of publication of this PEIR**. The **priority BMPs**...subset of the potential BMPs that have undergone a site review and project evaluation that has identified these BMPs as a priority. These **priority projects** are shown based upon **available data at the time of publication of this PEIR**.
EWMP groups, EWMPs, and watershed areas are inadequately associated and defined; presumably 12 EWMPs may be associated into 6 EWMP Groups based on watershed associations.
Similarly designations as to:
Potential, Planned, and Priority BMPs - Priority BMPs are part of Potential BMPs
Regional and centralized BMPs - excluding distributed
Priority projects or BMPs
require clear definitions and ordering in order to have adequate clarity for public review.

2-40/1 Appendix G provides the location and general description of the **priority BMPs**...**Distributed BMPs** are planned to be implemented throughout the urbanized areas of each EWMP.
2-43/3 ...Figures 2-5 through 2-16, each of the **EWMPs**...wide distribution of BMPs to achieve permit compliance. **Appendix G** provides the locations and general descriptions of the **priority BMPs** (**where data is available)**,...**Priority Projects** are **projects that have been identified through the EWMP process** as **targeted for implementation** within the first years following the EWMPs approval by the LARWQCB. **Identification of Priority Projects is underway** and **has not been completed by all EWMPs at this time**. ***[For any??]...*****PEIR is being prepared in parallel to the EWMPs**. **Priority Projects *[proper noun]* will be defined** in all the EWMPs **to be submitted for public comment in June 2015**. Priority Projects that have been identified at this time through the EWMP process are shown on the following figures. **Priority Projects may be regional, centralized or distributed type BMPs**. For **potential projects**...location of potential regional and centralized **BMPs** are shown. Distributed BMP will be distributed throughout the urbanized areas and are not shown on the following figures
...2-44/1...
No "general description" is provided for the program, projects, and BMPs, as summarized below, only listings and figures found in the Vol.1. Apdx. G EWMP Proposed BMP and Priority Project

Data and Figures A-L, pages unnumbered items renders the entire appendix confusing and un-reviewable for the general public and the only "General Description" is APN numbers.

2-57/1 **2.6 EWMP BMP Implementation Schedule** The EWMPs that are **being prepared in parallel** to the PEIR will provide a **timeline for the implementation** of the BMPs ***[as define in MS4/TMDLs]***...**priority BMPs**...that have undergone a site review and project evaluation and...based on available data at the time of publication of this PEIR...**Implementation of priority BMPs will begin following approval of the EWMPs by the LARWQCB...depend on the approval of the EWMPs, *1)* further environmental assessment, *2)* permitting, and *3)* availability of funding sources**.
The EWMPs will be submitted to the LARWQCB in June 2015.
The entire process of LACo-EWMP, EWMPs, BMPs, etc. and implementation of "Priority BMPs" have not been fully provided nor adequately documented.
As indicated above, a fully scheduled/timed EWMP/EWMPs implementation schedule for all BMP and for further - annual - updating must be included in the Final PEIR perhaps as part of the MMRPlan for PEIR and within each EWMPs' CEQA documents.
Statements as to the submittal dates in less than three months clearly indicates that undue pressure is being attempted in order to force the CEQA and project development processes through without due consideration as to the completeness and adequacy of project, program, and CEQA documents and processes.

2-57/4 Each EWMP will **define** priority projects, and **installation** of these projects will move forward depending on the **availability of funding** and **outcome of further project-specific CEQA review**. Funding options for implementing agencies would include obtaining **grant funds, low-interest loans, tax-based general funds, or special assessments**. Each **jurisdiction** will be responsible for securing the necessary funds over time to achieve permit compliance.
References to but absence of information regarding funding, funds, and other related economic/financial elements and their pivotal importance to any "Project" renders continued discussion of projects inadequate and incomplete and subject to major changes of any PEIR referenced "project between now and July 1, 2015 and thereafter.
Introduction of "jurisdiction" renders the discussion meaningless, incomplete and inadequate.

NEW #3/4

1-9/3 ***Program-LACo EWMP***
12 Local/Regional EWMPs
Projects/BMPs

BMPs

2-7/ Table 2-2 Typical Structural Best Management Practices

Main BMP Category BMP Assessed Sub-Types Of BMPs

2-17/Table 2-3 Examples of **Planned or Installed** Distributed BMP Projects

2-29/Table 2-4 Examples of Planned Centralized BMP Projects

2-37/Table 2-5 Examples of Planned Regional Projects

Impacts not by EWMP but by BMP levels and cumulative per sector

3.2-30/Table 3.2-10 **Summary of** Air Quality **Impacts Requiring Mitigation Measures** BMP + Cumulative

3.3-32/Table 3.3-1 ...Biological Resources...

3.4-29/Table 3.4-2 ...Cultural Resources...

3.5-29/Table 3.5-3 ...Geologic Resources...

3.7-25/Table 3.7-1 ...Hazards...

3.8-43/Table 3.8-3 ...Hydrological Resources...

3.9-40/Table 3.9-16 ...Land Use and Agriculture...

3.14-24/Table 3.14-3 ...Utilities and Service Systems...

2-1/ The structural watershed control measures that will be implemented by the LACFCD will be multi-benefit **stormwater projects** that emphasize **flood risk mitigation**...

.

Public Health and BMP Maintenance (ongoing annual costs)

2-9/1 Wet detention ponds may require **engineering**...to ensure that the permanent pool does not become stagnant and a magnet for **mosquito production (must be emptied within 72 hours)**.

Rain Barrels

2-13/2 **Planter Boxes.** Planter boxes are bioretention systems...where space constraints limit the implementation of other LID elements...designed to both filter and store runoff...used in combination with **rain barrels and cisterns** that store the runoff and then direct it ***into*** these boxes to filter the runoff.

2-14/2 **Rainfall Harvest.** Rainfall harvesting improves water quality by intercepting rooftop runoff...**rain barrels** are storage tanks used to intercept and store rooftop runoff for **nonpotable use** such as landscape irrigation or gradual infiltration.

.

p.2-18 **Upper LA River Brandon Street and Green Street Improvements Project**

The project will reconstruct...roadway...design includes...Much of the runoff from the streets and private properties that would have otherwise drained to the Rio Hondo will be directed to the infiltration area.

How much

2-19 **Upper San Gabriel River Avocado Heights Multiuse Trail Project**

The project will...thereby reducing the amount of impermeable surfaces as well as runoff. Approximately...Combined together, **up to 115 acre-feet of groundwater** will be recharged annually.

2-26\2 Typical constructed wetland projects require extensive grading of site soils, though excavated soils are often balanced on-site to provide material for

levees,
berms,
ecotones, and
other flood control/habitat features.

.

2-27/2 **Multi-benefit flood management projects*.*** This category...designed to result in direct or indirect benefits to flood management.
...Tujunga Wash Greenway project that incorporates...detention elements can **improve flood management** by **reducing stormwater flow rates and/or volumes**.
.

2-27/3 *Construction Impacts.* **Multi-benefit flood management projects** are typically expansive projects that range from a few to tens of acres in size...Because of their scale, **multi-benefit flood** 2-28/1 **management projects**...
.

2-30 TABLE 2-4 EXAMPLES OF PLANNED CENTRALIZED BMP PROJECTS This project will also have educational signage on a riparian zone and the **stormwater cleanup objectives of this project**.
.

2-30/Table 2-4 Item 2 **Malibu Creek Lindero Parkway Improvements** The project...streetscape improvement project that...this parkway was **originally a flood control maintenance road**...new project,...Stormwater runoff would then be treated in the bio-swale followed by discharge into Westlake Lake...also have educational signage on a riparian zone and the **stormwater cleanup objectives** of this project. ***FP***
.

2-31/Table 2-4 Item 4 **Palos Verdes Peninsula San Ramon Canyon Stormwater Flood Reduction Project** The San Ramon Canyon...near Palos Verdes Drive East....landslide induced rock and soil deposits in the canyon bottom are transported during **heavy rainfall events**...creates **flooding** of the roadway, overwhelming existing drainage facilities, endangering nearby roadway integrity and threatening downstream residents...***(SRCSFRP)*** involves significant drainage restoration work to stabilize... ***FP***
.

2-32/Table 2-4, Item 2 Phase II of the Penmar project...Replacing this volume of potable water with treated storm water...provides 34.7 million gallons per year increase to annual runoff diversion capacity...By installing the reuse option, the overall project capacity will increase, thereby also increasing the volume of urban runoff that can be retained by the project **for use as an alternative source of water to potable water** for landscape irrigation.
.

2-34/1 **2.4.5 Regional Structural BMPs** Regional structural BMPs are those that can **capture the volume of water from an 85th percentile, 24-hr storm in a contributing watershed, known as the *design volume (...*85th percentile storm...0.75 inches over 24 hours**).
The project's BMPs...**alleviate local flooding** by collecting runoff from a 21-acre drainage area...into two underground infiltration galleries...
.

2-34/2 *Anticipated Construction Activities:* The construction activities...are generally similar to those of their centralized counterparts, with the **exception of regional retention BMPs**,...adequate storage capacity to **hold runoff from the design storm**....Larger, multi-benefit regional BMPs are similar to **centralized multi-benefit regional flood management projects**...
.

2-42/4 The Los Angeles River...natural hydrology of the Los Angeles River watershed has been altered by channelization and the construction of dams and **flood control reservoirs**...Because of the greater extent and number of pollutant priorities, the BMP strategy in the Upper Los Angeles River watershed includes well over a hundred planned regional and centralized retention and infiltration BMPs ***[Estimated***

unfunded projects: 400] that take advantage of the **favorable groundwater recharge characteristics**...BMP strategy also includes distributed smaller BMPs located throughout the urbanized areas of the watershed as retrofits in existing developments and streets. LFDs to comply with dry-weather bacteria TMDLs may also be included.

.

3.1-12/3 BMP **maintenance is also important**...Wet ponds and constructed wetlands can also become **mosquito-breeding grounds**...can usually be **reduced or eliminated through proper design and/or organic controls**.***[=maintenance]***..all BMPs need to have trash and debris removed periodically to prevent odor and preserve aesthetic values. **With proper maintenance...impacts would be less than significant.**

Nothing about public health
Public Health not well discussed at Program levels
PH not discussion
Odor
Disease vector Mosquito

3.1-15/**TABLE 3.1-1 SUMMARY OF...IMPACTS REQUIRING MITIGATION MEASURES**
Distributed BMP
LID – Green Infrastructure – Capture and Use – Cisterns, Rain Barrels, Green roofs, Planter Boxes
.

3.5-19/2 ***City of Los Angeles Low Impact Development Manual***
In November 2011, the City of Los Angeles adopted the Stormwater Low Impact Development (LID) Ordinance #181899) with the stated **purpose** of:

- Requiring the use of LID standards and practices in future developments and redevelopments to encourage the beneficial use of rainwater and urban runoff
- **Reducing stormwater/urban runoff** while improving water quality
- Promoting rainwater harvesting
- **Reducing offsite runoff** and providing increased groundwater recharge
- **Reducing** erosion and **hydrologic impacts downstream**
- Enhancing the recreational and aesthetic values in our communities

.

3.5-19/3 The City institutionalized the use of LID techniques...adoption of the Stormwater LID Ordinance, the City prepared the *Development Best Management Practices Handbook, Low Impact Development Manual,...*required BMPs (City of Los Angeles, 2011).
.

3.7-17/2 The LID Standards...provide protocols for designing regional and centralized BMPs that minimize the potential for contaminant loading. For example, the LID Manual requires a certain distance to groundwater to ensure that adequate soil filtration occurs prior to the percolating water reaching a drinking water aquifer.
.

3.8-1/3 Annual precipitation can vary significantly between drought and flood conditions; periodic and occasionally severe droughts and floods within the area are well-documented (LARWQCB, 1994), and the potential for extreme precipitation (maximum intensity of precipitation for periods of 12 hours or longer which might be expected at intervals of ten to 100 years) is greater in portions of the San Gabriel Mountains than practically anywhere else in the continental United States (WERC, 2014). Average annual rainfall within the Los Angeles Basin is approximately 14.5 inches, though local averages can vary considerably depending on location within the basin (WERC, 2012).
No adequate stormwater flow forecast 85%ile

Climate changes.

3.8-8/2 5. **Dominguez Channel Watersheds (Figure 3.8-6)** (Dominguez Channel EWMP and Beach Cities EWMP– ...Dominquez Channel EWMP and a portion of the Beach Cities EWMP...differentiated by a larger area of industrial land use. Because of the high density...large regional and centralized infiltration-type BMPs will be limited. The structural BMP strategy will be more LFDs, both large (centralized) and small (distributed), located at MS4 outfalls...The other BMP strategy is the use of **smaller distributed BMPs**...low-impact development (LID) type of BMPs, such as green streets and biofiltration BMPs.
.

3.8-4/3 EWMP Groups The proposed program has been divided into 12 EWMP Areas that have been organized by watershed groups that **share comparable conditions**.
The 12 EWMPs are consolidated into six watershed areas that are grouped **by similar watershed characteristics**...and also provide hydrologic features and the locations and distribution of planned and priority regional/centralized BMPs.
No comparable, similar, or differing watershed conditions or characteristics have been identified other than physical channel connections.

3.8-4/3 The **priority BMPs** are a **subset of the planned BMPs** and have been selected as **priority projects** based on a **screening assessment** of the planned projects.
Priority projects will be implemented before additional **planned projects**.
Define and compare priority, planned, and potential BMPs and projects.
Referenced "screening assessment" has not been described.

3.8-4/3 Distributed BMPs are **planned to be implemented** throughout the urbanized areas of the EWMPs.
No plan provided for distributed BMPs within the EWMP or available EWMPs.
No designation as to whether distributed BMPs/Projects will be priority, potential, or just planned projects; as provide after the priority projects.

3.8-20/1 ...these LFDs could potentially increase the amount of water available for recycling, reuse, and **groundwater recharge**.
3.8-21/1 ...45 percent are supplied by local groundwater basins that **are recharged naturally**...**through constructed recharge facilities** (MWD, 2010).
.

3.8-21/1 ...stormwater recharge facilities **currently augment local groundwater supplies** in the region by an estimated 477,000 acre-feet per year (MWD, 2014).
.

3.8-21/1 **One of the primary goals of the EWMP program**...**increase the amount of stormwater that is recharged**...particularly in portions of the Central Basin that experience a high degree of hydraulic connectivity between surface water and groundwater. Infiltration BMPs proposed within the EWMPs are expected to **increase the rates and amounts of groundwater recharge**...
.

3.8-31/3 ***County of Los Angeles Low Impact Development Manual***
The County...prepared the 2014 Low Impact Development Standards Manual (LID Standards Manual, County of Los Angeles, 2014b) to comply with the requirements of the 2012 MS4 Permit...provides guidance for the implementation of stormwater quality control measures in new development and redevelopment projects in unincorporated areas of the County with the intention of improving water quality and mitigating potential water quality impacts from stormwater and non-stormwater discharges.
.

3.8-31/4 The LID Standards Manual addresses...objectives and goals:

- Lessen the adverse impacts of stormwater runoff from development and urban runoff on natural drainage systems, receiving waters, and other water bodies.
- Minimize **pollutant loadings from impervious surfaces** by requiring development projects to incorporate properly-designed, technically-appropriate BMPs and other LID strategies.
- Minimize erosion and other hydrologic impacts on natural drainage systems by requiring development projects to incorporate properly-designed, technically appropriate **hydromodification control development principles and technologies**.

Not objective - goals yes.

City of Los Angeles Low Impact Development Manual

3.8-31/5 In November 2011, the City of Los Angeles adopted the Stormwater Low Impact Development Ordinance #181899 with the stated purpose of:

- Requiring the use of LID standards and practices in future developments and redevelopments to encourage the beneficial use of rainwater and urban runoff
- Reducing stormwater/urban runoff while improving water quality
- Promoting rainwater harvesting
- Reducing off-site runoff and providing increased groundwater recharge
- Reducing erosion and hydrologic impacts downstream
- Enhancing the recreational and aesthetic values in our communities

.

3.8-31/6 The City of Los Angeles institutionalized the use of LID techniques...Subsequent to the adoption of the Stormwater LID Ordinance, the City prepared the *Development Best Management Practices Handbook, Low Impact Development Manual,* dated June 2011, to describes the required BMPs (City of Los Angeles, 2011).

.

3.8-35/2 **Mitigation Measure HYDRO-1** requires Permittees to evaluate the suitability of BMP locations for groundwater **recharge**. **Infiltration BMP**s would not be suitable in areas of low permeability where subsurface structures could be adversely affected by groundwater mounding.

.

3.8-41/5 **Cumulative Impact Discussion Structural (Regional, Centralized, and Distributed) BMPs** **...**Implementation of the proposed structural BMPs,...other reasonably foreseeable future projects...result in improved stormwater quality and reduced non storm flows....will experience reduced dry-weather runoff, a more natural hydrology, and improved receiving water 3.8-42/1 quality. In addition, new infiltration projects will incrementally augment groundwater drinking water supplies. **Although the increased infiltration projects may increase pollutant loads to groundwater aquifers, pretreatment systems coupled with regional groundwater management lead by the local Watermasters will ensure that the beneficial uses of groundwater basins are not significantly impaired.** ...EWMPs will beneficially impact local surface water quality and groundwater supplies. **Mitigation Measures:** None required **Significance Determination:** Less than significant

.

3.8-43/**TABLE 3.8-3 SUMMARY OF HYDROLOGICAL RESOURCE IMPACTS REQUIRING MITIGATION MEASURES Cumulative Impacts, No mitigation required**

.

3.9-2/2 ...shows land uses in the Ballona Creek Watershed and the location of **planned and priority regional/centralized Best Management Practices (BMPs)**. The location of distributed BMPs would be throughout the urbanized areas of the watershed.

3.9-4/1 land uses in the Beach Cities EWMP area...

3.9-6/1 land use in the Dominguez Channel EWMP area...

3.9-8/2 ...land uses in the Malibu Creek Watershed EWMP area...
3.9-10/2 ...land use in the Marina del Rey Watershed EWMP area...
3.9-12/1 North Santa Monica Bay EWMP area...
3.9-15/2 ...Palos Verdes Peninsula EWMP area...
3.9-17/2 ...Rio Hondo/ San Gabriel River EWMP area...
3.9-19/2 ... Santa Monica Bay EWMP area...
3.9-21/2 ... Upper Los Angeles River EWMP area...

Define and described priority, planned, and potential BMPs and projects and provide sequential arrangements. Will distributed BMP be implemented before the end of the priority or planned BMP implementation? Absence of phased or scheduled implementation listing of the BMPs or projects renders section inadequate if not incomplete.

3.14-9/4 **...**EWMP comprehensively evaluates opportunities...multi-benefit regional projects that, **wherever feasible,** retain (i) **all** nonstormwater runoff and (ii) **all stormwater runoff from the 85th percentile, 24-hour storm event** for the drainage areas tributary to the projects, **while also achieving other benefits including flood control** and **water supply**,...
Feasible.

within the participating Permittees' collective jurisdictional area in a Watershed Management Area, for collaboration among Permittees and **other partners** on (i) **all** nonstormwater runoff and (ii) **all stormwater runoff from the 85th percentile, 24-hour storm event** for the drainage areas tributary to the projects, **while also achieving other benefits** including flood control
Other partners
feasible
85th %ile
Flood control
Water supply
.
Is this an objective

3.14-15/5 *Water Supply* Impact 3.14-3: The proposed program ***[=The EWMP]*** **could require new or expanded water supply resources or entitlements** or require or result in the construction...could cause **significant environmental effects**.

Any increase in recharge and safe yields of local groundwater will be used in water supplies and support larger populations and more intensive water uses unless physical capacities are reduced by physical removal of existing facilities.

Herein, unlike other sections, the program is acknowledges as to being capable/could affecting/impacting directly on water resources and their associated water rights/entitlements and related retail service areas and populations (users).

Given the general purpose of the EWMP is to recharge groundwater in a urban-suburban context where groundwater is used for water supply, such "conditional-could" appears totally inappropriate and must be technically defined/determined in order to fully and adequately discussed environmental, cost-effectiveness, and compliance with discharge water quality limits over the life of the projects.

3.14-20/5 Impacts to the **existing water supplies are anticipated to be beneficial** as a result of the stormwater and non-stormwater runoff infiltration and conservation BMPs implemented across the EWMP areas. **Mitigation Measure UTIL-1** would require that implementing agencies **evaluate impacts to downstream beneficial uses, including surface water rights** prior to **BMP approval**. No adverse 3.14-21/1 cumulative impacts related to **new or expanded water supply resources or entitlements would occur**.

"Evaluate" is not a mitigation measure; similarly establishment of "surface water rights" for recharged groundwater and "BMP approval" are left undefined and unassigned.

Clearly require as part of the MMRPlan that the County and all Permittees and EWMPs establish recharged groundwater entitlements for every facility capable of recharging more than 100acft per year.

Clearly require as part of the MMRPlan that the County and all Permittees and EWMPs establish water supply monitoring and reporting of dependent service area expansions or increased total use and the portion which is sourced from recharged storm and recycled waters for every facility capable of recharging more than 100acft per year.

Impacts are not defined and an assumption of beneficial is not defined but would be assumed to improved/increase supply and reliability/assurance of supply for a larger population or higher uses which would lead to expanded supply service areas.

This statement contradicts the statements regarding little or no water supply growth inducements; this becomes a greater concern when stormwater recharge is combined/integrated with recharge of recycled water for storage and eventual local water supply services.

Review and revise these statements and those regarding growth inducements from increase water supply and reliability of service deliveries arising from increased local storm and recycled water sources.

Historic practices in adjudicated basins has been that whoever adds water to the basin become entitled to extract that water for their own interests.

4-4/Table 4-1 EWMP **Projects**

4-4/Table 4.1
5 Wildlife Road Storm Drain Improvements
Distributed North Santa Monica Bay Coastal Watersheds
Construction was scheduled to begin March -August 2014
.

8A-8C Torrance Stormwater Basin Recharge and Enhancement Project
Regional Beach Cities WMG Construction was scheduled for Spring 2014.
.

13 Phase II of the Mar Vista Recreation Center Stormwater BMP Project
Centralized Ballona Creek Phase II is expected to be completed by December 2014.
.

19 San Ramon Canyon Stormwater Flood Reduction Project Centralized Palos Verdes Peninsula Anticipated to be completed June 2015.
.

4-5/Fig. 4-1 Storm Drains - ***Delineated***
.

4-6/1 4.3 Plan Consistency General Plans Construction of structural BMPs and adoption of non-structural BMPs would occur throughout each of the EWMP areas, encompassing 84 cities and large areas of unincorporated Los Angeles County. Each city has adopted land use plans and zoning codes covering development within their jurisdictions. Many cities including the City of Los Angeles have **adopted LID ordinances** that promote new development of storm flow retention and water quality BMPs. Each implementing agency **would be required to evaluate the consistency of each BMP** with local zoning codes. **Compliance** with city codes for placement of BMPs **would ensure that the cumulative impact of installing multiple BMPs** throughout the County **would not conflict with local plans and policies**.
.

4-6/2 The Los Angeles County General Plan includes land use designations...provides a list of **goals and policies**...that promote **storm water** quality infrastructure. The installation of multiple BMPs...**would be consistent with...goals promoting LID infrastructure and improved storm water quality**...identifies the regional conservation planning efforts...including critical habitat, significant ecological areas, habitat conservation planning areas, and...parks....enhanced water quality and a more natural hydrology **encouraged**...consistent with the habitat conservation goals of each of these plans.
Recent changes in Hauled Water Initiative constraints.

4-6/2 ...Permit describes the Watershed Management Program optional compliance approach as providing more **opportunities** for multi-benefit projects that would **encourage** goals of recreation and habitat value creation as part of the BMP. The **proposed program would be consistent with regional General Plan goals and policies**.
Program
Consistency
General Plan
Goals and Policies .

4-7/1 ...air quality, traffic, and water supply), the cumulative setting...specific regional boundaries...contributing to cumulative impacts...cumulative setting is based on development anticipated within the vicinity of the EWMP project. The impact analysis in Chapter 3...cumulative impacts for each resource area...conclusions of the cumulative analysis in Chapter 3....implementation of the BMPs would result in cumulative significant impacts to air quality, cultural resources, and noise.
Hauled water, recycled water, and stormwater.

p.4-8/Table 4-3 **SUMMARY OF CUMULATIVE IMPACT ANALYSIS**

Issue Area	Significance Determination
Hydrology and Water Quality (Cumulative)	LSM ***[Less than Significant with Mitigation].***

Given common usage of groundwater basins for recharged water storage for both storm and recycled waters revise the table and incorporate growth inducements amongst cumulative impacts for recharged stormwater.

6-2/5 **6.2 Review of Proposed Program Goals and Objectives**
The alternatives presented in this chapter were analyzed for their abilities to reduce significant program impacts and meet the objectives of the proposed program, which are:

- To **collaborate** among agencies (Permittee jurisdictions) across the watershed **to promote more cost-effective** and multi-beneficial water quality improvement projects to **comply with the Municipal Separate Storm Sewer System (MS4) Permit.**
- To develop watershed-wide Enhanced Watershed Management Programs (EWMPs) that would, once implemented, remove or reduce pollutants from dry- and wet-weather urban runoff in a **cost-effective** manner.
- To **reduce the impact** of stormwater and non-stormwater on receiving water quality.

Discussion starts with a title of Goals and Objectives then switches to objectives. These are goals not objectives as they are not quantified nor scheduled in any manner.

Since two "objectives" refer to "cost-effectiveness" and no costs, revenues, economics, or financial information or assessment are not provided, all discussions of the achievements of goals and objectives becomes mute and the PEIR totally incomplete with regard to the "project" or "program" and its alternatives.

Similarly reference to collaboration becomes mute as all related agencies and those in the county have already collaborated and therefore any "collaboration" discussion must be quantified which they have not been.

As to compliance with permit conditions and reduction of impacts are only presumed without documentation which is under parallel preparation for June 2015 and without any hydrological modeling or calculations to support such contentions and comparisons amongst alternatives.

The entire Alternatives section is incomplete and totally inadequate.

6-3/4 The Lead Agency **conducted an alternatives screening process** to identify **feasible** alternatives to the proposed program. The screening process for identifying viable alternatives included consideration of the following criteria:

- Ability to meet the program **objectives** ***[presumes meet objectives or not considered]***
- Ability to reduce significant environmental effects of the proposed program
- **Economic** and engineering feasibility ***[presumes to meet economic feasibility parameters and criteria not presents]***

Introduction of "Lead Agency" at this point would imply some agencies other than LACoDPW, perhaps LACoFCD (??); while reference to an "alternative screening process" indicates some formal process rather than that documented in the PEIR.

Discussion of environmental effects or water-related compliance of flow and quality for a Water Resources project or program without a quantified and presumably computerized complex model for each watershed element is totally inadequate and incomplete at any level.

Introduction of "feasible" and economics without definitions and the objectives which 2/3 include costs and therefore economics strongly distorts any screening or comparisons toward costs, economics, and financial for which no information is provided or believed to be even remotely available for the PEIR, the EWMP, and most if not all of the EWMPs.

Such inadequacies and incompleteness renders Sec.6 irrelevant to the CEQA process with regard to the project, any alternatives, and any designation as to an "Environmentally Superior Alternative" compared to an "economically superior alternative".

Presumptions and unsupported statement are not with the goals of CEQA to provide a complete, adequate, objective, and quantified review and assessment of a program's or project's effects and appropriate mitigation and alternatives to such.

6-3/5 Based on these **criteria**, the **Lead Agency** has identified the following alternatives:

Introduction of "Lead Agency" at this point would imply some agencies other than LACoDPW, perhaps LACoFCD (??); while reference to an "alternative screening process" indicates some formal process rather than that documented in the PEIR.

Identifications are not supported in comparisons primarily with regard to collaboration and presumed economies of scale and cost-effectiveness.

6-5/2 **Ability to Meet Program Objectives** The No Program Alternative...not meet...objective to **collaborate among agencies**...promote more cost-effective and multi-beneficial water quality improvement projects...meet the other objectives to remove or reduce pollutants from dry- and wet-weather urban runoff and reduce the impact of stormwater and non-stormwater on receiving water quality...

.

6-7/7 The Non-Structural BMPs Only Project Alternative may not meet the objectives of the proposed program to collaborate among agencies to promote more cost-effective and multibeneficial water quality improvement projects because Non-Structural BMPs are generally implemented individually in each jurisdiction, so **collaboration efforts for cost-effective solutions** diminishes with implementation of non-structural BMPs only.

.

6-9/9 **Ability to Meet Program Objectives**
The Distributed Structural BMPs Only Program Alternative would meet the **objectives** of the proposed program to collaborate among agencies to promote more cost-effective and multibeneficial water quality improvement projects. However, because distributed structural BMPs **tend to be smaller** in nature and typically are distributed widely throughout the watershed, **more BMPs** may be necessary to meet water quality objectives in the MS4 Permit. The **ability to meet** 6-10/1 the water quality objectives would be **less certain** under this alternative.

This statement indicates that distributed BMPs are cost-effective for the program although they are smaller (may disagreed based on economies of scale and information provided by LACiDWP).

"Less certain" is not defined nor is the statement supported; 100 times more sites may be sufficient and available but no presumption can be supported either way based on the PEIR.

6-12/3 **6.6 Alternatives Suggested in Scoping**
...comment letter...suggested that the PEIR include an assessment of several funding mechanism alternatives, including: Single Parcel Fee Assessment, Parcel Area Fee Assessment, Hybrid Parcel Area Fee Assessment, Zero Discharge Assessment, and Large Parcel Assessment. These suggested alternatives **would not lessen any significant environmental impacts of the Program** and were therefore not considered in this PEIR. Although CEQA allows for discussion of economic impacts and project costs as measures of feasibility, the funding mechanisms required to implement projects are **generally not susceptible to environmental analysis**.

As the program objectives and criteria for alternatives both include economics and costs and as all BMPs require both capital and operation and maintenance costs to be effective, a full documentation using the above mentions financing package must be incorporated into the project description and alternatives, especially those presented to the LARWQCB in June 2015.

Adequately funded projects within the ability to pay of the service population would assure continue environmental compliance and support of a wide array of mitigation measures compared to capital intensity project requiring longer term bonding and expensive project management.

Comparisons of large projects with high capital costs to program of lots of small projects with low capital costs but with higher operating costs have been alluded to in discussions of other alternatives but without any documentation.

As all publicly funded projects to be submitted to LARWQCB in June 2015 must be funded n have not been demonstrated at this time to be funded, any inclusion of projects in this program can not be assumed to have long-term funding to assure mitigation of impacts.

6-12/4 ...comment...Full Capture and Recharge of Flows Greater than 100 cfs Alternative...rejected...because of the **infeasibility** of capturing all storm flows...unrealistic, requiring most of the **developed land in the County to be accomplished**...
...suggesting full capture of **all flows less than 100 cfs**...was rejected from further consideration for the same reason...would require enormous areas of...currently developed...recharge is **only feasible** in certain areas of the County because of the poor percolation capacity of surficial soils...accumulation of **subsurface clay lenses** creates recharge barriers in **many places of the County**, making retention and recharge of large quantities of stormwater **infeasible** in these locations.

PEIR total lacks definitions for "feasibility" and "infeasiblity" as to technically, financially, administrative, or politically aspects.
As no surface or subsurface hydrologic model is available or referenced, and supporting documentation is not provided nor apparently available for either flow capture alternative dismissal.
The PEIR does not provide maps of locations with clay lenses and their extents/depths and thereby barrier effects.

6-13/Table 6-2 Ability of Project Alternatives to Meet **Project Objectives** Project Objectives
1. To Collaborate Among Agencies (Permittee Jurisdictions) Across the Watershed
To **Promote more cost-effective** and multi-beneficial water quality improvement projects
To comply with the MS4 Permit. ***[=portions of Objectives 2 & 3]***
2. To develop watershed-wide EWMPs that will, once implemented, **remove or reduce pollutants from dry- and wet-weather urban runoff** ***[= Objective 1.]*** in a **cost-effective manner.**
3. To reduce the impact of stormwater and nonstormwater on receiving water quality. ***[=Objective 1.]***
Program and projects confused and confusing.
As objectives, inadequately quantified and not scheduled.
Comparisons of alternatives and "abilities" of Project GOALS and objectives without cost-effectiveness and any hydrological model for wet/storm and dry/storm water flows render all as totally inadequate and incomplete.
As written, the objectives must be referred to as "Goals"; objectives must be measurable/monitorable with schedules and quantified levels of achievement, e.g., 4Qtr2016 and $100/ppm reduction.

6-14/1 The No Program Alternative...impacts...would be similar to the proposed alternative. None of the significant and unavoidable impacts of the proposed alternative would be avoided by this alternative. Furthermore, since the ability to achieve compliance with MS4 Permit water quality objectives would be reduced if each Permittee were on their own, impacts to water quality would be greater under this alternative.
.

6-14/2 The Distributed Structural BMPs Only Alternative... would avoid construction and operational impacts...However, since the ability to achieve compliance with MS4 Permit water quality objectives would be reduced without the larger-scale centralized and regional BMPs, impacts to water quality would be greater under this alternative.
.

Dr. Tom Williams **March 13, 2015** **Submittal #3** **CCSC**

Stakeholder O Advisory Comte LACity Frank Acevedo SOAC Central Planning Commis.
facevedo@rampartproperties.net

Tunnel Profile Slopes

-2.86 CNC Hellman-Valley
3% Drop 3/100 60ft x 3 180ft 5280ft to tunnel depth - 158.4 lower road deck for %slopes and for x2cover beneath URR 40+120

-3.50 CNC Valley-UPRR 1000ft = 35ft **Dive! Dive! Dive!**

+1.75% Main Bored Tunnel

+3.45 CNC Palmetto > DelMar **Blow Ballast**

+3.00 CNC Delmar>Colorado

AIR QUALITY **Comply with 2012RTP/2015 FTIP**

Additional analyses for Prefferred Alternative

Designs for Cost Estimates

Designs for Air Modeling and Ventilation

Size-Flows/Velocity-Temps/Compositions >1% slopes -5mi

Intake vs Outflow

Tunnel Plenum- above/below - Ventilation

ECONOMICS -
- **Property Acquisition**
- **Parking**
- **Employment**
- **Property and Sales Tax Revenues losses**
- **PPP Partnerships**

Lee Dolley **Parking losses**

#28 PropertyAcquisitions/Relocations
#29 Land Use - Parking Space/Tempor./Permanent
#30 Employment/Fiscal Impacts - O&M Jobs and Annual Earnings
not using Million $ - separated Millions and $0-$50
#31 Construction Employment/Fiscal Impacts - Jobs and Annual Earning
#32 Property and Sales Tax Revenue Loss - Annual $10K-$80K

RESOLUTION
Whereas the MTA/Metro and Caltrans remains supportive of the Freeway Tunnel for the SR 710 North Extension Project;
Whereas the current route and portal location remains in and under the City of Los Angeles and is contrary to the City Council Resolution of 2012;
Whereas the proposed portal buildings would foreclose any further expansion of high tech biotechnical developments; and
Whereas the most probable favored alternative, Freeway Tunnel, would include tolled trucking with a capacity of more than 40,000 trucks a day, every day.

Therefore be it resolved, the Sunland Tujunga Neighborhood Council opposes the Freeway Tunnel, either single or dual, for the selected alternative of the SR-710 North Extension project and support a more transit and rail based alternative to serve passenger and goods movements for the central/western San Gabriel Valley and eastern City of Los Angeles.

Dr. Tom Williams 323-528-9682 ctwilliams2012@yahoo.com

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Dr. Tom Williams 323-528-9682 ctwilliams2012@yahoo.com

DAY 1 8.25
Course review, objectives, introductions 1.00
Completion design - objectives 0.50
Break 0.25
Completion design - key decisions 2.00
Lunch 1.00
Completion- integration with well construction 1.00

DAY 2 8.50
Completion equipment 1.25
Exercise 0.25
Completion equipment 1.25
Exercise 0.5
Perforating 0.75
Lunch 1.00
Perforating 0.50

DAY 3 8.50
Formation damage 1.25
Exercise 0.25
Break 0.25
Wells servicing fluids 1.00
Exercise 0.25
Lunch 1.00
Completion programming & exercise 1.00

DAY 4 8.25
Sand exclusion techniques 1.00
Exercise - sand exclusion selection 0.50
Break 0.25
Well problems and workover planning 1.00
Exercise - well diagnosis 0.5
Coiled Tubing 0.75
Lunch 1.00
Coiled tubing 0.75

DAY 5 4.75
Live well interventions 0.50
Hydraulic workover and snubbing units 1
Break 0.25
Frequently deployed workover operations 1
Exercise 1.00
Lunch
Completion programming and course review ??????
Further discussion if required

Complex wells – horizontal wells 0.75
Well stimulation - options 1.00
Coiled tubing 0.75
Completion - impact of well flow capacity 0.75
Complex wells - multilaterals/multiple 0.75
Well stimulation screening 0.50

Wireline techniques 0.75
Completion - artificial lift options 0.50
(Break) 0.25
(Break) 0.25
(Break) 0.25
Exercise 0.50
Exercise 0.50
Exercise - stimulation screening 0.50
Wireline 1.00

Completions and Workovers (CAW)
COURSE AGENDA
Director
Specialised completion/technologies 0.75
Sand production and management 1.00
Exercise 0.50
Exercise - sand size analysis 0.25

Paige Anderson

To: Laura Rocha
Subject: RE: EWMP-PEIR Comments 2/4

From: Tom Williams [mailto:ctwilliams2012@yahoo.com]
Sent: Wednesday, March 11, 2015 2:00 PM
To: Gregg Begell
Subject: EWMP-PEIR Comments 2/4

See attached

03/11/15 #2 of 4 Comments

Will be integrated for final submission on 03/16/15 12-3pm

Thanks

Tom

March 11, 2015

TO: Gregg BeGell, P.E.
County of Los Angeles Department of Public Works, Project Management Division II
900 South Fremont Avenue, 5th Floor Alhambra, CA 91803
gbegell@dpw.lacounty.gov

FROM: Dr. Tom Williams, Sr. Techn. Advisor
Citizens Coalition for A Safe Community
Sierra Club, Angeles Chapter, Water Committee

Subject: Enhanced Watershed Management Plan
RE: Comments on Programmatic Draft EIR
Specific Comments #2/4, 03/11-13-16/15.

SAME as 03/09/15
Following provides a brief review of the CEQA/P-DEIR (PEIR) documents of almost 70MB/1000 pages. We thank the LACo Department of Public Works and Flood Control District for this opportunity to review and comment on the PEIR and greatly appreciate the deadline extension for doing such. I will be submitting detailed comments during 03/09-03/16, and these overall comments on 03/09 & 16/15.

Overall review is that the document(s) are inadequate, incomplete, inaccessibility for the general educated public due to the volume, technical character, overly-broad statements, lack of documentation and support of statements, and lack of consistency of terms and usage,

The proposed Program does not provide a plan for tiered project CEQA considerations by the other permittees nor the County itself. No plan for the Program or the projects has been established for the Enhanced Watershed Management Plan to achieve and comply with the LA Regional Water Quality Control Board's permit requirements. A program may be more generalized but still must provide a plan of actions for both the lead and responsible agencies.

The Program does not provide even the requirements, process, and procedures for subsequent CEQA compliance by other permittees and some projection as to whether EIRs, MNDs, ND, or CE will be used to tier down from this P-DEIR/P-FEIR. Conditions for Program Compliance by tiered projects have not been listed or even referenced other than some ill-defined listing of BMPs.

No current listing of all planned and funded Projects has been provided and incorporated into a scheduled and quantified plan for submission in June.

Although research has been underway for five-plus years, the EWMP and this EIR does not use nor even reference use of computerized modeling of the appropriate basins (Ballona Creek, Upper LA River, Middle LA River and Arroyo Seco, Lower LA River and San Gabriel River, and LA River Mouth/Estuary-Dominguez Channel) although the federal agencies (BLM, USGS, ACoE, etc.) and perhaps local agencies (some permittees and the Water Board) have some local or watershed models . Without a model and its components, the impacts and their significance of detention, retention, recharge, and flood protection cannot be assessed nor mitigated adequately or completely.

Three goals are provided but no objectives (sub-tiered from goals) are provided with/without defined schedules and other quantitative parameters for program monitoring. Confusion is introduced in later text when both flood control and water supply "augmentation" are also introduced as "goals" and as "objectives".

Specific goals are only to meet the MS4 Permit requirements and related water quality conditions and to meet them in a "Cost-Effectiveness" manner. However, costs, financial support, revenue, capital bonding, or economic effectiveness or efficiency are not provided, and thereby achievement of the cost effectiveness cannot be judged nor compared and must presumed by submission of any proposed project.

Growth inducement is mentioned primarily with regard to direct housing construction and employment and incomes while dismissing potential effectts of recharged (diverted storm flows) water supplies.

Additional benefits primarily for flood protection are mentioned in some statements while it is not supported by any text or analyses under water resources. No assessment of beneficial and adverse effects are provided for raising base flow levels from program-augmented/diverted-stormwater groundwater resources and their effects upon subsequent pollutant concentrations and flood flows.

I am retired from 30 years in water and environmental resources with Parson Corp., Pasadena and URS San Francisco and over 10 years with Dubai (UAE) government and local water and environmental companies. I have prepared sections and entire documents for more than 300 EIRs, EISs, and EAs worldwide for local agencies, cities, counties, states, federal, and international agencies and organizations and have reviewed more than 100 additional assessments. During work for URS, I was involved in the development and environmental considerations for the 1970s EPA's Santa Ana and Santa Marguerita/San Luis Rey basins plans. My reviews have included the LACity's Recycled Water Management Plan and Stormwater Capture Management Plan, and I am currently vice chair of the LA City's Floodplain Management Plan.

Dr. Tom Williams

NEW - NOT INCLUDING THOSE OF 03/09/15

EWMP - SPECIFIC COMMENTS
Comments, recommendations, and additions are presented in **Bolded *Italics***
PEIR text specific to the comments are presented in plain text as was in the PEIR. Some specifically relevant PEIR text may be **Bold Underlined**.

ES-2/2 The EWMPs **will** identify **potential and priority** **structural and non-structural** Best Management Practices (BMPs) within the region's stormwater collection system to improve runoff water quality.
Potential and priority BMPs are referred to but are not adequately related to the EWMPs and the EWMP/PEIR and as indicated herein they ARE BEING developed, they are not developed. The EWMP and PEIR are not definitive at even a programmatic or conceptual deign level.

ES-2/5 A few of the BMPs are currently **well defined** but most **are yet to be fully developed** under the EWMPs....priority BMPs...detailed in each of the EWMPs; these **are being developed in parallel with the PEIR**....describes the details **that are available** for each of the EWMPs currently...by the EWMP working groups.
1-3/3 A set of **priority BMPs** will be detailed in each of the EWMPs; these are being developed in parallel with the PEIR. The PEIR describes the details that are available for each of the EWMPs currently under preparation by the EWMP working groups.
No definition of "Fully" or "Well" is provided for the PEIR and as they are being developed at the same time as this PEIR their entire discussion is so general as to render assessment impossible and open to any combination of current or future "projects" and BMPs as desired by the agencies. No reliable discretionary decision can be made and funded based on the PEIR.

1-1/3 The MS4 Permit gives Permittees the option of implementing an innovative approach to permit compliance through development of an Enhanced Watershed Management Program (EWMP)....**will identify potential and priority structural and non-structural Best Management Practices (BMPs)** within the region's stormwater collection system to improve runoff water quality. The LACFCD, along with participating Permittees, has opted to exercise this option and has submitted to the LARWQCB 12 separate Notices of Intent (NOIs) for the development of EWMPs within 12 distinct watershed groups...Implementation of the EMWPs would be the responsibility of each Permittee and would occur following approval of the EWMPs by the LARWQCB.
BMPs, groups of BMPs, and Projects are not defined at any engineering levels so as to determine cost-effectiveness, capabilities to achieve any project/program goal involving water quality or flows and their effects and impacts.

1-3/3 The EWMPs will identify **management strategies** including **hundreds of structural Best Management Practices** (BMPs) that **may be** designed and implemented by the Permittees to meet **permit compliance objectives** ***[Only one of the Program objectives]***.
Clearly indicates that this RAA model for water quality is not completed prior to its assessment and that the assessment cannot adequately assure that even the water quality goals and objectives cannot be realized.
Water quality and flow models and proposed BMP depend on diversion or reduction of flows during both dry- and wet-weather flows, and therefore the RAA must be based on a hyrdologic/hydraulic model which has not bee referenced or mentioned.
This EWMP and PEIR must provide the programmatic management strategy guidelines for those of the tiered-down EWMPs-strategies and related CEQA documents. Use of the conditional: "may be" voids following verbs and leaves the statement as irrelevant to the Program and Project EIRs.

1-4/3 The EWMPs are to include a discussion of the environmental documents, assessments, and permitting required for the implementation of the **priority projects**. The PEIR can provide a basis for this discussion. The use of the PEIR in the development and implementation of the EWMPs is further discussed in this chapter in the *Purpose of the Program Environmental Impact Report*.

Priority BMPs were discussed but have not been distinguished from "Priority Projects".

The PEIR does not discuss the process of tiering to projects or to specific BMPs and whether Mitigated Negative Declarations will be tiered down from this PEIR or whether the project must require tiered/focused EIRs for full and adequate CEQA compliance.

1-7/1

- Other Receiving Water Considerations (**second category**):
  - The second highest priority shall be considered controlling pollutants for which data indicate impairment of exceedances of receiving water limitations and the findings from the source assessment implicates discharges from the MS4.

As no hydrologic model for flows and concentrations has been provided even for the TMDL constituents, references to secondary pollutants appears totally inappropriate and purposefully attempts to elevate the credibility of compliance with the TMDL, which has not been achieved.

1-7/2 The **EWMP prioritization process** includes
identifying the priority pollutants and...
schedule for implementing BMPs to meet the following criteria:

- For pollutants...same class as TMDLs,...consider these pollutants within...same time frame as...TMDLs.
- For...303(d) list...EWMPs develop a schedule to address these pollutants **as soon as possible** with milestones.

Priority pollutants have already been prioritized and identified, and the prioritization process has not been described although referred to, and no schedule for prioritization, definition of priority projects or priority BMPs has been provided.

Prioritization process and schedule are rendered totally inadequate when modified by whenever "possible". MMRPlan must include a full and scheduled prioritization process for ALL EWMPs.

1-8/2 The RAA **is being performed** as part of the preparation of the EWMPs, and **in parallel with...this PEIR.** The RAA...primary goal of the EWMP...meet the **water quality goals**. The **modeling being performed**...will determine...number and distribution of the BMP types and specific projects identified in the EWMP Work Plans will meet the water quality goals. This PEIR will assess the types of BMPs that **may be implemented** to meet **these** ***WATER QUALITY*** **goals**.

Management strategies (MSs) presumably are different from the BMPs and the EWMPs which they maybe be parts of, but MSs are not defined nor associated with BMPs and EWMPs.

The RAA and a supporting/integrated Hydrologic Model must be provided in a final form to be incorporated, not be performed in parallel, with full integration/incorporation. The MMRPlan must include a final RAA.

1-9/1 The LACFCD will **consider** the information presented in this PEIR, along with **other factors**, **in the development and implementation of the EWMPs**. The EWMPs are to include a discussion of the environmental documents, assessments and permitting required for the implementation of the **priority projects**. The PEIR **can provide** a basis for this discussion.

1-10/2 The EWMPs are to include a discussion of the environmental documents, assessments, and permitting required for the implementation of the **priority projects**. *Repeated*

Consider and other factors are not defined and as such allow the entire PEIR process to be set-aside.

The PEIR does not fully define the roles and participations of the LACFCD in the development of tiered EWMPs and their CEQA documents.

Again "priority projects" are mentioned and not defined with regard to "priority and potential BMPs."

CEQA texts must recognize differences between "can/could provide" and "will/would provide" and require clarity as to what will occur in the teiring of projects and CEQA documents.

1-11/1 Maps identifying **potential and priority BMP locations** are provided in Chapter 2...with the overall EWMP **watershed characteristics** and **BMP implementation strategy**.

No definition or specificity of potential and the subgroup priority BMPs and locations nor details are provided within the tables and generalized maps. No watershed characteristics are provided regarding runoff coefficients, design rainfall amounts, times of concentrations, are estimated flow levels are provided for any watershed, not even a ranking of highest to lowest flows or highest-lowest dry- and wet weather water qualities.

1-11/1 The PEIR **focuses** its assessment on **construction and operation** of these potential and priority BMPs to be installed throughout the watersheds—but primarily within urbanized areas where the **pollutant loading is greatest** and where these **BMPs can be most cost-effective** in **meeting water quality goals**.

No focused information is given regarding the BMP operations and their effectiveness in removing pollutants and meeting water quality goals (not objectives).

No information is provided regarding the degree of urbanization for each watershed, nor the assumed "loadings" being greater, median, or least.

BMPs are presumed as cost effective without documentation and analyses as to pollutant - present/removed per 100 acft or any other quantified parameter and as to achievement of current reductions down to desired goals.

2-5/1 Additional information and figures on the location and distribution of potential and priority BMPs based on available data at the time of publication of this PEIR, are presented in Section 2.5*, EWMP Watershed Characteristics and BMP Implementation Strategies*.

.

2-15/2 Source Control BMPs. Source control structural BMPs are commercial products designed to treat runoff in highly urbanized environments. Mechanical separation, or more complex physicochemical processes, provides separation of gross solids and other pollutants...**designed to sequester hydrocarbons and other pollutants**.

Residual pollutants and their disposition is not mentioned nor provided any where in the PEIR. No discussion is included regarding the soil sequestering of hydrocarbons, metals, and other pollutants in the ground materials (especially in/on clays). No estimate is provided as to anticipated sequestering per year and probable long-term removal of soil materrials before they achieve "hazardous" levels.

2-16/2 Specific examples of **distributed** BMPs that are in various stages of planning and implementation and part of a possible EWMP are presented in **Table 2-3**. The locations of these examples of planned **distributed** BMPs are shown in **Figure 2-2**. Table 2-3 presents the locations, project description, and key elements of the **distributed** BMPs to further illustrate these types of structural BMPs that **may be part** of **an** EWMP. Additional information and figures on the location and distribution of potential and priority BMPs, where data ***are***~~is~~ available, are presented in Section 2.5, *EWMP Watershed Characteristics and BMP Implementation Strategies*.

Centralied and Regional BMP discussions repetitive from 2-16/2 except as highlighted.

2-28/2 ...**centralized** BMPs...presented in **Table 2-4**. The locations of these examples of planned and implemented **centralized** BMP...in **Figure 2-3**.
Table 2-4...the **centralized** BMPs...structural BMPs that **are part** of **the** EWMP....of potential and priority BMPs, where data ***are***~~is~~ available,...*BMP Implementation Strategies*.

2-35/1 ...**regional** BMPs...of planning ***and implementation and*** **that are part** of the EWMP are presented in **Table 2-5.** The locations of these examples of **regional** BMPs are shown in **Figure 2-5**. Table 2-5...of the **regional** BMPs to further illustrate these types of structural BMPs **that are concepts being developed through the EWMP process**. ...of potential and priority BMPs, where data ***are***~~is~~ available...*BMP Implementation Strategies*.

The complex repetitive wording and slight but several differences in these texts cause considerable confusion for the public review and participation in this CEQA process. Without clear table-ed presentation meaning and clarity are lost, rending these important issues inadequately treated in this PEIR.

2-40/1 Summarized below are the general characteristics of the watersheds within the **EWMP Groups** and the overall strategies for BMP implementation...twelve **EWMPs** are consolidated to **six watershed areas**...summary provides additional detail on the distribution and location of **potential and priority BMPs**, **where data is available**,...for each EWMP and show the location and distribution of **planned and priority regional/centralized BMPs** for which **data are available at the time of publication of this PEIR**. The **priority BMPs**...subset of the potential BMPs that have undergone a site review and project evaluation that has identified these BMPs as a priority. These **priority projects** are shown based upon **available data at the time of publication of this PEIR**.

EWMP groups, EWMPs, and watershed areas are inadequately associated and defined; presumably 12 EWMPs may be associated into 6 EWMP Groups based on watershed associations.

Similarly designations as to:

Potential, Planned, and Priority BMPs - Priority BMPs are part of Potential BMPs

Regional and centralized BMPs - excluding distributed

Priority projects or BMPs

require clear definitions and ordering in order to have adequate clarity for public review.

2-40/1 Appendix G provides the location and general description of the **priority BMPs**...**Distributed BMPs** are planned to be implemented throughout the urbanized areas of each EWMP.
2-43/3 ...Figures 2-5 through 2-16, each of the **EWMPs**...wide distribution of BMPs to achieve permit compliance. **Appendix G** provides the locations and general descriptions of the **priority BMPs** (**where data is available)**,...**Priority Projects** are **projects that have been identified through the EWMP process** as **targeted for implementation** within the first years following the EWMPs approval by the LARWQCB. **Identification of Priority Projects is underway** and **has not been completed by all EWMPs at this time**. ***[For any??]...*****PEIR is being prepared in parallel to the EWMPs**. **Priority Projects** ***[proper noun]*** **will be defined** in all the EWMPs **to be submitted for public comment in June 2015**. Priority Projects that have been identified at this time through the EWMP process are shown on the following figures. **Priority Projects may be regional, centralized or distributed type BMPs**. For **potential projects**...location of potential regional and centralized **BMPs** are shown. Distributed BMP will be distributed throughout the urbanized areas and are not shown on the following figures
...2-44/1...

No "general description" is provided for the program, projects, and BMPs, as summarized below, only listings and figures found in the Vol.1. Apdx. G EWMP Proposed BMP and Priority Project Data and Figures A-L, pages unnumbered items renders the entire appendix confusing and un-reviewable for the general public and the only "General Description" is APN numbers.

2-57/1 **2.6 EWMP BMP Implementation Schedule** The EWMPs that are **being prepared in parallel** to the PEIR will provide a **timeline for the implementation** of the BMPs ***[as define in MS4/TMDLs]***...**priority BMPs**...that have undergone a site review and project evaluation and...based on available data at the time of publication of this PEIR...**Implementation of priority BMPs will begin following approval of the EWMPs by the LARWQCB...depend on the approval of the EWMPs, *1)* further environmental assessment, *2)* permitting, and *3)* availability of funding sources**.
The EWMPs will be submitted to the LARWQCB in June 2015.

The entire process of LACo-EWMP, EWMPs, BMPs, etc. and implementation of "Priority BMPs" have not been fully provided nor adequately documented.

As indicated above, a fully scheduled/timed EWMP/EWMPs implementation schedule for all BMP and for further - annual - updating must be included in the Final PEIR perhaps as part of the MMRPlan for PEIR and within each EWMPs' CEQA documents.

Statements as to the submittal dates in less than three months clearly indicates that undue pressure is being attempted in order to force the CEQA and project development processes through without due consideration as to the completeness and adequacy of project, program, and CEQA documents and processes.

2-57/4 Each EWMP will **define** priority projects, and **installation** of these projects will move forward depending on the **availability of funding** and **outcome of further project-specific CEQA review**. Funding options for implementing agencies would include obtaining **grant funds, low-interest loans, tax-based general funds, or special assessments**. Each **jurisdiction** will be responsible for securing the necessary funds over time to achieve permit compliance.

References to but absence of information regarding funding, funds, and other related economic/financial elements and their pivotal importance to any "Project" renders continued discussion of projects inadequate and incomplete and subject to major changes of any PEIR referenced "project between now and July 1, 2015 and thereafter.

Introduction of "jurisdiction" renders the discussion meaningless, incomplete and inadequate.

3.14-15/5 *Water Supply* Impact 3.14-3: The proposed program ***[=EWMP]*** **could require new or expanded water supply resources or entitlements** or require or result in the construction...could cause significant environmental effects.

Given the general purpose of the EWMP is to recharge groundwater in a urban-suburban context where groundwater is used for water supply, such "conditional-could" appears totally inappropriate and must be technically defined/determined in order to fully and adequately discussed environmental, cost-effectiveness, and compliance with discharge water quality limits over the life of the projects.

6-2/5 **6.2 Review of Proposed Program Goals and Objectives**

The alternatives presented in this chapter were analyzed for their abilities to reduce significant program impacts and meet the objectives of the proposed program, which are:

- To **collaborate** among agencies (Permittee jurisdictions) across the watershed **to promote more cost-effective** and multi-beneficial water quality improvement projects to **comply with the Municipal Separate Storm Sewer System (MS4) Permit.**
- To develop watershed-wide Enhanced Watershed Management Programs (EWMPs) that would, once implemented, remove or reduce pollutants from dry- and wet-weather urban runoff in a **cost-effective** manner.
- To **reduce the impact** of stormwater and non-stormwater on receiving water quality.

Discussion starts with a title of Goals and Objectives then switches to objectives. These are goals not objectives as they are not quantified nor scheduled in any manner.

Since two "objectives" refer to "cost-effectiveness" and no costs, revenues, economics, or financial information or assessment are not provided, all discussions of the achievements of goals and objectives becomes mute and the PEIR totally incomplete with regard to the "project" or "program" and its alternatives.

Similarly reference to collaboration becomes mute as all related agencies and those in the county have already collaborated and therefore any "collaboration" discussion must be quantified which they have not been.

As to compliance with permit conditions and reduction of impacts are only presumed without documentation which is under parallel preparation for June 2015 and without any hydrological modeling or calculations to support such contentions and comparisons amongst alternatives.

The entire Alternatives section is incomplete and totally inadequate.

6-3/4 The Lead Agency **conducted an alternatives screening process** to identify **feasible** alternatives to the proposed program. The screening process for identifying viable alternatives included consideration of the following criteria:

- Ability to meet the program **objectives** ***[presumes meet objectives or not considered]***
- Ability to reduce significant environmental effects of the proposed program
- **Economic** and engineering feasibility ***[presumes to meet economic feasibility parameters and criteria not presents]***

Introduction of "Lead Agency" at this point would imply some agencies other than LACoDPW, perhaps LACoFCD (??); while reference to an "alternative screening process" indicates some formal process rather than that documented in the PEIR.

Discussion of environmental effects or water-related compliance of flow and quality for a Water Resources project or program without a quantified and presumably computerized complex model for each watershed element is totally inadequate and incomplete at any level.

Introduction of "feasible" and economics without definitions and the objectives which 2/3 include costs and therefore economics strongly distorts any screening or comparisons toward costs, economics, and financial for which no information is provided or believed to be even remotely available for the PEIR, the EWMP, and most if not all of the EWMPs.

Such inadequacies and incompleteness renders Sec.6 irrelevant to the CEQA process with regard to the project, any alternatives, and any designation as to an "Environmentally Superior Alternative" compared to an "economically superior alternative".

Presumptions and unsupported statement are not with the goals of CEQA to provide a complete, adequate, objective, and quantified review and assessment of a program's or project's effects and appropriate mitigation and alternatives to such.

6-3/5 Based on these **criteria**, the **Lead Agency** has identified the following alternatives:

Introduction of "Lead Agency" at this point would imply some agencies other than LACoDPW, perhaps LACoFCD (??); while reference to an "alternative screening process" indicates some formal process rather than that documented in the PEIR.

Identifications are not supported in comparisons primarily with regard to collaboration and presumed economies of scale and cost-effectiveness.

6-9/9 **Ability to Meet Program Objectives**

The Distributed Structural BMPs Only Program Alternative would meet the **objectives** of the proposed program to collaborate among agencies to promote more cost-effective and multibeneficial water quality improvement projects. However, because distributed structural BMPs **tend to be smaller** in nature and typically are distributed widely throughout the watershed, **more BMPs** may be necessary to meet water quality objectives in the MS4 Permit. The **ability to meet** 6-10/1 the water quality objectives would be **less certain** under this alternative.

This statement indicates that distributed BMPs are cost-effective for the program although they are smaller (may disagreed based on economies of scale and information provided by LACiDWP).

"Less certain" is not defined nor is the statement supported; 100 times more sites may be sufficient and available but no presumption can be supported either way based on the PEIR.

6-12/3 **6.6 Alternatives Suggested in Scoping**

...comment letter...suggested that the PEIR include an assessment of several funding mechanism alternatives, including: Single Parcel Fee Assessment, Parcel Area Fee Assessment, Hybrid Parcel Area Fee Assessment, Zero Discharge Assessment, and Large Parcel Assessment. These suggested alternatives **would not lessen any significant environmental impacts of the Program** and were therefore not considered in this PEIR. Although CEQA allows for discussion of economic impacts and project costs as measures of feasibility, the funding mechanisms required to implement projects are **generally not susceptible to environmental analysis**.

As the program objectives and criteria for alternatives both include economics and costs and as all BMPs require both capital and operation and maintenance costs to be effective, a full documentation using the above mentions financing package must be incorporated into the project description and alternatives, especially those presented to the LARWQCB in June 2015.

Adequately funded projects within the ability to pay of the service population would assure continue environmental compliance and support of a wide array of mitigation measures compared to capital intensity project requiring longer term bonding and expensive project management.

Comparisons of large projects with high capital costs to program of lots of small projects with low capital costs but with higher operating costs have been alluded to in discussions of other alternatives but without any documentation.

As all publicly funded projects to be submitted to LARWQCB in June 2015 must be funded n have not been demonstrated at this time to be funded, any inclusion of projects in this program can not be assumed to have long-term funding to assure mitigation of impacts.

6-12/4 ...comment...Full Capture and Recharge of Flows Greater than 100 cfs Alternative...rejected...because of the **infeasibility** of capturing all storm flows...unrealistic, requiring most of the **developed land in the County to be accomplished**...

...suggesting full capture of **all flows less than 100 cfs**...was rejected from further consideration for the same reason...would require enormous areas of...currently developed...recharge is **only feasible** in certain areas of the County because of the poor percolation capacity of surficial soils...accumulation of **subsurface clay lenses** creates recharge barriers in **many places of the County**, making retention and recharge of large quantities of stormwater **infeasible** in these locations.

PEIR total lacks definitions for "feasibility" and "infeasiblity" as to technically, financially, administrative, or politically aspects.

As no surface or subsurface hydrologic model is available or referenced, and supporting documentation is not provided nor apparently available for either flow capture alternative dismissal.

The PEIR does not provide maps of locations with clay lenses and their extents/depths and thereby barrier effects.

6-13/Table 6-2 Ability of Project Alternatives to Meet **Project Objectives** Project Objectives

1. To Collaborate Among Agencies (Permittee Jurisdictions) Across the Watershed
To **Promote more cost-effective** and multi-beneficial water quality improvement projects
To comply with the MS4 Permit. ***[=portions of Objective 2 & 3]***

2. To develop watershed-wide EWMPs that will, once implemented, **remove or reduce pollutants from dry- and wet-weather urban runoff** ***[= Objective 1.]*** in a **cost-effective manner.**

3. To reduce the impact of stormwater and nonstormwater on receiving water quality. ***[=Objective 1.]***

Comparisons of alternatives and "abilities" of Project GOALS and objectives without cost-effectiveness and any hydrological model for wet/storm and dry/storm water flows render all as totally inadequate and incomplete.

As written, the objectives must be referred to as "Goals"; objectives must be measurable/monitorable with schedules and quantified levels of achievement, e.g., 4Qtr2016 and $100/ppm reduction.

Paige Anderson

To: Laura Rocha
Subject: RE: EWMP-PEIR Comments - Submittal 1

From: Tom Williams [mailto:ctwilliams2012@yahoo.com]
Sent: Monday, March 09, 2015 11:11 AM
To: Gregg Begell
Cc: Paul Ferrazzi; Esq. Todd T. Cardiff
Subject: Re: EWMP-PEIR Comments - Submittal 1

SORRY cancel the last attachment 4 pages of notes...
See this one ONLY

Tom

On Monday, March 9, 2015 11:01 AM, Tom Williams <ctwilliams2012@yahoo.com> wrote:

See attached MSWord Final - Submittal 1/4
Disregard File Title

Still in San Anotnio - wanted to submit 1/4 today

Thanks for the schedule - still looking for the good stuff for final next week...before I go to Bakersfield for week's training.

Dr. Tom Williams
323-528-9682

March 9, 2015

TO: Gregg BeGell, P.E.
County of Los Angeles Department of Public Works, Project Management Division II
900 South Fremont Avenue, 5th Floor Alhambra, CA 91803
gbegell@dpw.lacounty.gov

FROM: Dr. Tom Williams, Sr. Techn. Advisor
Citizens Coalition for A Safe Community
Sierra Club, Angeles Chapter, Water Committee

Subject: Enhanced Watershed Management Plan
RE: Comments on Programmatic Draft EIR
Specific Comments #1/4, 03/09-11-13-16/15.

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The Program does not provide even the requirements, process, and procedures for subsequent CEQA compliance by other permittees and some projection as to whether EIRs, MNDs, ND, or CE will be used to tier down from this P-DEIR/P-FEIR. Conditions for Program Compliance by tiered projects have not been listed or even referenced other than some ill-defined listing of BMPs.

No current listing of all planned and funded Projects has been provided and incorporated into a scheduled and quantified plan for submission in June.

Although research has been underway for five-plus years, the EWMP and this EIR does not use nor even reference use of computerized modeling of the appropriate basins (Ballona Creek, Upper LA River, Middle LA River and Arroyo Seco, Lower LA River and San Gabriel River, and LA River Mouth/Estuary-Dominguez Channel) although the federal agencies (BLM, USGS, ACoE, etc.) and perhaps local agencies (some permittees and the Water Board) have some local or watershed models . Without a model and its components, the impacts and their significance of detention, retention, recharge, and flood protection cannot be assessed nor mitigated adequately or completely.

Three goals are provided but no objectives (sub-tiered from goals) are provided with/without defined schedules and other quantitative parameters for program monitoring. Confusion is introduced in later text when both flood control and water supply "augmentation" are also introduced as "goals" and as "objectives".

Specific goals are only to meet the MS4 Permit requirements and related water quality conditions and to meet them in a "Cost-Effectiveness" manner. However, costs, financial support, revenue, capital bonding, or economic effectiveness or efficiency are not provided, and thereby achievement of the cost effectiveness cannot be judged nor compared and must presumed by submission of any proposed project.

Growth inducement is mentioned primarily with regard to direct housing construction and employment and incomes while dismissing potential effectts of recharged (diverted storm flows) water supplies.

Additional benefits primarily for flood protection are mentioned in some statements while it is not supported by any text or analyses under water resources. No assessment of beneficial and adverse effects are provided for raising base flow levels from program-augmented/diverted-stormwater groundwater resources and their effects upon subsequent pollutant concentrations and flood flows.

I am retired from 30 years in water and environmental resources with Parson Corp., Pasadena and URS San Francisco and over 10 years with Dubai (UAE) government and local water and environmental companies. I have prepared sections and entire documents for more than 300 EIRs, EISs, and EAs worldwide for local agencies, cities, counties, states, federal, and international agencies and organizations and have reviewed more than 100 additional assessments. During work for URS, I was involved in the development and environmental considerations for the 1970s EPA's Santa Ana and Santa Marguerita/San Luis Rey basins plans. My reviews have included the LACity's Recycled Water Management Plan and Stormwater Capture Management Plan, and I am currently vice chair of the LA City's Floodplain Management Plan.

Dr. Tom Williams

MAJOR ISSUES:

<u>LACo Water Computer Model</u>
No model has been used or referenced

<u>Project Storm</u>
References are made to the Project Storm event of 85th-percentile for daily (24 hour) rainfall and estimated at 0.75 inches but no primary references or sources for the storm distributions are provided. Choice of this particular criterion is not described but may be related to the permit requirements without any further considerations or its appropriateness. Provide references and demonstration that the storm precipitation applies to the entire southern LACo or where it does apply.

<u>Increased Water Supply and Growth Inducements</u>
Many statements of the use of diverted stormwater and other waters for recharge is not carried through to the ultimate effects of such recharge on base flow (exfiltration) from shallow groundwater into channels or on the available safe yields for potable water supplies. The entire PEIR is incomplete and totally inadequate for the discussion of the volumes, recharge areas, and pumping areas and uses for increased local water supplies either as a means of substitution for imported with the same population or to assure adequate total supplies for increasing or re-distributed populations.

<u>Environmental Justice for Water Supply Sources</u>
Also as an environmental justice issue, the PEIR does not address the distribution of recharge areas for both local stormwater and treated recycled waters (also part of LACo and LACity plans and projects), compared to those areas receiving the higher water quality and lower total delivered costs of imported waters. As both areas would presumably pay the same water supply rates, they must get the same quality water (e.g., TDS, nitrates, metals, etc.), else wise an environmental justice issue appears to exist. Provide the expected water quality and any treatment related to recharged storm and treated wastewater and to imported water (e.g., northern San Fernando Valley-Santa Clarita vs Torrance-Compton-Whittier.

<u>Public Health</u>
Retention, detention, and recharge facilities create good habitats for mosquitoes and other vectors but the PEIR mention mosquito and other water related vectors four times. No discussion is presented regarding the public health issues for water- and water-logged soil related habitats for disease vectors, especially give the concerns regarding West Nile and Dengue Fever vectors. Having suffered malaria, the reviewer may be overly concerned but some assessment and mitigation measures must be included. As a long term operations and maintenance issue, ongoing revenue sources and appropriate O&M funding and activities are vital to any assessment of water related projects in a dense board urban environment.

Fungi-Mold (Valley Fever) are/is would be expected to expand especially in those areas with high soil moisture and perhaps near surface mounded groundwater.

Accumulations of metals and hydrocarbons may occur due to treatment by soil-based systems and stabilization of metals in project basin soils and vegetation.
Watershed health is mentioned but only as this health relates to the presence or removal of contaminants from the dry-/wet-weather runoffs.
No discussion is presented regarding any stormwater-related diseases.

<u>Operations and Maintenance and Revenues</u>
Proposed facilities would be expected to have high manual maintenance.
Coordination and compliance with scheduled maintenance must be incorporated into a thorough scheduled and quantified Mitigation Monitoring and Reporting Plan/Program for all facilities and operations.

<u>Revenues and Stormwater Fees</u>
Sources of revenues are not provided to support capital construction and replacement, financing, and long term operations and maintenance.
No provision is made for revenues based on per-parcel or per-area assessments and fees.
No assignment and delineations are made for benefits and effects/risks to the public and land owners for water quality, flood control, or recharged water supplies.
No comparisons are offered to compare abilities for overall or percentile economic groups to pay for both owners and residents.

<u>Revenues from Groundwater Production</u>
Groundwater resources will be increased but it is unknown as to the ownership of the recharged water and to the process of recovery of increased local groundwater resources beyond the immediate vicinity of the recharge areas.

<u>Flood Control, Protection, Diversion, and Other Related Issues</u>
Flood protection, control, and management are mentioned as a goal/objective of the program but without delineation and definition, and significance to other related concerns (e.g., Growth inducement)

<u>Effects of Increased Base Flow (levels and flows)</u>
No discussion (Two mentions of base flows in all 504 pages) is presented as to both the beneficial and detrimental effects of higher base flow volumes and levels resulting indirectly from rising/mounding groundwater resources downslope of stormwater and recycled water recharge basins/projects.
Increased low flow volumes for pollution dilution of existing and other permitted discharges are not considered.
Increased low flow levels for increased total flood level and expanded flood area are not considered.

EWMP - SPECIFIC COMMENTS
Comments, recommendations, and additions are presented in **Bolded *Italics***
PEIR text specific to the comments are presented in plain text as was in the PEIR. Some specifically relevant PEIR text may be **Bold Underlined**.

Apdx. A, NOP, p.9/4 **4.1.1 Regional Structural BMPs** "Regional EWMP projects" are defined by the MS4 Permit as multi-benefit regional projects that, wherever feasible, retain all non-stormwater runoff and all **stormwater runoff** from the **85th percentile, 24-hour storm event** for the contributing drainage area, while also achieving other benefits such as flood control and/or water supply.

The PEIR states consistently that the project storm is the 85th percentile/24-hour/approximately 0.75inch (some up to 1 inch). However no documentation/derivation of the 24 hr storm analyses has been provided. The 24-hour storm event is not equal to a daily storm event (any 24-hr vs a 12:01:01am-11:59:59pm) and can be quite different based on moving 24-hour totals and frequency compared to that for calendar day.

Similarly the runoff from a 0.75inch rainfall would not be expected to be the same as the amount of rain falling on the ground (467gals/1000sqft vs 0.9x467gals= say 420gals) but no provision is made regarding runoff coefficients..

The PEIR is inadequate with regard to the absence of documentation/analyses demonstrating the total distribution from say 50%-100% of 24hr storm event. Furthermore no assumed runoff coefficient(s) has been provided for estimating the likely detention capacities required.

ES-3/5 The LACFCD has a **vested interest in increasing opportunities** for stormwater capture and groundwater recharge as a means of assisting **local water supply augmentation**.

Direct reference to increased water supply without delineation as to where augmentation and local supplies may be augmented.

Without removal of existing facilities in order to reduce existing water supply flow capacities, increased local sources can increase and must be considered as increased total water supply and appropriate assessment of growth inducement.

Local augmentation, in general, would be at lower elevations than imported water supplies would serve due to the State Water Project and Colorado River Project source elevations of imported supplies and those of most probable recharge areas and down-flow groundwater wells. Service areas of recharged stormwater and recycled waters are generally of lower elevations and of different economic status from those at higher elevations and served by imported water supplies..

p.1-3/23 ...timeline...in the MS4 Permit requires that Permittees submit the ***12*** EWMP***s*** to the LARWQCB by June 28, 2015, in order to be in compliance with the permit conditions.

Should have started earlier. Mid March - Late June, 105 days, is a very tight, aggressive schedule and should have been better scheduled and implemented. Public participation should not be sacrificed for untimely agency coordination. Some issues may be resolved through tiering and MMRP in the Final PEIR.

LACo EWMP vs 12 additional EWMPs in 90 days following LACo BOS approval and certification may be in jeopardy.

12 EWMPs are required and presumably requires local jurisdictions to have discretionary actions by city councils. Presumably the cities will reference the LACo EWMP-PEIR as CEQA compliance but must have the project specific and local BMP EIRs/MNDs processed to be in compliance with this PEIR and CEQA. As stated herein this PEIR, the PEIR does not complete the CEQA compliance for the 12 EWMPs and their CEQA considerations.

p.1-3/2 As a result, the LACFCD has prepared this Program Environmental Impact Report (PEIR) in compliance with the California Environmental Quality Act (CEQA) to provide the public and the responsible and trustee agencies with information about the potential effects on the local and regional environment associated with implementation of the ***12*** **EWMPs**.

Relationship and contents of the master PEIR and tiered EIRs/MNDs and other CEQA documents are not clearly provided. The statement and others promote confusion between the EWMP and

the EWMPs and between the PEIR and CEQA considerations for the 12 EWMPs to be tiered off of the PEIR and documented separately.

p.1-3/2 The LACFCD will submit the PEIR to its governing body, the Los Angeles County Board of Supervisors, for approval prior to submittal of the EWMPs. The **EWMPs** will be submitted by each EWMP group to the LARWQCB.

Discretionary actions by the BOS do not substitute for the discretionary actions by the 12 jurisdictions of the "EWMP Groups" (cities) to approve the 12 local EWMPs and their incorporate BMP projects.

What is an "EWMP Group"? Presumably one or more cities who will agree on an EWMP and vote to approve the EWMP before submission the the LARWCBrd. CEQA requires environmental considerations other than referencing this PEIR for the 12 local EWMPs.

p.1-3/3 **This PEIR describes and evaluates each of the EWMPs being prepared by the Permittees collectively.**

This statement suggests that this PEIR covers all EWMPs prepared by an "EWMP Groups" and that they have been prepared and incorporated herein. No documentation is provided as to whether cities approved and authorized any local EWMP and its inclusion herein. Presumably one or more cities who will agree on an EWMP and vote to approve the EWMP before submission the the LACo for inclusion in the PEIR and submission to the LARWCBrd. CEQA requires environmental considerations of the local discretionary actions other than referencing this PEIR for the 12 local EWMPs.

p.1-3/3 The discretionary action prompting the need for CEQA compliance is the **submittal** of the completed EWMPs to the LARWQCB.

Submission is not a discretionary action but a ministerial action on the part of a department following the discretionary action of a Board of Supervisors, city council, or other public elected body to approve the local EWMP and its shcedule and funding.

p.1-3/3 A few of the BMPs ***[=Projects]*** are currently well defined but most are yet to be fully developed under the ***12 local*** EWMPs. A set of **priority BMPs *[=Projects]*** will be detailed in each of the EWMPs; these are **being developed** in parallel with the PEIR. The PEIR describes the **details that are available** for each of the ***12 local*** EWMPs **currently under preparation** by the **EWMP working groups**.

Confused and demonstrates that this PEIR may be incorporating projects, BMPs (if different), some portions of the other 12 EWMPs, and the LACo EWMP which has not been approved by the LACo BOS.

Is it EWMP group, EWMP Working Group, or Permittees? Are they the same or different? Have any been approved and funded by a council in a discretionary action? Clarification is needed.

p.1-4/par.3 The EWMPs...discussion of the environmental documents, assessments, and permitting required for the implementation of the **priority projects**. The PEIR **can provide** a basis for this discussion...PEIR in the development and implementation of the EWMPs is further discussed in this chapter in the *Purpose of the Program Environmental Impact Report*.

A "priority project(s)" are not defined and therefore the statement is rendered meaningless.

Throughout the referenced section 1.3 (p.1-9 - 1-10), statements are made as to "can" rather "shall" and thereby the PEIR does not establish a procedure for the tiered environmental documents shall assess their environmental impacts and provide mitigation.

The PEIR must provide a procedural context for most if not all elements for the Project EIR/MND by the local agencies as the LACo shall be a responsible if not a lead agency for each Project. As provided the PEIR is incomplete and inadequate for establishing an expected or required procedure and process for preparation of a project specific CEQA document.

1-5/3 **Watershed Management Programs** The MS4 Permit Section VI.C (page 47) includes provisions that allow Permittees to **voluntarily choose to implement** a Watershed Management Program (WMP). The **purpose of this program** is to “allow Permittees the flexibility to develop Watershed Management Programs to implement the requirements of [the] Order on a watershed scale through customized strategies, control measures, and BMPs." The permit states that "participation in a Watershed Management Program is **voluntary** and allows a Permittee to address the **highest watershed priorities**."

CEQA is not voluntary and the "Program" must provide the structure for the tiered CEQA process to operate and satisfy CEQA for each project or tiered PEIR.

The permittee is not the department but the City or County. Provide a listing of all councils which have approved development and submission of an EWMP to the Regional Board.

As a program, provide all documentation as to whether the subsidiary agencies have committed to the Watershed program or whether they have voluntarily chosen not to participate.

No priorities are provided - references are made to conservation priorities, pollutant priorities, renewable priorities water quality priorities, and watershed priorities (and highest watershed pr...), but only some water quality priorities are discussed.

1-9/3 Purpose of the Program Environmental Impact Report The LACFCD determined that implementation of the **12 EWMPs** could have a significant effect on the environment and therefore required preparation of a PEIR...-

to provide...information about...significant environmental effects of the **proposed program**,
to identify possible ways to minimize potentially significant effects ***[Mitigation measures]***, and
to describe and evaluate feasible alternatives to the proposed program ***[Alternatives]***.

Use of EWMP, EWMPs, and Program cause confusion as to what is what and what will be presented in each.

1-9/4 This document has been prepared as a PEIR...one type of environmental review document that may be used to evaluate a plan or program that has multiple components (projects and actions) or to address a series of actions that are related in any of the following ways:

Geographically. As **logical parts in the chain of contemplated actions**.

- ...issuance of rules, regulations, plans, or other general criteria to govern the conduct of a continuing program.
- As **individual activities** carried out under the same authorizing statutory or regulatory authority and having **generally similar environmental effects** that can be **mitigated in similar ways**.

No logical chain has been graphically depicted/modeled and arranged to demonstrate and monitor progress to and through the permit and compliance process for such a wide variety and mammoth scale of the projects and their components (e.g., diversion-transmission-spreading-recharging-production).

1-11/2 Scoping Period ...A Notice of Preparation (NOP)...was circulated to...**other interested parties**...discussed the purpose of the EWMPs and their management strategies, identified the EWMP Study Areas, and provided a brief and preliminary list of environmental issue areas that **could be impacted**.

As indicated in Scoping Comments, the PEIR does not reflect comments provided during the Scoping period and for the Initial Study and Notice.

-Socio-economics and revenue sources to assure operations and maintenance,
- Environmental justice
- Water models or Other Quantitative Estimates/Flowcharts

1-18/2 **Chapter 1.0, *Introduction*.** This chapter discusses...the background and **purpose** of the PEIR for the proposed program.

The PEIR does not provide the objective, full disclosure, complete, and adequate purposes of the EWMP, and therefore the purposes of the PEIR cannot be satisfied.

HYDROLOGICAL MODEL References to Hydrological Model

Apdx A NOP 8/5 In accordance with the provisions of the MS4 permit, the work plans describe the following steps to EWMP development:

2. Characterization of existing and potential control measures within the watershed
3. Addressing the approach to incorporate **reasonable assurance analysis (RAA)** in the **optimization of watershed control measures**

1-8/1 **Reasonable Assurance Analysis ...**(RAA) is...to demonstrate “that the activities and control measures will achieve applicable **water-quality-based effluent limitations** and/or RWLs with compliance deadlines...”...as a **quantitative demonstration** that **control measures (such as BMPs) will be effective**, the RAA also provides an **opportunity to use a modeling process** to identify and prioritize potential control measures. The RAA for each EWMP uses a **model to simulate a critical storm (design storm)** and...achieve compliance with the TMDLs and water-quality-based effluent limitations.

As indicated in the PEIR text and appendices, the PEIR lacks any quantified Hydrologic Model for watershed controls and has focused the only "modeling" on meeting the water quality requirements of the MS4 at discharges, not watershed controls.

3.2 Air Resources and 3.6 GHGs

These sections reference many air-related models and modeled/modeling results.

Apdx A. Comment Letter to the LACFCD: Draft PEIR p.16/Item 56: Foothill Municipal Water District Recycled Water Project ... Cal Poly Pomona has partnered with FMWD and **is developing a model** that will also capture stormwater for recharge using the same infiltration galleries.

pdf-254 Comments - Model ...**no cost/benefit analysis** or any **modeling** completed to substantiate the “cost-effectiveness” of these methods. Please identify any additional documentation supporting this claim. Enrique Huerta Downey, CA ehuerta28@gmail.com

Scoping Comment Letter indicated that minor agencies/permittees may have conducted some form of hydrological model but not the EWMP or the PEIR.

Issue-Water Supply

p.2-1/par.3 This Project Description describes types of BMPs...to illustrate the function, type of construction, and general locations of the BMP types for the **purpose** of the environmental assessment of the BMP types identified in the EWMPs.

As indicated elsewhere, the local conditions govern where the optimal locations for BMP would be and general assessments cease to be appropirate for CEQA compliance unless the forms and procedures are provided to reflect the local assessment in the project EIRs/MNDs.

2-22/1 ***Infiltration BMPs.*** Infiltration facilities are designed to **decrease runoff volume through groundwater recharge** and improve water quality through filtration and sorption.

No discussion of beneficial effects is provided for rising base flow
providing greater dilution volumes assuming that discharges remain constant, or
providing higher water levels when stormwater arrives at downstream locations and thereby elevating the flood water levels and inundation extent.

2-41/7 This watershed is further differentiated by the **importance of groundwater recharge basins** that are supplied by a **series of reservoirs further upstream**...

No information is provided regarding the basins, total projected annual recharge flows, and relationships between "reservoirs" and "recharge basins" presumably the augmented groundwater storage basins, rather than basins used for recharge.

2-42/4 ...BMP strategy in the Upper Los Angeles River watershed includes well **over a hundred planned regional and centralized retention and infiltration BMPs** that take advantage of the **favorable groundwater recharge characteristics**....

No definition of BMPs has been applied to the projects proposed.
No map or other descriptive information of the 100+ retention/infiltration BMPs have not been provided.
No comparison or prioritization or even definition of favorability or recharge characterization have been provided.

ES-3/3 **ES.3 Project Objectives**

The primary goals and objectives of the EWMPs are:

- To **collaborate among agencies**...to promote more **cost-effective** and multi-beneficial water quality improvement projects **to comply** with the MS4 Permit.
- To develop watershed-wide EWMPs that will...**remove or reduce pollutants** from dry- and wet-weather urban runoff in a **cost-effective manner**.
- To reduce the impact of stormwater and non-stormwater on **receiving water quality**.

Elsewhere goals and objectives are mentioned and then supposed objectives are provided. Here these are largely "goals" as they have no specification of schedule or quantification.

As these are stated as "primary" with no mention of secondary or tertiary goals or objectives, the entire EWMP is without adequate or complete goals and objectives and various statement totally confuse the basis for the "project" and related " alternatives" and their compparisons and assessments.

Report is unclear as to definition and has inconsistent usage of Goals and Objectives of the Program.

These are Goals only, while objectives must have specifics as to schedule and quantitative indicators of compliance (e.g., acre-feet/year recharged, return rate changes by 2020, etc.

2-2/2 **2.2 *Project* Goals ~~and Objectives~~**

The **primary** **goals and objectives** of the EWMPs are:

- To **collaborate among agencies** (Permittee jurisdictions)...to **promote more cost-effective** and **multi-beneficial water quality improvement projects** to **comply with the MS4 Permit**.
- To develop watershed-wide EWMPs...remove or reduce pollutants from dry- and wet-weather urban runoff in a **cost-effective manner**.
- To reduce the **impact of stormwater and non-stormwater on receiving water quality**. ***[#2 and #3 are virtually identical and only differ by the "terms" used: Wet vs Dry Weather Flow vs Stormwater and Non-Stormwater, which would be defined the same]***

[In #1 and #2, references are made to cost-effectiveness although never discussed and compared.]

Reference to costs requires a description, assessment of impacts, and provisions for the life of the project - at least 25 years. Most importantly are provisions sufficient annual funding for operations and maintenance of all facilities through and beyond 2040.

Assessment must include best-available information and projections economic, financial, bonding, costs (both capital and O&M), and ability to pay by the service populations.

This is particularly important as the LACo and associated cities are promoting changes of "Storm Water Fees on the LACo annual property taxes and fees.

This deficiency and conflict clearly indicate that the entire PEIR is incomplete and inadequate with regard to costs and other related issues for the proposed program.

Table 2-3 **Project Feature - Flood Protection**

No description of flood protection is developed for the EWMP and thereby must not be included, or mentioned, without development and assessment of benefits and impacts. No coordination/collaboration has been referenced or known in the LACity Floodplain Management Plan.

2-26\3 **Creek/River/Floodplain/Estuary Restoration*.*** This category includes multi-benefit projects that typically combine elements of **habitat restoration**...as **flood management** and water quality improvement. Project components such as...setback levees, floodplain bench excavation, levee breaches, and other actions can **increase...flood storage capacity**...

...This project restored 1.2 miles of natural bottomed creek habitats, which are capable of infiltrating up to 118...million gallons of stormwater from the wash into the local groundwater aquifer.

Plants in the wash also aid the biogeochemical removal of pollutants such as nitrogen.

Actually bacteria and fungi attached to the cellousic stems and leaves that are periodically submerged. Few emergent plants can absorb or treat any aqueous pollutants.

More to come

5-3/1 The proposed program is not a **land use project** and its implementation would not introduce new...or any other growth-inducing land uses. The structural BMPs would augment the physical structure

of established communities,...and enhancing the water quality of existing communities. As a result, the proposed program would not induce population growth.
Most infrastructure projects do not involve much in the way of direct structured development; however, operations of such facilities support development of user structures especially where water and other service may be constraining support factors.

5-3/2 The **nature of the proposed program** is to increase stormwater recharge and improve stormwater quality;...**would not result in increased economic activity or population growth** in the EWMP areas...water recharged...**is anticipated to support existing water supply needs and reduce dependence on imported water supplies**.
Mechanisms or rules are NOT provided as to how various project waters would be assigned to only reducing imported water dependence while others may be used for supporting growth.

5-3/3 **5.4 Secondary Effects of Growth**
Implementation...would not result in a direct or indirect increase in population or employment. The proposed program itself, therefore, is **not growth-inducing and would not induce secondary effects of growth**.
Such a broad reaching statement cannot be justified as implementation (?=construction) and presumed operations (say 10% of total capital costs annually) would generate new employment within the project area and would divert funds for imported water sources outside the project area to the more local based water sources and operators employed therein.

5-3/3 While one of the main goals of the EWMPs is to **increase infiltration and potentially increase recharge of stormwater**...**the amount of water potentially recharged would not be enough to indirectly support population growth** and is intended to **support existing water supply needs**. This potential additional **recharge would contribute to local water supply needs** but would not alter population demographics. Therefore, there would be no secondary effects of growth.
Mechanisms or rules are NOT provided as to how various project waters would be assigned to only reducing imported water dependence while others may be used for supporting growth.
Again, such a statement cannot be justified as local sources can easily augment existing or future distribution without specific assignment to service areas.

6-1/1 ...Environmental Impact Report (EIR) must describe...
reasonable range of alternatives to a proposed project...
could **feasibly** attain most of the basic project objectives...
would avoid or substantially lessen...proposed project's significant environmental effects.
6-2/2 Alternatives may be eliminated...
if they **fail to meet most** of the **project objectives**,
are infeasible, or
do not avoid any significant environmental effects.
"Feasibly" is not clearly defined nor established as to whether the BMPs, EWMPs, or this EWMP can be done in technical and practical (=ECONOMIC) terms as required by the objectives and criteria for the program, the local programs/projects and BMPs. As technical feasibility is not at issue, the actual meaning of feasibly must relate to two of three goals having phrases of "cost-effectiveness". Therefore this use of feasibly and project objectives (not objectives but goal) are the costs and presumably capital and operations/maintenance. As no information is provided for costs and their fundings, these statements become totally inadequate and incomplete as no information is provided nor compared to demonstrate the alternatives compliance or lack of compliance with the MS4 permit conditions..
As two expressed "objectives" out of three include reference to "cost-effectiveness" the absence of demonstrated "cost-effectiveness" renders any comparison incomplete and inadequate for justifying an alternative discussion. The two objectives have no quantification nor scheduling and therefore are NOT OBJECTIVES but may remain as goals but without any supporting information as to costs and sources of revenues to support such costs.

6-2/5 **6.2 Review of Proposed Program Goals and Objectives**

The alternatives presented in this chapter were analyzed for their abilities to reduce significant program impacts and meet the **objectives** of the proposed program, which are:

- To collaborate among agencies (Permittee jurisdictions) across the watershed to promote...

6-2/5 The alternatives presented...analyzed for their abilities to reduce significant program impacts and meet the **objectives of the proposed program**,...:

- To collaborate among agencies (Permittee jurisdictions)...
  promote more cost-effective...
  multi-beneficial water quality improvement projects...
  comply with the Municipal Separate Storm Sewer System (MS4) Permit.
- To develop watershed-wide Enhanced Watershed Management Programs (EWMPs)...
  once implemented, remove or reduce pollutants from dry- and wet-weather urban runoff
  cost-effective manner.
- To reduce the impact of stormwater and non-stormwater on receiving water quality.

Goals are not mentioned only objectives above. The entire PEIR appears incomplete without a clear statement as to typical goals and objectives - recharge dry and wet weather runoff and 20% recharge every five years for next 25 years.

Total confusion as to goals and objectives renders the entire alternatives chapter totally inadequate. Absence of any costs/revenue information renders achievement of goals or objectives totally incomplete for both the development of the alternatives and their comparisons.

6-3/3 In accordance with the CEQA "rule of reason," an EIR is required to consider a range of alternatives that permit a **reasoned choice** and that are "limited to ones that would avoid or substantially lessen any of the significant effects of the project" (CEQA Guidelines Section 5126.6(f)). The Lead Agency conducted an alternatives screening process to identify feasible alternatives to the proposed program. The screening process for identifying viable alternatives included consideration of the **following criteria**:

- Ability to meet the **program objectives**
- Ability to reduce significant environmental effects of the proposed program
- **Economic and engineering feasibility**

Since the program objectives require 2 of 3 items of "cost-effectiveness" and here a criterion requires meeting the program objectives, the PEIR appears inadequate and incomplete without the presence of and achievement of cost-effectiveness and economic feasibility-ability to pay for both vapital and O&M costs for at least 25 years.

As no economic feasibility analyses and comparisons are provided, and no jurisdictional funding is provided throughout the PEIR, no reasoned or reasonable achievements of one of three criteria can be assessed or compared.

6-1/3 "Feasible" means capable of being accomplished in a successful manner within a reasonable period of time, taking into account **economic**, environmental, legal, social, and technological factors.

No economic factors have been provided in the PEIR, including sources of revenues and abilities for LACo and all permittees. Therefore, the PEIR is incomplete and inadequate.

6-13/1 **6.7 Environmentally Superior Alternative** CEQA requires that an EIR identify the environmentally superior alternative(s) of a project other than the proposed program or the "no project" alternative (CEQA Guidelines Section 15126.6 (e)(2)). As stated at the beginning of this chapter, the purpose of this alternatives analysis is to consider a reasonable range of alternatives that could feasibly attain most of the basic project objectives and avoid or substantially lessen significant program impacts.

Since no information is provided as to the actual cost-effectiveness of any projects or groups of project the requirement cannot be achieved, reviewed, or commented on with the currently available information. Based on DWP information distributed small projects could achieve the economy-of-scale that larger one could and therefore any plot-by-plot LID projects. If 10,000 single family dwellings would theoretically detain 460gal/1000sf roof, one design storm would generate 4.6M gal for direct use (about one day piped water supply); however, cities do not require 460gal of rain barrels but generally only require two rain barrels of 100gal capacity.

The PEIR does not provide the basis for development of the Environmentally Superior Stormwater Alternative and those with recognized "least worst" environmental effect could not meet two of the three goals of the Program, cost effectiveness with or without real requirements for the 85%ile rainfall event.

6-14/3 The Non-Structural BMPs Only Alternative would avoid all of the significant and unavoidable impacts associated with construction of the structural BMPs....However, since the ability to achieve compliance with MS4 Permit water quality objectives would be substantially reduced, impacts to water quality would be greater under this alternative, and compliance with the MS4 Permit would be unlikely.
Even if it could achieve permit compliance, the Program goals of cost-effectiveness most likely could not be achieved as the disperse detention could not attain any significant economies of scale and would require vastly greater plot-by-plot compliance which is beyond the typical new, additions, or replacement linkages with structured improvements.

6-14/4 As a result, since the proposed alternative would provide the best chance of **achieving regional water quality objectives**, it is considered the environmentally superior alternative.
The conclusion is not based on any documentation or projected/estimate successful implementation and does not include any comparisons and development of cost-effectiveness or revenue sources for a much larger implementation phase. The preparers have assumed a development condition without any concept of reality and without documentation as to implementability in order to have an "Environmentally Superior Alternative", which is incomplete and inadequate.

Apdx A Appendix A Comment Letter to the LACFCD: Draft PEIR 18/#61(pdf-p.244) The overarching goal of the GRIP Recycled Water Project is to **offset the current use of imported water by providing up to 21,000 acre-feet per year (AFY)** of recycled water as a **reliable supply source for groundwater basin replenishment via the Montebello Forebay** within a reasonable timeframe.
Although the watershed channel are well known and studies for almost 100 years, no hydrologic model has been developed and incorporated into the EWMP or its component EWMPs. The current efforts therefore cannot provide a factual and quantitative basis for assessing the environmental effects of existing water resources and their future states for water supply availability and locations, flood control, and water chemistry dilutions or reductions.

ApdxA/NOP 2/2 The LACFCD, as a regional agency charged with **conserving stormwater for use in our local water supply,** has a **vested interest in increasing opportunities for stormwater capture and groundwater recharge**. The LACFCD has flood control infrastructure...LACFCD will be an implementing agency only on those projects for which it has been identified in an EWMP as a responsible implementing party.
Apdx A Appendix A Comment Letter to the LACFCD: Draft PEIR 18/#61(pdf-p.244) The overarching goal of the GRIP Recycled Water Project is to **offset the current use of imported water by providing up to 21,000 acre-feet per year (AFY)** of recycled water as a **reliable supply source for groundwater basin replenishment via the Montebello Forebay** within a reasonable timeframe.
Although the watershed channel are well known and studies for almost 100 years, no hydrologic model has been developed and incorporated into the EWMP or its component EWMPs. The current efforts therefore cannot provide a factual and quantitative basis for assessing the environmental effects of existing water resources and their future states for water supply availability and locations, flood control, and water chemistry dilutions or reductions.
As indicated elsewhere, this NOP and letter statements clearly indicate the anticipated development of water supply resources which goes beyond the water quality and flood protection benefits and relates the EWMP to growth inducements for future populations needs for greater water resources without adding new imported water supply facilities.

ApdxF 7/2 The Los Angeles River is approximately 55 miles long, and five of six reaches lie within the Upper Los Angeles River EWMP Area. The natural hydrology of the Los Angeles River watershed has been significantly altered by urbanization, channelization, and the construction of dams and flood control reservoirs. The river and many of its tributaries are lined with concrete for most or all of their length. Soft-bottom segments of the river occur where groundwater upwelling prevents armoring of the river bottom.

Although the watershed channel are well known and studies for almost 100 years, no hydrologic model has been developed and incorporated into the EWMP or its component EWMPs. The current efforts therefore cannot provide a factual and quantitative basis for assessing the environmental effects of existing water resources and their future states for water supply availability and locations, flood control, and water chemistry dilutions or reductions.

Response to Comment Letter 20 (Sierra Club, Angeles Chapter, Water Committee – March 16, 2015)

Response to Comment 20-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or “Program”). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The Upper LA River Brandon Street and Green Street Improvements Project is under construction as noted on page 2-18. Approximately 1,800 feet of biorentention planter boxes (bioswales) will be constructed throughout the project limits. In addition, an underground infiltration basin system will be installed at the cul-de-sac of Green Street with 5,800 cubic feet of infiltration capacity. Trees and drought-tolerant plants will also be added throughout the project. As an advanced planning document, the PEIR does not provide substantial detail for any individual project. Section 2.4 of the PEIR defines categories of projects that may be incorporated into the EWMPs to achieve regional water quality objectives. Tables 2-3, 2-4, and 2-5 list some of the projects that have been planned or already installed in the region that will assist in achieving the receiving water quality objectives, including the Brandon Street project. This information on Upper LA River Brandon Street and Green Street Improvements Project was taken from the Notice of Intent to prepare a EWMP by the Upper Los Angeles River Watershed Group.

Response to Comment 20-B:

Tables 2-3, 2-4, and 2-5 list some of the projects that have been planned or already installed in the region that will assist in achieving the receiving water quality objectives, including the Upper San Gabriel River Avocado Heights Multiuse Trail Project, which has already undergone environmental analysis and been approved for implementation. As a result, details of certain projects may already be known. The projects presented in Chapter 2 include some projects that are already approved and under construction or recently constructed. Approximately 2,300 feet of the multiuse trail on 5th Avenue will be constructed with decomposed granite to provide 14,000 cubic feet of infiltration capacity. In addition, an infiltration swale will be constructed at the end of 5th Avenue immediately adjacent to San Jose Creek to provide 3,200 cubic feet of capacity. Combined together, up to 115 acre-feet of groundwater will be recharged annually. This information was obtained from the Avocado Heights Multiuse Trail Fact Sheet, located in Appendix E of the Notice of Intent for the Enhanced Watershed Management Program and Coordinated Integrated Monitoring Program. However, several of the projects listed in Chapter 2 have not been fully defined and have not undergone environmental review and additional details are not yet known.

Response to Comment 20-C:

The Tujunga Wash Greenway project was mentioned on page 2-27 of the PEIR as an example of a multi-benefit flood management project that has already been approved and implemented, providing water conservation, water quality protection, flood control, recreational, and aesthetic benefit. The Tujunga Wash Greenway project involved the creation of a naturalized streamcourse designed to accept low flows diverted from the Tujunga Wash (LADPW, 2015). This project was identified only to give an idea of what other multi-benefit EWMP projects may look like once identified fully in the EWMP. As noted in Section 1, each individual project that has not yet been approved will undergo subsequent CEQA determination by the lead implementing agency prior to installation.

Response to Comment 20-D:

Flood control is defined as "the act or technique of controlling river flow with dams, dikes, artificial channels, etc., so as to minimize the occurrence of floods" (Dictionary.com, 2015). Floodplain management is defined by FEMA as "the operation of a community program of preventive and corrective measures to reduce the risk of current and future flooding, resulting in a more resilient community" (FEMA, 2015). Floodplain management considers all efforts to mitigate the effects of flooding including efforts on private property. Flood Control is one of many components of floodplain management in order to reduce the risk of flooding. Both terms generally refer to the avoidance of damages from flood events through physical structures or specific management measures. The PEIR generally uses these terms interchangeably. Flood control benefits are realized when BMPs retain local storm flows, however small in volume, that help to buffer peak flows downstream. The supporting information or analyses for quantification of levels of management/control in addition to other beneficial sectors, e.g., groundwater sourcing for suburban and urban water supplies would be assessed at the individual project level. Management of groundwater as a drinking water source for urban and suburban consumers would continue to be the responsibility of the local groundwater management agencies subject to adjudicated water rights.

Response to Comment 20-E:

Centralized BMPs are a type of structural BMP that treats runoff from a 10 acres or more tributary area, typically. The priority projects can be a centralized BMP that will be included as a project that will be immediately pursued in each EWMP. The potential projects can be a centralized BMP that may be pursued at a future date. The EWMPs are currently being prepared; the priority and potential projects listed in the PEIR are in various stages of planning and development. Page 2-28 of the PEIR notes that information for specific projects is provided in the document in cases where it is available at the time of publication of the Draft PEIR. As an advanced planning document, the PEIR does not provide substantial detail for any individual project. Individual projects requiring subsequent CEQA analyses would be determined by the lead implementing agency prior to installation.

Response to Comment 20-F:

The water quality objectives identified in EWMP areas provide the basis for the selection and scheduling of BMPs (or projects). The priority BMPs have undergone a site review and project evaluation that has identified them as having a greater opportunity to achieve the water quality objectives for their specific EWMP area. These priority BMPs were listed based upon available data at the time of publication of this PEIR. **Appendix G** provides the location and general description of the priority BMPs. These priority projects will be further developed with conceptual plans in the draft EWMPs. The term planned centralized projects is used to reflect project opportunities where it may not be feasible to construct a BMP to retain the 85th percentile storm but would have a substantial water quality benefit for a larger watershed. The term potential means that a concept will not be developed in the draft EWMP but the site will be identified as a potential project site for the future. Planned project is used to reflect projects that are already being planned to be constructed in the near future. They would not be a priority or potential project. These planned projects were part of the "30 month project" identified in each EWMP's Notice of Intent that was approved by the Regional Board. Table 2-4 includes a column that notes the status of the project as complete or planned to be installed and provides an approximate date of completion where available.

Response to Comment 20-G:

The requirement to fully capture the 85th percentile storm in a regional BMP is a Permit requirement. Providing the hydrology calculations (design volume, runoff coefficients, time of concentrations) is beyond the scope of the PEIR, as it is an advanced planning document. The PEIR evaluates typical project types to assess potential impacts of implementing the entire program throughout the region over a long period of time. More information about these projects can be obtained from the individual implementing agencies.

Response to Comment 20-H:

As stated on page 3.8-23 of the PEIR, the EWMP areas overlie various groundwater basins; these groundwater basins are summarized in **Table 3.8-2**. Each groundwater basin contains multiple recharge areas. Providing the specific recharge area locations and recharge capacities for all groundwater basins receiving infiltration from the EWMP areas is beyond the scope of the PEIR, as it is an advanced planning document. Therefore, a priority assessment based on this recharge and capacity information will need to be considered on an individual project basis. As noted in Section 2.4.2, the EWMPs include infiltration projects that are installed where the soils and groundwater capacity are favorable. The PEIR acknowledges that depth to groundwater and infiltration capacity are important factors for locating effective infiltration BMPs. Mitigation Measures GEO-1 and HYDRO-1 require that implementing agencies evaluate site suitability prior to installation and would reduce potentially significant impacts to less than significant levels.

Response to Comment 20-I:

The PEIR discusses potential impacts to public health in Impact 3.7-2. The PEIR acknowledges that accumulation of contaminants in BMPs over time could result in hazardous conditions. Mitigation Measure HAZ-1 is included to ensure that maintenance plans are prepared and implemented to reduce the risk to public health. BMPs may detain water that stagnates or generates odors. Mitigation Measure AIR-4 requires implementing agencies to consider odor controls to reduce impacts to the public. Other vectors such as mosquitos and rodents could be attracted to standing water. Local vector control agencies would employ measures to reduce public health impacts from areas of standing water in cooperation with the LACFCD as a standard practice. In response to the comment, Mitigation Measure HAZ-1 has been modified to ensure that vector control plans are incorporated into BMP maintenance plans. Both mitigation measures AIR-4 and HAZ-1 would reduce potentially significant impacts to less than significant levels. Mitigation Measure HAZ-1 has been updated as follows:

> **HAZ-1:** Implementing agencies shall prepare and implement maintenance practices that include periodic removal and replacement of surface soils and media that may accumulate constituents that could result in further migration of constituents to sub-soils and groundwater. A BMP Maintenance Plan shall be prepared by Implementing Agencies upon approval of the BMP projects that identifies the frequency and procedures for removal and/or replacement of accumulated debris, surface soils and/or media (to depth where constituent concentrations do not represent a hazardous conditions and/or have the potential to migrate further and impact groundwater) to avoid accumulation of hazardous concentrations and the potential to migrate further to sub-soils and groundwater. <u>The Maintenance Plan shall include vector control requirements.</u> The BMP Maintenance Plan may consist of a general maintenance guideline that applies to several types of smaller distributed BMPs. For smaller distributed BMPs on private property, these plans may consist of a maintenance covenant that includes requirements to avoid the accumulation of hazardous concentrations in these BMPs that may impact underlying sub-soils and groundwater. Structural BMPs shall be designed to prevent migration of constituents that may impact groundwater.

This modification has been included in Chapter 12, *Clarifications and Modifications of the Final PEIR*. The potential impact to public health is noted on page 3.7-16 of the Draft EIR. The modification clarifies that vectors are public health hazards that need to be considered along with other hazards. The modification does not identify any new significant impact or trigger the need to recirculate the Draft PEIR under Section 15088.5 of the *CEQA Guidelines*.

Response to Comment 20-J:

The addition of rain barrels as potentially effective distributed BMPs is noted in on page 2-14. Table 3.1-1 notes which mitigation measures would apply to rain barrel installation. The quantified impact to downstream hydrology from installing individual rain barrels would depend on the location, watershed, and rate of LID implementation. This information will be addressed in the applicable environmental analysis applicable to the individual BMPs once details are available.

Response to Comment 20-K:

The Low Impact Development (LID) standards included in the City of Los Angeles LID Manual are a part of the overall storm water quality improvement framework being developed within the EWMPs. Schedules for LID implementation will depend on redevelopment rates and will vary by watershed area; however, the EWMPs will include implementation schedules as required in the Permit. Also see response to Comment 20-J.

Response to Comment 20-L:

The term "high density" was used to reflect an urbanized area. The terms "large" and "small" in reference to BMPs were used to describe the expected amount of area and/or footprint of the BMPs. In the PEIR, BMP types are defined on page 2-6. Distributed Structural BMPs, treat runoff close to the source and are typically implemented at a single- or few-parcel level (e.g., facilities typically serving a contributing area less than one acre). Centralized Structural BMPs treat runoff from a contributing area of multiple parcels (e.g., facilities typically serving a contributing area on the order of tens or hundreds of acres or larger). However, additional quantification information specific to each type of BMP (distributed and centralized) was provided under the headings, *Anticipated Construction Activities*. For example, page 2-8 identifies, ground disturbance for distributed detention is typically less than 1 to 2 acres in extent, but may extend in some limited applications up to 5 acres where space is available. And on page 2-23, centralized infiltration facilities are generally larger than distributed BMPs and can vary from 2 to 10 acres in size, depending on the number of parcels (drainage area). The sizing of BMPs typically refers to designing BMPs to capture, store, and/or infiltrate a specific volume of water, and is based on a variety of factors including the adjacent topography, storm event type, base flow, etc. These details will be known on a project-specific basis, and therefore could not be provided at this level of analysis.

Response to Comment 20-M:

In addition to the discussions on pages 3.8-20 and 3.8-21 of the PEIR mentioned by the commenter, in regard to growth inducement, the PEIR acknowledges that increased stormwater recharge will augment groundwater supplies. The overall recharge volume will vary from basin to basin and from season to season and will increase over time as more BMPs are installed. This additional benefit of the EWMPs is consistent with the goals and plans of the regional groundwater basin managers and water suppliers as described in Section 3.14-1. Water retailers in Los Angeles County generally have two water sources available to them: imported water supplied by a water wholesaler (e.g., Metropolitan, Castaic Lake Water Agency) or groundwater. The two large groundwater basins in Los Angeles County are adjudicated, with established water rights made available to pumpers. The pumpers' allocations are constricted to prevent over-drafting the aquifer. The groundwater managers (Water Replenishment District of Southern California, Upper

Los Angeles River Area Water Master) augment the groundwater basins with imported surface water when available to meet demands.

Population growth is expected in the region and the local water suppliers have prepared urban water management plans that explain how they intend to meet the growing demand. The current conditions throughout the State of California indicate that imported water supplies will be more limited in the future than they have been historically. Emphasis is being placed on local supplies to replace imported water. For example, the Water Replenishment District of Southern California is actively pursuing a policy of Water Independence Now (WIN) that will eliminate imported water for replenishment and replace it with storm water and recycled water recharge. The LACFCD has no authority over population growth, land use jurisdiction, or water supplies. As noted in Section 5.3 of the PEIR, the augmentation of water supplies as a secondary outcome of the EWMPs would not induce growth or remove an obstacle to growth, but may help to replace the use of imported water over time as a part of the regional water supply portfolio managed by others.

Furthermore, the PEIR evaluates the potential impacts of increased recharge to groundwater quality and groundwater levels in Impact 3.8-1. The potential for groundwater to exfiltrate in creeks, road cuts, and areas of lower elevation is recognized on page 3.8-35. However, as low flow BMPs are installed throughout the region, base flows fed from landscape runoff are predicted to decrease throughout the region. Any new contribution to surface water flows from new groundwater seepage would be accommodated by the drainage system and would reflect a more natural condition.

As stated on page 3.14-20 of the PEIR, cumulative impacts in regard to existing water supplies are anticipated to be beneficial as a result of stormwater and non-stormwater runoff infiltration and conservation BMPs implemented across the EWMP areas.

Response to Comment 20-N:

The Hauled Water Initiative will determine the feasibility of using hauled water as a potable water source for new single-family residential development where there is no feasible source of municipal or well water available. The Notice of Preparation and Initial Study for the Hauled Water Initiative was released in September of 2014; the Initiative has not yet been approved and no public schedule has been released for completion of the environmental review (LA County Planning, 2015). Because the proposed program involves implementation of storm water infrastructure and not development of new single-family residential, the discussion of impacts relating to the promotion of hauled water developments is not relevant.

Population growth is expected in the region and the local water suppliers have prepared urban water management plans that explain how they intend to meet the growing demand. The current conditions throughout the State of California indicate that imported water supplies will be more limited in the future than they have been historically. Emphasis is being placed on local supplies to replace imported water. For example, the Water Replenishment District of Southern California is actively pursuing a policy of Water Independence Now (WIN) that will eliminate imported water for replenishment and replace it with storm water and recycled water recharge. The LACFCD has no authority over population growth, land use jurisdiction, or water supplies. As noted in Section 5.3 of the PEIR, the augmentation of water supplies as a secondary outcome of the EWMPs would not induce growth or remove an obstacle to growth, but may help to replace the use of imported water over time as a part of the regional water supply portfolio managed by others.

Response to Comment 20-O:

The priority projects were initially selected to be further investigated as part of the EWMPs. The future projects will be selected based on engineering feasibility, water quality reduction benefit, and other factors such as soil investigations, partnership opportunities, etc.

Mitigation Measures AES-1 and HAZ-1 both require that implementing agencies prepare and implement maintenance plans as part of the project approval and would reduce potentially significant impacts to less than significant levels. These mitigation measures will be adopted with the Mitigation Monitoring and Reporting Plan.

The EWMPs will summarize project costs and funding mechanisms available to implementing agencies. Implementing agencies are responsible for identifying funding mechanisms needed to effectuate Permit compliance. The PEIR does not evaluate costs or funding sources for BMP implementation since providing funding is not an environmental impact. Revenue sources will vary for each implementing agency but will likely include grant funding, low interest loans, or local fee assessment.

As no other definition for it has been stated in the LID Manual, the term “minimize” as referenced by the commenter LID Manual has been interpreted to have the following meaning: “to make as small as possible.” As no other definition for it has been stated in the LID Manual, the term “lessen” as referenced by the commenter LID Manual has been interpreted to have the following meaning: “to become less or cause something to become less” (Merriam Webster, 2015a; Merriam Webster, 2015b). The LID ordinance does not apply to existing streets, however it would apply to future streets that are part of a tract development.

Response to Comment 20-P:

Population growth is expected in the region and the local water suppliers have prepared urban water management plans that explain how they intend to meet the growing demand. The current conditions throughout the State of California indicate that imported water supplies will be more limited in the future than they have been historically. Emphasis is being placed on local supplies to replace imported water. For example, the Water Replenishment District of Southern California is actively pursuing a policy of Water Independence Now (WIN) that will eliminate imported water for replenishment and replace it with storm water and recycled water recharge. The LACFCD has no authority over population growth, land use jurisdiction, or water supplies. As noted in Section 5.3 of the PEIR, the augmentation of water supplies as a secondary outcome of the EWMPs would not induce growth or remove an obstacle to growth, but may help to replace the use of imported water over time as a part of the regional water supply portfolio managed by others.

Please also refer to Response to Comment 20-G above regarding the rainfall analysis. Please also refer to Response to Comment 20-K and 20-J regarding the sufficiency of detention containers.

Response to Comment 20-Q:

As noted on Section 2.4.2, the EWMPs include infiltration projects to be installed where the soils and groundwater capacity are favorable. The PEIR acknowledges that depth to groundwater and infiltration capacity are important factors for locating effective infiltration BMPs. Mitigation Measures GEO-1, GEO-2, and HYDRO-1 require that implementing agencies evaluate site suitability prior to installation and would reduce potentially significant impacts to less than significant levels.

Response to Comment 20-R:

The priority projects were initially selected to be further investigated as part of the EWMPs. The future projects will be selected based on engineering feasibility, water quality reduction benefit, and other factors such as soil investigations, partnership opportunities, etc. More information will be provided in each EWMP.

The PEIR provides a cumulative assessment in Section 3.8. The PEIR notes that future projects could directly or cumulatively impact local soil stability. As a result, the PEIR identifies Mitigation Measure GEO-2 that requires implementing agencies notify local groundwater managers prior to installing infiltration BMPs. Implementation of this mitigation measure would reduce potentially significant impacts to less than significant levels. The goal of the infiltration BMPs is to increase stormwater infiltration for water quality benefits but also for water supply benefits. Future increase in stormwater infiltration is consistent with regional water supply planning efforts underway by the groundwater managers (Water Replenishment District of Southern California, the ULARA Watermaster, and Santa Clarita River Valley stakeholders) and water suppliers such as Metropolitan Water District of Southern California (MWD, 2010) and the City of Los Angeles (City of Los Angeles, 2009). Implementing agencies would evaluate cumulative projects for future projects as necessary to comply with CEQA. An analysis of cumulative impacts would be included in each EIR developed by the lead agencies associated with future EWMP projects.

In regard to growth inducement as a cumulative effect of EWMP implementation, population growth is expected in the region and the local water suppliers have prepared urban water management plans that explain how they intend to meet the growing demand. The current conditions throughout the State of California indicate that imported water supplies will be more limited in the future than they have been historically. Emphasis is being placed on local supplies to replace imported water. For example, the Water Replenishment District of Southern California is actively pursuing a policy of Water Independence Now (WIN) that will eliminate imported water for replenishment and replace it with storm water and recycled water recharge. The LACFCD has no authority over population growth, land use jurisdiction, or water supplies. As noted in Section 5.3 of the PEIR, the augmentation of water supplies as a secondary outcome of the EWMPs would not induce growth or remove an obstacle to growth, but may help to replace the use of imported water over time as a part of the regional water supply portfolio managed by others.

Response to Comment 20-S:

Each EWMP employs water quality predictive modeling as part of the process of identifying BMP locations and designs. Each watershed within the region has focused on using predictive modeling tailored to its own needs. The Permit requires that Reasonable Assurance Analysis be conducted to predict the outcome of the BMPs to be employed throughout the individual watersheds. The PEIR evaluates the potential environmental impacts of implementing structural and non-structural BMPs. The effectiveness of each EWMP to achieve permit compliance will be evaluated by the RWQCB, which may require additional projects or management actions to ensure compliance.

The requirement to fully capture the 85th percentile storm in a regional BMP is a Permit requirement. Providing the hydrology calculations (design volume, runoff coefficients, time of concentrations) is beyond the scope of the PEIR, as it is an advanced planning document. The PEIR evaluates typical project types to assess potential impacts of implementing the entire program throughout the region over a long period of time. More information about these projects can be obtained from the individual implementing agencies. The capacity of each regional BMP identified will be subject to subsequent site specific analysis, which is dependent on local geology, precipitation trends and contributing area. Each regional BMP will be subject to further design, CEQA compliance, and approval by the implementing agencies.

Response to Comment 20-T:

Because project details are largely incomplete since the EWMPs are being drafted concurrently, each individual project will be subject to a CEQA compliance evaluation prior to approval by the implementing agencies as noted in Section 1 of the Draft PEIR. As individual projects identified in the EWMPs are fully developed, the implementing agency (i.e., the Permittee responsible for implementing the project) will conduct CEQA analysis for individual projects, as appropriate, or may determine that no additional CEQA analysis is required or that a project is exempt from CEQA. Each implementing agency would determine the significance after mitigation for potential impacts of its proposed projects.

The PEIR provides the LACFCD a foundation for any necessary future environmental review that focus on individual projects of the EWMPs for which the LACFCD is the designated Lead Agency.

As noted on page 1-3, the PEIR can be used by the LACFCD or other Permittees to streamline environmental review of individual projects. The process for incorporating the PEIR or tiering from the PEIR pursuant to Section 15152 of the CEQA Guidelines may be employed by lead agencies for use regarding individual BMPs at their discretion. No uniform tiering plan of action has been established for subsequent project approvals since each project will require specific consideration by varying Permittees.

Response to Comment 20-U:

As noted on page 1-3, the PEIR can be used by the LACFCD or other Permittees to streamline environmental review of individual projects. Implementation of CEQA is at the lead agency's discretion. No uniform tiering plan of action has been established for subsequent project approvals since each project will require specific consideration by varying Permittees. The process for incorporating the PEIR or tiering from the PEIR pursuant to Section 15152 of the CEQA Guidelines may be employed by lead agencies for use regarding individual BMPs at their discretion.

Response to Comment 20-V:

The proposed EWMP BMPs as described in the PEIR are under development. Potential priority projects are shown in Figures 2-5 through 2-16 and Appendix G of the PEIR. More site investigations are needed to fully vet these projects and define the project scope needed to satisfy the respective EWMP requirements; these analyses will be done following the certification of this EIR in the individual EWMPs themselves.

Response to Comment 20-W:

Each BMP will affect flood control facilities differently. Direct benefits may include reduced hyrdomodification, reduced erosion, and reduced peak flows. Retention of storm flows, whatever the volume, assists in reducing peak flows downstream. Some BMPs will reduce dry-weather flows as well. The reduction in dry weather base flow will vary from watershed to watershed and season to season and will increase over time as more BMPs are installed. A more-detailed prediction of future dry weather and wet weather flows is currently unavailable.

Each EWMP employs water quality predictive modeling as part of the process of identifying BMP locations and designs. Each watershed within the region has focused on using predictive modeling tailored to its own needs. The Permit requires that Reasonable Assurance Analysis be conducted to predict the outcome of the BMPs to be employed throughout the individual watersheds. The PEIR evaluates the potential environmental impacts of implementing structural and non-structural BMPs. The effectiveness of each EWMP to achieve permit compliance will be evaluated by the RWQCB, which may require additional projects or management actions to ensure compliance.

Providing the hydrology calculations (design volume, runoff coefficients, time of concentrations) is beyond the scope of the PEIR, as it is an advanced planning document. The PEIR evaluates typical project types to assess potential impacts of implementing the entire program throughout the region over a long period of time. More information about these projects can be obtained from the implementing agency.

Response to Comment 20-X:

The program objectives are provided in Section 2.2 of the PEIR. Quantitative objectives and success criteria are mandated in the Permit. No additional program objectives are necessary.

Response to Comment 20-Y:

The EWMPs will summarize project costs and funding mechanisms available to implementing agencies. Implementing agencies are responsible for identifying funding mechanisms needed to effectuate Permit compliance. The PEIR does not evaluate costs or funding sources for BMP implementation since providing funding is not an environmental impact. Revenue sources will vary for each implementing agency but will likely include grant funding, low interest loans, or local fee assessment.

Response to Comment 20-Z:

The PEIR acknowledges that increased stormwater recharge will augment groundwater supplies. The overall recharge volume will vary from basin to basin and from season to season and will increase over time as more BMPs are installed. This additional benefit of the EWMPs is consistent with the goals and plans of the regional groundwater basin managers and water suppliers as described in Section 3.14-1. Water retailers in Los Angeles County generally have two water sources available to them: imported water supplied by a water wholesaler (e.g., Metropolitan, Castaic Lake Water Agency) or groundwater. The two large groundwater basins in Los Angeles County are adjudicated, with established water rights made available to pumpers. The pumpers' allocations are constricted to prevent over-drafting the aquifer. The groundwater managers (Water Replenishment District of Southern California, Upper Los Angeles River Area Water Master) augment the groundwater basins with imported surface water when available to meet demands.

Population growth is expected in the region and the local water suppliers have prepared urban water management plans that explain how they intend to meet the growing demand. The current conditions throughout the State of California indicate that imported water supplies will be more limited in the future than they have been historically. Emphasis is being placed on local supplies to replace imported water. For example, the Water Replenishment District of Southern California is actively pursuing a policy of Water Independence Now (WIN) that will eliminate imported water for replenishment and replace it with storm water and recycled water recharge. The LACFCD has no authority over population growth, land use jurisdiction, or water supplies. As noted in Section 5.3 of the PEIR, the augmentation of water supplies as a secondary outcome of the EWMPs would not induce growth or remove an obstacle to growth, but may help to replace the use of imported water over time as a part of the regional water supply portfolio managed by others.

Furthermore, the PEIR evaluates the potential impacts of increased recharge to groundwater quality and groundwater levels in Impact 3.8-1. The potential for groundwater to exfiltrate in creeks, road cuts, and areas of lower elevation is recognized on page 3.8-35. However, as low flow BMPs are installed throughout the region, base flows fed from landscape runoff are predicted to decrease throughout the region. Any new contribution to surface water flows from new groundwater seepage would be accommodated by the drainage system and would reflect a more natural condition.

As stated on page 3.14-20 of the PEIR, cumulative impacts in regard to existing water supplies are anticipated to be beneficial as a result of stormwater and non-stormwater runoff infiltration and conservation BMPs implemented across the EWMP areas.

Response to Comment 20-AA:

As low flow BMPs are installed throughout the region, base flows fed from landscape runoff are predicted to decrease throughout the region. Any new contribution to surface water flows from new groundwater seepage would be accommodated by the drainage system and would reflect a more natural condition. The PEIR acknowledges on page 3.5-27 that increased recharge could raise groundwater levels in some areas and could impact shallow infrastructure such as concrete channel bottoms, bridge footings, buildings, and utilities.

Response to Comment 20-BB:

The commenter's background and qualifications are noted.

Response to Comment 20-CC:

Each EWMP employs water quality predictive modeling as part of the process of identifying BMP locations and designs. A single surface water quality model for the entire County has not been employed since such an effort would provide minimal value for the amount of effort required. Rather, each watershed within the region has focused on using predictive modeling tailored to its own needs. The Permit requires that Reasonable Assurance Analysis or modeling be conducted to predict the outcome of the BMPs to be employed throughout the individual watersheds. The PEIR evaluates the potential environmental impacts of implementing structural and non-structural BMPs. The effectiveness of each EWMP to achieve permit compliance will be evaluated by the RWQCB, which may require additional projects or management actions to ensure compliance.

Response to Comment 20-DD:

The requirement to fully capture the 85th percentile storm in a regional BMP is a Permit requirement. Providing the hydrology calculations (design volume, runoff coefficients, time of concentrations) is beyond the scope of the PEIR, as it is an advanced planning document. The PEIR evaluates typical project types to assess potential impacts of implementing the entire program throughout the region over a long period of time. More information about these projects can be obtained from the individual implementing agencies. The capacity of each regional BMP identified will be subject to subsequent site specific analysis, which is dependent on local geology, precipitation trends and contributing area. Each regional BMP will be subject to further design, CEQA compliance, and approval by the implementing agencies. More information

regarding the precipitation rainfall across the County can be found
http://www.ladpw.org/wrd/publication/engineering/Final_Report-Probability_Analysis_of_85th_Percentile_24-hr_Rainfall1.pdf

Response to Comment 20-EE:

The PEIR acknowledges that increased stormwater recharge will augment groundwater supplies. The overall recharge volume will vary from basin to basin and from season to season and will increase over time as more BMPs are installed. This additional benefit of the EWMPs is consistent with the goals and plans of the regional groundwater basin managers and water suppliers as described in Section 3.14-1. Water retailers in Los Angeles County generally have two water sources available to them: imported water supplied by a water wholesaler (e.g., Metropolitan, Castaic Lake Water Agency) or groundwater. The two large groundwater basins in Los Angeles County are adjudicated, with established water rights made available to pumpers. The pumpers' allocations are constricted to prevent over-drafting the aquifer. The groundwater managers (Water Replenishment District of Southern California, Upper Los Angeles River Area Water Master) augment the groundwater basins with imported surface water when available to meet demands.

Population growth is expected in the region and the local water suppliers have prepared urban water management plans that explain how they intend to meet the growing demand. The current conditions throughout the State of California indicate that imported water supplies will be more limited in the future than they have been historically. Emphasis is being placed on local supplies to replace imported water. For example, the Water Replenishment District of Southern California is actively pursuing a policy of Water Independence Now (WIN) that will eliminate imported water for replenishment and replace it with storm water and recycled water recharge. The LACFCD has no authority over population growth, land use jurisdiction, or water supplies. As noted in Section 5.3 of the PEIR, the augmentation of water supplies as a secondary outcome of the EWMPs would not induce growth or remove an obstacle to growth, but may help to replace the use of imported water over time as a part of the regional water supply portfolio managed by others.

Furthermore, the PEIR evaluates the potential impacts of increased recharge to groundwater quality and groundwater levels in Impact 3.8-1. The potential for groundwater to exfiltrate in creeks, road cuts, and areas of lower elevation is recognized on page 3.8-35. However, as low flow BMPs are installed throughout the region, base flows fed from landscape runoff are predicted to decrease throughout the region. Any new contribution to surface water flows from new groundwater seepage would be accommodated by the drainage system and would reflect a more natural condition.

Response to Comment 20-FF:

Implementation of the EWMPs would not disproportionately affect areas with lower than average incomes. Local water supplies are largely shared resources, managed by regional agencies (e.g., Metropolitan, Castaic Lake Water Agency) responsible for supplying drinking water equitably to the population. Local water retailers receive their water generally from imported water wholesalers and groundwater pumping. Groundwater recharge resulting from infiltration BMPs will occur throughout the region. Some areas will experience greater volumes of recharge than others due to the local topography and geology. However, local demographics will not influence water quality control infrastructure locations. The equitable delivery of high quality drinking water is the responsibility of water retailers as regulated by the State Water Resources Control Board and the California Department of Public Health.

Response to Comment 20-GG:

The PEIR discusses potential impacts to public health in Impact 3.7-2. The PEIR acknowledges that accumulation of contaminants from water and water-logged habitats in BMPs over time could result in hazardous conditions. Mitigation Measure HAZ-1 is included to ensure that maintenance plans are prepared and implemented to reduce the risk to public health. BMPs may detain water that stagnates or generates odors. Mitigation Measure AIR-4 requires implementing agencies to consider odor controls to reduce impacts to the public. Other vectors such as mosquitos and rodents could be attracted to standing water. Local vector control agencies would employ measures to reduce public health impacts from areas of standing water in cooperation with the LACFCD. In response to the comment Mitigation Measure HAZ-1 has been modified to ensure that vector control plans are incorporated into BMP maintenance plans. Both mitigation measures AIR-4 and HAZ-1 would reduce potentially significant public health impacts to less than significant levels.

> **HAZ-1:** Implementing agencies shall prepare and implement maintenance practices that include periodic removal and replacement of surface soils and media that may accumulate constituents that could result in further migration of constituents to sub-soils and groundwater. A BMP Maintenance Plan shall be prepared by Implementing Agencies upon approval of the BMP projects that identifies the frequency and procedures for removal and/or replacement of accumulated debris, surface soils and/or media (to depth where constituent concentrations do not represent a hazardous conditions and/or have the potential to migrate further and impact groundwater) to avoid accumulation of hazardous concentrations and the potential to migrate further to sub-soils and groundwater. <u>The Maintenance Plan shall include vector control requirements.</u> The BMP Maintenance Plan may consist of a general maintenance guideline that applies to several types of smaller distributed BMPs. For smaller distributed BMPs on private property, these plans may consist of a maintenance covenant that includes requirements to avoid the accumulation of hazardous concentrations in these BMPs that may impact underlying sub-soils and groundwater. Structural BMPs shall be designed to prevent migration of constituents that may impact groundwater.

Response to Comment 20-HH:

Mitigation Measures AES-1 and HAZ-1 both require that implementing agencies prepare and implement maintenance plans as part of the project approval and would reduce potentially significant impacts to less than significant levels. These mitigation measures will be adopted with the Mitigation Monitoring and Reporting Plan.

The EWMPs will summarize project costs and funding mechanisms available to implementing agencies. Implementing agencies are responsible for identifying funding mechanisms needed to effectuate Permit compliance. The PEIR does not evaluate costs or funding sources for BMP implementation since providing funding is not an environmental impact. Revenue sources will vary for each implementing agency but will likely include grant funding, low interest loans, or local fee assessment.

Response to Comment 20-II:

The EWMPs will summarize project costs and funding mechanisms available to implementing agencies. Implementing agencies are responsible for identifying funding mechanisms needed to effectuate Permit compliance. The PEIR does not evaluate costs or funding sources for BMP implementation since providing funding is not an environmental impact. Revenue sources will vary for each implementing agency but will likely include grant funding, low interest loans, or local fee assessment.

Each BMP will affect flood control facilities differently. Direct benefits may include reduced hyrdomodification, reduced erosion, and reduced peak flows. Retention of storm flows, whatever the volume, assists in reducing peak flows downstream. Some BMPs will reduce dry-weather flows as well. The reduction in dry weather base flow will vary from watershed to watershed and season to season and will increase over time as more BMPs are installed. A more-detailed prediction of future dry weather and wet weather flows is currently unavailable.

The PEIR acknowledges that increased stormwater recharge will augment groundwater supplies. The overall recharge volume will vary from basin to basin and from season to season and will increase over time as more BMPs are installed. This additional benefit of the EWMPs is consistent with the goals and plans of the regional groundwater basin managers and water suppliers as described in Section 3.14-1. Water retailers in Los Angeles County generally have two water sources available to them: imported water supplied by a water wholesaler (e.g., Metropolitan, Castaic Lake Water Agency) or groundwater. The two large groundwater basins in Los Angeles County are adjudicated, with established water rights made available to pumpers. The pumpers' allocations are constricted to prevent over-drafting the aquifer. The groundwater managers (Water Replenishment District of Southern California, Upper Los Angeles River Area Water Master) augment the groundwater basins with imported surface water and other water sources when available to meet demands.

Response to Comment 20-JJ:

The PEIR acknowledges that increased stormwater recharge will augment groundwater supplies. The overall recharge volume will vary from basin to basin and from season to season and will increase over time as more BMPs are installed. The recharge would not be considered a water banking resource that would be eligible for extraction by the recharging permittee. Once infiltrated, the water is subject to the authority of groundwater basin managers or watermaster in managed basins or otherwise subject to adjudicated settlements and the California Water Code rules governing groundwater use in California.

Page 3.8-35 of the PEIR states that in areas with shallow groundwater tables or impermeable soils, recharge could result in mounding that affects subsurface infrastructure such as building or bridge foundations. This would be a potential impact of regional BMPs that recharge large volumes of captured stormwater, but could also occur for distributed BMPs in areas with limited permeability. For example, the EWMP Areas of Malibu Creek, Northern Santa Monica Bay, and Palos Verdes are located in areas where no significant groundwater basin occurs. In addition, the West Coast Basin consists of a series of aquitards near the surface that prevent surface water percolation into the productive aquifers. Infiltration BMPs in these areas would result in shallow infiltration followed by lateral movement and seepage to nearby areas that could include creek cuts, areas of lower elevation, or basements and underground vaults. Mitigation Measure HYDRO-1 would require Permittees to evaluate the suitability of BMP locations for groundwater recharge. Infiltration BMPs would not be suitable in areas of low permeability where subsurface structures could be adversely affected by groundwater mounding.

Response to Comment 20-KK:

Each BMP will affect flood control facilities differently. Direct benefits may include reduced hyrdomodification, reduced erosion, and reduced peak flows. Retention of storm flows, whatever the volume, assists in reducing peak flows downstream. These benefits would not be growth-inducing. Some BMPs will reduce dry-weather flows as well. The reduction in dry weather base flow will vary from watershed to watershed and season to season and will increase over time as more BMPs are installed. A more-detailed prediction of future dry weather and wet weather flows is unavailable since it will depend on multiple variables including the implementation schedules of multiple BMPs.

Response to Comment 20-LL:

The PEIR evaluates the potential impacts of increased recharge to groundwater quality and groundwater levels in Impact 3.8-1. The potential for groundwater to exfiltrate in creeks, road cuts, and areas of lower elevation is recognized on page 3.8-35. However, as low flow BMPs are installed throughout the region, base flows fed from landscape runoff are predicted to decrease throughout the region. Any new contribution to surface water flows from new groundwater seepage would be accommodated by the drainage system and would reflect a more natural condition. The PEIR acknowledges on page 3.5-27 that increased recharge could raise groundwater levels in some areas and could impact shallow infrastructure such as concrete channel bottoms, bridge footings, buildings, and utilities. Mitigation Measure GEO-2 commits the LACFCD to coordinate with local groundwater managers to "mitigate high groundwater levels." This mitigation measure would reduce potentially significant impacts to less than significant levels. The changes to dry weather base flow will vary from watershed to watershed and season to season and will increase over time as more BMPs are installed. A more-detailed prediction of future dry weather and wet weather flows is currently unavailable since it will depend on multiple variables including the implementation schedules of multiple BMPs.

Each BMP will affect flood control facilities differently. Direct benefits may include reduced hyrdomodification, reduced erosion, and reduced peak flows. Retention of storm flows, whatever the volume, assists in reducing peak flows downstream. These benefits would not be growth-inducing. Some BMPs will reduce dry-weather flows as well. The reduction in dry weather base flow will vary from watershed to watershed and season to season and will increase over time as more BMPs are installed. A more-detailed prediction of future dry weather and wet weather flows is currently unavailable since it will depend on multiple variables including the implementation schedules of multiple BMPs.

Response to Comment 20-MM:

Subsequent to receiving this comment letter, the commenter's requested information was provided to the commenter by the City of Los Angeles. The EWMPs containing a list of proposed priority projects and locations will be submitted to the RWQCB in June 2015. Appendix G of the PEIR provides some location information on the priority projects known at time of publication of the PEIR. Otherwise, the PEIR describes typical project types that would be employed within each EWMP, but does not provide specific details to any individual project. The analysis in the PEIR focuses on construction impacts of typical projects, the overall cumulative impacts associated with the program, and an assessment of program alternatives. Individual projects will be identified and subject to CEQA compliance on a case by case basis by the implementing agency.

Response to Comment 20-NN:

The documentation that identifies the 85th percentile, 24 hour storm as the most cost effective storm can be obtained at http://dpw.lacounty.gov/wmd/wmms/docs/DesignStormReport.pdf

Also, the 85th percentile, 24 hour storm is a theoretical storm based on historical rainfall data and not a specific storm at a specific time. More information can be found at http://www.ladpw.org/wrd/publication/engineering/Final_Report-Probability_Analysis_of_85th_Percentile_24-hr_Rainfall1.pdf

The runoff coefficients will vary from project to project and will not be part of the PEIR, but the calculations will be provided in the EWMPs.

The requirement to fully capture the 85th percentile storm in a regional BMP is a Permit requirement. Providing the hydrology calculations (design volume, runoff coefficients, time of concentrations) is beyond the scope of the PEIR, as it is an advanced planning document. The PEIR evaluates typical project types to assess potential impacts of implementing the entire program throughout the region over a long period of time. More information about these projects can be obtained from the individual implementing agencies. The capacity of each regional BMP identified will be subject to subsequent site specific analysis, which is dependent on local geology, precipitation trends and contributing area. Each regional BMP will be subject to further design, CEQA compliance, and approval by the implementing agencies.

Response to Comment 20-OO:

The EWMPs are under development and input was received from each participating permittee. The PEIR provides available information, acknowledging that projects will be changed and added over time to meet Permit objectives. The PEIR as an advanced planning tool provides an early environmental assessment of the overall EWMP compliance approach to assist Permittees in assessing individual projects. Project types are defined clearly in Section 2.4. The requirements of the Permit are defined in Section 1.2. Each concept identified in the PEIR is defined as needed to support the reader in understanding the analysis. However, individual projects are not yet designed to the detail requested by the commenter. As projects are designed, they will be evaluated by the implementing agencies and subject to a CEQA compliance determination.

Response to Comment 20-PP:

The EWMPs are under development. The PEIR provides available information, acknowledging that projects will be changed and added over time to meet Permit objectives. Tables 2-3, 2-4, and 2-5 provide available details on planned and proposed BMPs. Appendix G provides available location information for the priority projects that were identified at the time of publication.

Response to Comment 20-QQ:

The PEIR acknowledges that most of the projects to be included in the EWMPs are either currently undefined or currently under development. The PEIR explains that EWMPs are being prepared that will contain road maps to permit compliance for each of the 12 watersheds, without yet being fully detailed. The PEIR states on page ES-2 that "The PEIR analysis is not intended to focus on site-specific construction and operational details of each management strategy and project included in the EWMP. Rather this PEIR serves as a first-tier environmental document that focuses on the effects of implementing the EWMPs to reduce urban runoff pollution." The use of a PEIR pursuant to CEQA Guidelines Section 15168 is intended to evaluate broad-based impacts early in the planning process and is the appropriate CEQA compliance document for the EWMPs at this time.

Response to Comment 20-RR:

The projects objectives provided on page ES-3 and 2-2 are appropriate objectives for a CEQA compliance evaluation. Quantitative objectives and success criteria for water quality are mandated in the Permit. No additional or altered program objectives are necessary.

Response to Comment 20-SS:

In addition to the discussions on pages 3.8-20 and 3.8-21 of the PEIR, in regard to growth inducement, the PEIR acknowledges that increased stormwater recharge will augment groundwater supplies. The overall recharge volume will vary from basin to basin and from season to season and will increase over time as more BMPs are installed. This additional benefit of the EWMPs is consistent with the goals and plans of the regional groundwater basin managers and water suppliers as described in Section 3.14-1. Water retailers in Los Angeles County generally have two water sources available to them: imported water supplied by a water wholesaler (e.g., Metropolitan, Castaic Lake Water Agency) or groundwater. The two large groundwater basins in Los Angeles County are adjudicated, with established water rights made available to pumpers. The pumpers' allocations are constricted to prevent over-drafting the aquifer. The groundwater managers (Water Replenishment District of Southern California, Upper Los Angeles River Area Water Master) augment the groundwater basins with imported surface water when available to meet demands.

Population growth is expected in the region and the local water suppliers have prepared urban water management plans that explain how they intend to meet the growing demand. The current conditions throughout the State of California indicate that imported water supplies will be more limited in the future than they have been historically. Emphasis is being placed on local supplies to replace imported water. For example, the Water Replenishment District of Southern California is actively pursuing a policy of Water Independence Now (WIN) that will eliminate imported water for replenishment and replace it with storm water and recycled water recharge. The LACFCD has no authority over population growth, land use jurisdiction, or water supplies. As noted in Section 5.3 of the PEIR, the augmentation of water supplies as a secondary outcome of the EWMPs would not induce growth or remove an obstacle to growth, but may help to replace the use of imported water over time as a part of the regional water supply portfolio managed by others.

Furthermore, the PEIR evaluates the potential impacts of increased recharge to groundwater quality and groundwater levels in Impact 3.8-1. The potential for groundwater to exfiltrate in creeks, road cuts, and areas of lower elevation is recognized on page 3.8-35. However, as low flow BMPs are installed throughout the region, base flows fed from landscape runoff are predicted to decrease throughout the region. Any new contribution to surface water flows from new groundwater seepage would be accommodated by the drainage system and would reflect a more natural condition.

As stated on page 3.14-20 of the PEIR, cumulative impacts in regard to existing water supplies are anticipated to be beneficial as a result of stormwater and non-stormwater runoff infiltration and conservation BMPs implemented across the EWMP areas.

Environmental justice is discussed in Section 3.11, *Population and Housing and Environmental Justice*, Impact 3.11-4 on page 3.11-7. The PEIR concludes that impacts would be less than significant due to the broad distribution of water quality BMPs to be implemented throughout the communities. No mitigation was determined to be necessary to reduce environmental justice impacts to less than significant levels.

Response to Comment 20-TT:

In regard to the identification of potential and priority structural and non-structural BMPs mentioned in on page 1-1 of the PEIR, the commenter states that BMPs, groups of BMPs, and Projects are not defined at any engineering levels so as to determine cost-effectiveness, capabilities to achieve any project/program goal involving water quality or flows and their effects and impacts. To define the projects at "engineering levels" as stated by the commenter is interpreted to mean providing specific design details. Appendix G of the PEIR provides some location information on the priority projects known at time of publication of the PEIR; however, the EWMPs are currently in development and project details are not currently known. The effectiveness of each EWMP to achieve permit compliance will be evaluated by the RWQCB, which may require additional projects or management actions to ensure compliance.

The EWMPs will summarize project costs and funding mechanisms available to implementing agencies. Implementing agencies are responsible for identifying funding mechanisms needed to effectuate Permit compliance. The PEIR does not evaluate costs or funding sources for BMP implementation since providing funding is not an environmental impact. Revenue sources will vary for each implementing agency but will likely include grant funding, low interest loans, or local fee assessment.

Response to Comment 20-UU:

The Permit sets the schedule for preparation and delivery of the EWMPs. EWMPs are due to the RWQCB in June 2015. In an effort to maximize public involvement and participation, the LACFCD conducted six public meetings, placed numerous ads in regional and local newspapers, and maintained information including audio presentation on a dedicated website. Individual project approvals will require CEQA compliance by implementing agencies.

Response to Comment 20-VV:

Because project details are largely incomplete since the EWMPs are being drafted concurrently, each individual project will be subject to a CEQA compliance evaluation prior to approval by the implementing agencies as noted in Section 1 of the Draft PEIR. As individual projects identified in the EWMPs are fully developed, the implementing agency (i.e., the Permittee responsible for implementing the project) will conduct CEQA analysis for individual projects, as appropriate, or may determine that no additional CEQA analysis is required or that a project is exempt from CEQA. Each implementing agency would determine the significance after mitigation for potential impacts of its proposed projects.

The PEIR provides the LACFCD a foundation for any necessary future environmental review that focus on individual projects of the EWMPs for which the LACFCD is the designated Lead Agency.

As noted on page 1-3, the PEIR can be used by the LACFCD or other Permittees to streamline environmental review of individual projects. The process for incorporating the PEIR or tiering from the PEIR pursuant to Section 15152 of the CEQA Guidelines may be employed by lead agencies for use regarding individual BMPs at their discretion. No uniform tiering plan of action has been established for subsequent project approvals since each project will require specific consideration by varying Permittees implementing the requirements of CEQA at their discretion.

Response to Comment 20-WW:

Each jurisdiction has its own responsibility and discretion to comply with CEQA for individual EWMP projects. Because project details are largely incomplete since the EWMPs are being drafted concurrently, each individual project will be subject to a CEQA compliance evaluation prior to approval by the implementing agencies as noted in Section 1 of the Draft PEIR. As individual projects identified in the EWMPs are fully developed, the implementing agency (i.e., the Permittee responsible for implementing the project) will conduct CEQA analysis for individual projects, as appropriate, or may determine that no additional CEQA analysis is required or that a project is exempt from CEQA. Each implementing agency would determine the significance after mitigation for potential impacts of its proposed projects.

The PEIR provides the LACFCD with a foundation for any necessary future environmental review that focuses on individual projects of the EWMPs for which the LACFCD is the designated lead agency.

Response to Comment 20-XX:

EWMP groups were formed by Permittees from each jurisdiction in common watersheds electing to achieve Permit compliance through the EWMP process as outlined in the Permit. Each Permittee within the EWMP group has provided staff to assist in formulating strategies for compliance that include water quality modeling and preparation of a Reasonable Assurance Analysis, otherwise known as the EWMP Working Group. EWMP group and EWMP Working Group may be used interchangeably.

Response to Comment 20-YY:

The EWMPs are being developed concurrently and will be submitted to the RWQCB in June 2015. The PEIR includes information on the content of the EWMPS that was available at the time of publication and was based on the EWMP work plans. The comment is correct in stating that individual projects will require a subsequent CEQA compliance determination by implementing agencies prior to project approval.

Response to Comment 20-ZZ:

The discretionary action of the Board of Supervisors as noted on page 1-3 of the PEIR is to approve the submittal of the EWMPs to the RWQCB.

Response to Comment 20-AAA:

The EWMPs are in the process of being developed. As such, the PEIR identifies and analyzes the impacts of project types that the EWMPs are considering within each watershed to achieve Permit compliance. As individual projects are identified, the implanting agencies will conduct a CEQA determination prior to project approval and implementation. Implementing agencies adopting this PEIR are subject to the mitigation measures developed herein and included in the MMRP.

Response to Comment 20-BBB:

EWMP groups were formed by Permittees from each jurisdiction in common watersheds electing to achieve Permit compliance through the EWMP process as outlined in the Permit. Each Permittee within the EWMP group has provided staff to assist in formulating strategies for compliance that include water quality modeling and preparation of a Reasonable Assurance Analysis, otherwise known as the EWMP Working Group. EWMP group and EWMP Working Group may be used interchangeably.

Response to Comment 20-CCC:

Each EWMP employs water quality predictive modeling as part of the process of identifying BMP locations and designs. Each watershed within the region has focused on using predictive modeling tailored to its own needs. The Permit requires that Reasonable Assurance Analysis be conducted to predict the outcome of the BMPs to be employed throughout the individual watersheds. The PEIR evaluates the potential environmental impacts of implementing structural and non-structural BMPs. The effectiveness of each EWMP to achieve permit compliance will be evaluated by the RWQCB, which may require additional projects or management actions to ensure compliance.

Providing the hydrology calculations (design volume, runoff coefficients, time of concentrations) is beyond the scope of the PEIR, as it is an advanced planning document. The PEIR evaluates typical project types to assess potential impacts of implementing the entire program throughout the region over a long period of time. More information about these projects can be obtained from the implementing agency Subsequent CEQA analysis will be performed for the implementation of specific BMPs, which will be able to use site-specific environmental setting and BMP design details to more accurately assess whether water quality goals and objectives will be met.

Response to Comment 20-DDD:

Each jurisdiction has its own responsibility and discretion to comply with CEQA for individual EWMP projects. As individual projects identified in the EWMPs are fully developed, the implementing agency (i.e., the Permittee responsible for implementing the project) will conduct CEQA analysis for individual projects, as appropriate, or may determine that no additional CEQA analysis is required or that a project is exempt from CEQA. Each implementing agency would determine the significance after mitigation for potential impacts of its proposed projects. As noted on page 1-3, the PEIR can be used by the LACFCD or other Permittees to streamline environmental review of individual projects. The process for incorporating the PEIR or tiering from the PEIR pursuant to Section 15152 of the CEQA Guidelines may be employed by lead agencies for use regarding individual BMPs at their discretion. No uniform tiering plan of action has been established for subsequent project approvals since each project will require specific consideration by varying Permittees implementing the requirements of CEQA at their discretion.

Response to Comment 20-EEE:

The priority BMPs are defined as those BMPs that have undergone a site review and project evaluation that has identified them as having a greater opportunity to achieve the water quality objectives for their specific EWMP area. These priority BMPs were listed based upon available data at the time of publication of this PEIR. A priority BMP and priority project can be used interchangeably. **Appendix G** provides the location and general description of the priority BMPs.

Response to Comment 20-FFF:

Because project details are largely incomplete since the EWMPs are being drafted concurrently, each individual project will be subject to a CEQA compliance evaluation prior to approval by the implementing agencies as noted in Section 1 of the Draft PEIR. As individual projects identified in the EWMPs are fully developed, the implementing agency (i.e., the Permittee responsible for implementing the project) will conduct CEQA analysis for individual projects, as appropriate, or may determine that no additional CEQA analysis is required or that a project is exempt from CEQA. Each implementing agency would determine the significance after mitigation for potential impacts of its proposed projects.

The PEIR serves as a first-tier environmental document that focuses on the effects of implementing the EWMPs to reduce urban runoff pollution. The analysis assesses worst case situations where construction or operation of projects may significantly impact environmental resources. The analysis outlines mitigation strategies to be followed by the LACFCD and other implementing agencies that rely on the PEIR to avoid or minimize impacts wherever feasible.

The PEIR provides the LACFCD a foundation for any necessary future environmental review that focus on individual projects of the EWMPs for which the LACFCD is the designated Lead Agency.

The process for incorporating the PEIR or tiering from the PEIR pursuant to Section 15152 of the CEQA Guidelines may be employed by lead agencies for use regarding individual BMPs at their discretion. No uniform tiering plan of action has been established for subsequent project approvals since each project will require specific consideration by varying Permittees.

Response to Comment 20-GGG:

Because project details are largely incomplete since the EWMPs are being drafted concurrently, each individual project will be subject to a CEQA compliance evaluation prior to approval by the implementing agencies as noted in Section 1 of the Draft PEIR. As individual projects identified in the EWMPs are fully developed, the implementing agency (i.e., the Permittee responsible for implementing the project) will conduct CEQA analysis for individual projects, as appropriate, or may determine that no additional CEQA analysis is required or that a project is exempt from CEQA. Each implementing agency would determine the significance after mitigation for potential impacts of its proposed projects.

The PEIR serves as a first-tier environmental document that focuses on the effects of implementing the EWMPs to reduce urban runoff pollution. The analysis assesses worst case situations where construction or operation of projects may significantly impact environmental resources. The analysis outlines mitigation strategies to be followed by the LACFCD and other implementing agencies that rely on the PEIR to avoid or minimize impacts wherever feasible.

The PEIR provides the LACFCD a foundation for any necessary future environmental review that focus on individual projects of the EWMPs for which the LACFCD is the designated Lead Agency.

The process for incorporating the PEIR or tiering from the PEIR pursuant to Section 15152 of the CEQA Guidelines may be employed by lead agencies for use regarding individual BMPs at their discretion. No uniform tiering plan of action has been established for subsequent project approvals since each project will require specific consideration by varying Permittees.

Response to Comment 20- HHH:

The PEIR does not state that CEQA is voluntary. The PEIR states that participation in an EWMP is optional.

The process for incorporating the PEIR or tiering from the PEIR pursuant to Section 15152 of the CEQA Guidelines may be employed by lead agencies for use regarding individual BMPs at their discretion. No uniform tiering plan of action has been established for subsequent project approvals since each project will require specific consideration by varying Permittees. Each jurisdiction has its own responsibility and discretion to comply with CEQA for individual EWMP projects.

Response to Comment 20- III:

The PEIR has been prepared by the LACFCD to assess the EWMP program and to make conclusions regarding projects that will require LACFCD approval. The actions of other Permittees including those that may adopt the PEIR are not subject to LACFCD approval. The list of Permittees actively involved in the EWMP process is included Table 2-1.

Response to Comment 20- JJJ:

The text on page 1-5 of the PEIR is provided to summarize the requirements of the Permit in lay-person terms. The details of pollutant priorities and water quality objectives are different for each EWMP and will be included in the EWMP submittals. The PEIR evaluates at a program level, typical projects that will be installed throughout the County to improve surface water quality.

Response to Comment 20- KKK:

In regard to the hydrologic model, each EWMP employs water quality predictive modeling as part of the process of identifying BMP locations and designs. Each watershed within the region has focused on using predictive modeling tailored to its own needs, including consideration of existing TMDLs. The Permit requires that Reasonable Assurance Analysis be conducted to predict the outcome of the BMPs to be employed throughout the individual watersheds. The PEIR evaluates the potential environmental impacts of implementing structural and non-structural BMPs. The effectiveness of each EWMP to achieve permit compliance, including with TMDLs, will be evaluated by the RWQCB, which may require additional projects or management actions to ensure compliance.

Response to Comment 20- LLL:

The priority BMPs are defined as those BMPs that have undergone a site review and project evaluation that has identified them as having a greater opportunity to achieve the water quality objectives for their specific EWMP area. These priority BMPs were listed based upon available data at the time of publication of this PEIR. **Appendix G** provides the location and general description of the priority BMPs.

The text on page 1-5 of the PEIR is provided to summarize the requirements of the Permit in lay-person terms. The details of pollutant priorities and water quality objectives are different for each EWMP and will be included in the EWMP submittals. The PEIR evaluates at a program level, typical projects that will be installed throughout the County to improve surface water quality.

Response to Comment 20- MMM:

Regarding the hydrologic model, each EWMP employs water quality predictive modeling as part of the process of identifying BMP locations and designs. A single surface water quality model for the entire County has not been employed since such an effort would provide minimal value for the amount of effort required. Further, CEQA does not require that a predictive hydrology model be conducted. Each watershed within the region has focused on using predictive modeling tailored to its own needs. The Permit requires that Reasonable Assurance Analysis be conducted to predict the outcome of the BMPs to be employed throughout the individual watersheds. The PEIR evaluates the potential environmental impacts of implementing structural and non-structural BMPs. The effectiveness of each EWMP to achieve permit compliance will be evaluated by the RWQCB, which may require additional projects or management actions to ensure compliance.

Response to Comment 20- NNN:

Management strategies include policies, actions, and activities which are intended to minimize or eliminate pollutant sources. Management strategies also include the various structural BMPs identified in the EWMPs.

Response to Comment 20- OOO:

Regarding the hydrologic model, each EWMP employs water quality predictive modeling as part of the process of identifying BMP locations and designs. A single surface water quality model for the entire County has not been employed since such an effort would provide minimal value for the amount of effort required. Rather, each watershed within the region has focused on using predictive modeling tailored to its own needs. The Permit requires that Reasonable Assurance Analysis be conducted to predict the outcome of the BMPs to be employed throughout the individual watersheds. The PEIR evaluates the potential environmental impacts of implementing structural and non-structural BMPs. The effectiveness of each EWMP to achieve permit compliance will be evaluated by the RWQCB, which may require additional projects or management actions to ensure compliance.

Response to Comment 20- PPP:

The commenter provides a statement that Appendix A and Sections 3.2 and 3.6 reference many air-related models and modeled/modeling results and comparable to requirements for surface recharging and groundwater. However, no specific comment has been identified and as such no response is necessary.

Response to Comment 20- QQQ:

Regarding the hydrologic model, each EWMP employs water quality predictive modeling as part of the process of identifying BMP locations and designs. A single surface water quality model for the entire County has not been employed since such an effort would provide minimal value for the amount of effort required. Further, CEQA does not require that a predictive hydrology model be conducted. Each watershed within the region has focused on using predictive modeling tailored to its own needs. The Permit requires that Reasonable Assurance Analysis be conducted to predict the outcome of the BMPs to be employed throughout the individual watersheds. The PEIR evaluates the potential environmental impacts of implementing structural and non-structural BMPs. The effectiveness of each EWMP to achieve permit compliance will be evaluated by the RWQCB, which may require additional projects or management actions to ensure compliance.

Response to Comment 20- RRR:

The priority BMPs have undergone a site review and project evaluation that has identified them as having a greater opportunity to achieve the water quality objectives for their specific EWMP area. These priority BMPs were listed based upon available data at the time of publication of this PEIR. A priority BMP and priority project can be used interchangeably. Appendix G provides the location and general description of the priority BMPs.

The PEIR provides the LACFCD a foundation for any necessary future environmental review that focus on individual projects of the EWMPs for which the LACFCD is the designated Lead Agency. The LACFCD, as a regional agency, is a member of each of the 12 EWMP working groups, and as such provides a commonality within each EWMP group. However, LACFCD does not have a special status or authority designated by the MS4 Permit over any of the other Permittees and cannot enforce those mitigation measures outside their jurisdiction. The LACFCD will be working with the applicable Permittees in all 12 EWMP watersheds as an equal partner to identify the types and locations of BMPs needed to achieve permit compliance within each watershed. Each Permittee may choose to rely upon this PEIR and its identified mitigation measures, as appropriate, for BMPs within its jurisdiction. Individual projects will undergo subsequent CEQA analysis and documentation, as appropriate under the requirements of CEQA, by implementing agencies. The determinations of significance after mitigation in the PEIR apply to the LACFCD and other implementing agencies that choose to rely on this PEIR and the mitigation measures proposed herein. This PEIR can be used by the LACFCD or other Permittees to streamline environmental review of individual EWMP projects should they also adopt the findings within this PEIR. As individual projects identified in the EWMPs are fully developed, the implementing agency (i.e., the Permittee responsible for implementing the project) will conduct CEQA analysis for individual projects, as appropriate, or may determine that no additional CEQA analysis is needed with compliance with the mitigation measures identified in this PEIR.

The process for incorporating the PEIR or tiering from the PEIR pursuant to Section 15152 of the CEQA Guidelines may be employed by lead agencies for use regarding individual BMPs at their discretion. No uniform tiering plan of action has been established for subsequent project approvals since each project will require specific consideration by varying Permittees. Each jurisdiction has its own responsibility and discretion to comply with CEQA for individual EWMP projects.

Response to Comment 20- SSS:

Page 1-9 of the PEIR provides basic descriptions of the CEQA process and the purpose of a PEIR in lay-person terms. The comment does not clarify what is difficult to understand about the page in question.

Response to Comment 20- TTT:

The PEIR evaluates the potential impacts of project implementation, but does not evaluate the effectiveness of the strategies for achieving Permit compliance. The EWMP process includes a mechanism for the RWQCB to determine effectiveness of the BMPs over time.

Response to Comment 20- UUU:

The priority BMPs have undergone a site review and project evaluation that has identified them as having a greater opportunity to achieve the water quality objectives for their specific EWMP area. These priority BMPs were listed based upon available data at the time of publication of this PEIR. A priority BMP and priority project can be used interchangeably. Appendix G provides the location and general description of the priority BMPs.

The PEIR evaluates the potential impacts of project implementation, but does not evaluate the effectiveness of the strategies for achieving Permit compliance. Nor does the PEIR evaluate the suitability of the proposed EWMP development methodologies. The EWMP process includes a mechanism for the RWQCB to determine effectiveness of the BMPs over time.

Each watershed is described in general in Section 2.5, as well as section 3.8, Hydrology and Water Quality, and Appendix F Supplemental Hydrology and Water Quality Data.

Providing the hydrology calculations (design volume, runoff coefficients, time of concentrations) is beyond the scope of the PEIR, as it is an advanced planning document. The PEIR evaluates typical project types to assess potential impacts of implementing the entire program throughout the region over a long period of time. More information about these projects can be obtained from the individual implementing agencies. The capacity of each regional BMP identified will be subject to subsequent site specific analysis, which is dependent on local geology, precipitation trends and contributing area. Each regional BMP will be subject to further design, CEQA compliance, and approval by the implementing agencies.

Response to Comment 20- VVV:

The PEIR evaluates the potential impacts of project implementation, but does not evaluate the effectiveness of the strategies for achieving Permit compliance. Nor does the PEIR evaluate the suitability of the proposed EWMP development methodologies. The EWMP process includes a mechanism for the RWQCB to determine effectiveness of the BMPs over time. The degree of urbanization for each watershed is described in general in Section 2.5, as well as section 3.8, *Hydrology and Water Quality*, and Appendix F Supplemental Hydrology and Water Quality Data.

Response to Comment 20- WWW:

The PEIR acknowledges that most of the projects to be included in the EWMPs are either currently undefined or currently under development. The PEIR explains that EWMPs are being prepared that will contain road maps to permit compliance for each of the 12 watersheds, without yet being fully detailed. The priority BMPs have undergone a site review and project evaluation that has identified them as having a greater opportunity to achieve the water quality objectives for their specific EWMP area. These priority BMPs were listed based upon available data at the time of publication of this PEIR. Appendix G of the PEIR provides the location and general description of the priority BMPs.

Response to Comment 20- XXX:

The EWMPs will summarize project costs and funding mechanisms available to implementing agencies. Implementing agencies are responsible for identifying funding mechanisms needed to effectuate Permit compliance. The PEIR does not evaluate costs or funding sources for BMP implementation since providing funding is not an environmental impact. Revenue sources will vary for each implementing agency but will likely include grant funding, low interest loans, or local fee assessment..

Response to Comment 20- YYY:

Eight scoping period comment letters were not included in the PEIR as part of an accidental omission. These comment letters generally expressed support for the restoration of Baldwin Lake, which was a topic mentioned in Dale Carter's letter that was included in Table 1-1 and considered as part of the PEIR development. These omitted letters have been listed in Table 1.1, NOP Commenter List, as shown in Chapter 12, *Clarifications and Modifications*. These letters are also included as a part of this Final PEIR as part of Appendix A.

Environmental justice is discussed in Section 3.11, *Population and Housing and Environmental Justice*, Impact 3.11-4 on page 3.11-7. The PEIR concludes that impacts would be less than significant due to the broad distribution of water quality BMPs to be implemented throughout the communities. No mitigation was determined to be necessary to reduce environmental justice impacts to less than significant levels.

The EWMPs will summarize project costs and funding mechanisms available to implementing agencies. Implementing agencies are responsible for identifying funding mechanisms needed to effectuate Permit compliance. The PEIR does not evaluate costs or funding sources for BMP implementation since providing funding is not an environmental impact. Revenue sources will vary for each implementing agency but will likely include grant funding, low interest loans, or local fee assessment.

Response to Comment 20- ZZZ:

The project objectives are provided in Section 2.2 of the Draft PEIR.

Response to Comment 20- AAAA:

The EWMPs provide multiple benefits, but the project objectives are to improve water quality as defined in Section 2.2 of the Draft PEIR.

Response to Comment 20- BBBB:

The use of a PEIR pursuant to CEQA Guidelines Section 15168 is intended to evaluate broad-based impacts early in the planning process and is the appropriate CEQA compliance document for the EWMPs at this time.

Response to Comment 20- CCCC:

The EWMPs will summarize project costs and funding mechanisms available to implementing agencies. Implementing agencies are responsible for identifying funding mechanisms needed to effectuate Permit compliance. The PEIR does not evaluate costs or funding sources for BMP implementation since providing funding is not an environmental impact. Revenue sources will vary for each implementing agency but will likely include grant funding, low interest loans, or local fee assessment.

Response to Comment 20-DDDD:

Each BMP will affect flood control facilities differently. Direct benefits may include reduced hyrdomodification, reduced erosion, and reduced peak flows. Retention of storm flows, whatever the volume, assists in reducing peak flows downstream. These benefits would not be growth-inducing. Some BMPs will reduce dry-weather flows as well. The reduction in dry weather base flow will vary from watershed to watershed and season to season and will increase over time as more BMPs are installed. Table 2-3 identifies multi-benefit flood management project as BMP types to be assessed.

Response to Comment 20-EEEE:

The PEIR acknowledges that most of the projects to be included in the EWMPs are either currently undefined or currently under development. The PEIR explains that EWMPs are being prepared that will contain road maps to permit compliance for each of the 12 watersheds, without yet being fully detailed. Appendix G includes a list of the locations of priority projects identified as of the time of publication of the PEIR.

Response to Comment 20-FFFF:

The PEIR assesses various potential impacts of BMP implementation including wet and dry detention ponds in Section 3. Table ES-1 summarizes all mitigation measures identified in the Section 3 analysis to avoid or minimize potentially significant impacts. The term “engineering mitigation measures” as used by the commenter likely refers to specific design components incorporated as part of wet and dry detention ponds to reduce environmental impacts during their operation. Table 3.1-1 of the PEIR states that Mitigation Measure AES-1 would apply to detention regional BMPs. The following Mitigation Measures listed below pertain to the design of the BMPs.

- Mitigation Measure AES-1 would require aboveground structures to designed to be consistent with local zoning codes and applicable design guidelines and to minimize features that contrast with neighboring development.
- Mitigation Measure GEO-1 requires a geotechnical investigation that would recommend design measures necessary to prevent excessive lateral spreading that could destabilize neighboring structures.
- Mitigation Measure HAZ-1 requires structural BMPs to be designed to prevent migration of constituents that may impact groundwater.
- Mitigation Measure HYDRO-2 requires BMP design to consider pre-treatment technologies, type, and depth of filtration media; depth to groundwater; stormwater quality data within the BMP’s collection area to assess the need and type of treatment and filtration controls; and local design manuals and ordinances requiring minimum separation distance to groundwater.
- Mitigation Measure HYDRO-4 requires that BMP discharge locations are designed to minimize any hydromodification impacts including erosion and scour. Designs could include velocity dissipaters and bank re-enforcement components.
- Mitigation Measure NOISE-2 requires mechanized stationary equipment used for BMPs to be designed with noise-attenuating features.

As noted in Section 1, each individual project will undergo subsequent CEQA determination by the lead implementing agency prior to installation; more specific design components will be known at this level of analysis.

Response to Comment 20-GGGG:

The PEIR discusses potential impacts to public health in Impact 3.7-2. The PEIR acknowledges that accumulation of contaminants in BMPs over time could result in hazardous conditions. Mitigation Measure HAZ-1 is included to ensure that maintenance plans are prepared and implemented to reduce the risk to public health. BMPs may detain water that stagnates or generates odors. Mitigation Measure AIR-4 requires implementing agencies to consider odor controls to reduce impacts to the public. Other vectors such as mosquitos and rodents could be attracted to standing water. Local vector control agencies would employ measures to reduce public health impacts from areas of standing water in cooperation with the LACFCD. In response to the comment Mitigation Measure HAZ-1 has been modified to ensure that vector control plans are incorporated into BMP maintenance plans. Both mitigation measures AIR-4 and HAZ-1 would reduce potentially significant impacts to less than significant levels. Mitigation Measure HAZ-1 has been revised as follows:

> **HAZ-1:** Implementing agencies shall prepare and implement maintenance practices that include periodic removal and replacement of surface soils and media that may accumulate constituents that could result in further migration of constituents to sub-soils and groundwater. A BMP Maintenance Plan shall be prepared by Implementing Agencies upon approval of the BMP projects that identifies the frequency and procedures for removal and/or replacement of accumulated debris, surface soils and/or media (to depth where constituent concentrations do not represent a hazardous conditions and/or have the potential to migrate further and impact groundwater) to avoid accumulation of hazardous concentrations and the potential to migrate further to sub-soils and groundwater. <u>The Maintenance Plan shall include vector control requirements.</u> The BMP Maintenance Plan may consist of a general maintenance guideline that applies to several types of smaller distributed BMPs. For smaller distributed BMPs on private property, these plans may consist of a maintenance covenant that includes requirements to avoid the accumulation of hazardous concentrations in these BMPs that may impact underlying sub-soils and groundwater. Structural BMPs shall be designed to prevent migration of constituents that may impact groundwater.

The addition of rain barrels as potentially effective distributed BMPs is noted in on page 2-14. Table 3.1-1 notes which mitigation measures would apply to rain barrel installation. The quantified impact to downstream hydrology from installing individual rain barrels would depend on the location, watershed, and rate of LID implementation. The LID write-ups on page 3.8-31 of the PEIR do not need to include specific rain barrel requirements; the basic LID objectives and goals need only be described. The detailed LID requirements will be applied to each project developed.

Response to Comment 20-HHHH:

The PEIR acknowledges that accumulation of contaminants in BMPs over time could result in hazardous conditions. Mitigation Measure HAZ-1 is included to ensure that maintenance plans are prepared and implemented to reduce the risk to public health. BMPs may detain water that stagnates or generates odors. Mitigation Measure HAZ-1 would require the removal of contaminated soils and reduce potentially significant impacts to less than significant levels. Mitigation Measure HAZ-1 has been updated as follows:

> **HAZ-1:** Implementing agencies shall prepare and implement maintenance practices that include periodic removal and replacement of surface soils and media that may accumulate constituents that could result in further migration of constituents to sub-soils and groundwater. A BMP Maintenance Plan shall be prepared by Implementing Agencies upon approval of the BMP projects that identifies the frequency and procedures for removal and/or replacement of accumulated debris, surface soils and/or media (to depth where constituent concentrations do not represent a hazardous conditions and/or have the potential to migrate further and impact groundwater) to avoid accumulation of hazardous concentrations and the potential to migrate further to sub-soils and groundwater. <u>The Maintenance Plan shall include vector control requirements.</u> The BMP Maintenance Plan may consist of a general maintenance guideline that applies to several types of smaller distributed BMPs. For smaller distributed BMPs on private property, these plans may consist of a maintenance covenant that includes requirements to avoid the accumulation of hazardous concentrations in these BMPs that may impact underlying sub-soils and groundwater. Structural BMPs shall be designed to prevent migration of constituents that may impact groundwater.

Response to Comment 20-IIII:

The commenter's statement that the centralized and regional BMP discussions are repetitive has been noted; however, repetitive language does not affect the impact conclusions of the PEIR. Centralized Structural BMPs treat runoff from a contributing area of multiple parcels (e.g., facilities typically serving a contributing area on the order of tens or hundreds of acres or larger). Regional Structural BMPs are similar but are meant to retain the 85th percentile storm over 24 hours from a contributing area.

Response to Comment 20-JJJJ:

The potential for groundwater to exfiltrate in creeks, road cuts, and areas of lower elevation is recognized on page 3.8-35. However, as low flow BMPs are installed throughout the region, base flows fed from landscape runoff are predicted to decrease throughout the region. Therefore, rising base flow is not expected to occur as mentioned by the commenter. Any new contribution to surface water flows from new groundwater seepage would be accommodated by the drainage system and would reflect a more natural condition.

Response to Comment 20-KKKK:

The commenter disagrees with the statement on page 2-26 that states that plants in the wash also aid the biogeochemical removal of pollutants such as nitrogen. The commenter's statement that few emergent plants can absorb or treat any aqueous pollutants is not substantiated with information.

Response to Comment 20-LLLL:

The Draft PEIR reflects a good faith effort to investigate and disclose environmental impacts of the project in full compliance with the requirements of CEQA. The suggestion that the Draft PEIR is complex with repetitive wording that causes confusion in relation to public review and participation in the CEQA process is not supported by substantial evidence. The Draft PEIR includes an Introduction and a clear, accurate Project Description that include all the information required by CEQA to comprise an adequate description of the project without supplying extensive detail beyond that needed for evaluation and review of the environmental impacts (14 Cal. Code Regs. Section 15124). Chapter 12, *Clarifications and Modifications*, outlines the revisions to the Draft PEIR.

Response to Comment 20-MMMM:

EWMP groups were formed by Permittees from each jurisdiction in common watersheds electing to achieve Permit compliance through the EWMP process as outlined in the Permit. Each Permittee within the EWMP group has provided staff to assist in formulating strategies for compliance that include water quality modeling and preparation of a Reasonable Assurance Analysis, otherwise known as the EWMP Working Group. EWMP group and EWMP Working Group may be used interchangeably.

The priority BMPs are defined as those BMPs that have undergone a site review and project evaluation that has identified them as having a greater opportunity to achieve the water quality objectives for their specific EWMP area. These priority BMPs were listed based upon available data at the time of publication of this PEIR. Appendix G provides the location and general description of the priority BMPs.

Each program will implement multiple projects. Projects and BMPs can be used interchangeably.

Response to Comment 20-NNNN:

The proposed EWMP BMPs as described in the PEIR are under development; therefore, total projected annual recharge flows resulting from the BMPs cannot be predicted at this time. Reservoir is defined as “usually artificial lake that is used to store a large supply of water for use in people's homes, in businesses, etc.” (Merriam-Webster, 2015c). The terms “recharge basin” and “infiltration basin” are often used synonymously; an infiltration basin is defined as “an infiltration basin is a shallow impoundment which is designed to infiltrate stormwater into the soil” (EPA, 2014). Therefore, a reservoir is usually used to describe an above-ground structure that retains water for water supply purposes and does not necessarily infiltrate water, and a recharge basin is designed to capture and infiltrate water for recharge purposes.

Response to Comment 20-OOOO:

Figure 2-14 provides the location and distribution of potential regional/centralized BMPs (which would include any retention basins) in the Upper Los Angeles River EWMP as noted on page 2-

42. Each potential location will be evaluated for site suitability by implementing agencies for inclusion in the EWMP.

Response to Comment 20-PPPP:

The proposed EWMP BMPs as described in the PEIR are under development. More site investigations are needed to fully vet the proposed projects and define the project scope needed to satisfy the respective EWMP requirements; these analyses will be done following the certification of this EIR in the individual EWMPs themselves. The decision to implement projects as part of the individual EWMPs will be decided by respective jurisdictions. The MMRP for the PEIR will include the appropriate implementation of the mitigation measures identified in the PEIR. Implementation schedules for individual BMPs will be developed within each EWMP by the Permittees.

The Permit sets the schedule for preparation and delivery of the EWMPs. EWMPs are due to the RWQCB in June 2015. In an effort to maximize public involvement and participation, the LACFCD conducted six public meetings, placed numerous ads in regional and local newspapers, and maintained information including audio presentation on a dedicated website. Individual project approvals will require CEQA compliance by implementing agencies.

Response to Comment 20-QQQQ:

The term each jurisdiction refers to each lead agency or implementing agency. The PEIR does not evaluate costs or funding sources for BMP implementation since providing funding is not an environmental impact.

Response to Comment 20-RRRR:

The PEIR assesses green-house gas emissions and climate change in Section 3.6. The EWMPs identify BMPs designed to meet the Permit limits under existing climate conditions. The EWMPs include an adaptive management process which can incorporate future climate conditions once data is collected. More information regarding the precipitation rainfall across the County can be found http://www.ladpw.org/wrd/publication/engineering/Final_Report-Probability_Analysis_of_85th_Percentile_24-hr_Rainfall1.pdf.

Response to Comment 20-SSSS:

The commenter states that no comparable, similar, or differing watershed conditions or characteristics have been identified other than physical channel connections.

The EWMPs cover distinct watersheds described in Section 2.5, Section 3.3.1 and in Section 3.8.1.

Response to Comment 20-TTTT:

The referenced screening assessment will be provided in the EWMPs. The EWMPs are under development. Planned projects are projects that are currently being implemented and identified in each EWMP's Notice of Intent. The term planned project is used to reflect projects that are already being planned to be constructed in the near future. They would not be a priority or potential project. Table 2-4 includes a column that notes the status of the project as complete or planned to be installed and provides an approximate date of completion where available.

The priority projects mentioned in the PEIR were initially selected to be further investigated as part of the EWMPs. The future projects will be selected based on engineering feasibility, water quality reduction benefit, and other factors such as soil investigations, partnership opportunities, etc. Priority projects known at the time of the publication of the PEIR are listed in Appendix G. Potential projects being developed by each EWMP group will be submitted to the RWQCB in June 2015. The screening assessment referenced will be provided in the EWMPs.

Response to Comment 20-UUUU:

Distributed BMPs do not fall into the priority, potential, or planned projects category as they will be implemented in areas where the regional/centralized BMPs are unable to capture or treat it's tributary runoff. The term planned project is used to reflect projects that are already being planned to be constructed in the near future. They would not be a priority or potential project. Table 2-4 includes a column that notes the status of the project as complete or planned to be installed and provides an approximate date of completion where available.

The priority projects mentioned in the PEIR were initially selected to be further investigated as part of the EWMPs. The future projects will be selected based on engineering feasibility, water quality reduction benefit, and other factors such as soil investigations, partnership opportunities, etc. Priority projects known at the time of the publication of the PEIR are listed in Appendix G. Potential projects being developed by each EWMP group will be submitted to the RWQCB in June 2015.

Response to Comment 20-VVVV:

The use of the word "could" is appropriate when analyzing potential impacts according to CEQA thresholds. The analysis that follows that threshold statement indicates the project would not require new or expanded water supplies. The PEIR evaluates types of projects that may be installed to comply with the Permit. Each individual project will require subsequent CEQA determination by the implementing agency.

Response to Comment 20-WWWW:

The structural BMPs would require construction and would generate some temporary employment. Maintenance of structural BMPs could potentially generate permanent employment within the maintenance staffs of the Permittees. However, implementation of the EWMPs is not expected to substantially increase or generate employment in the area.

In addition to the discussions on pages 3.8-20 and 3.8-21 of the PEIR, in regard to growth inducement, the PEIR acknowledges that increased stormwater recharge will augment groundwater supplies. The overall recharge volume will vary from basin to basin and from season to season and will increase over time as more BMPs are installed. This additional benefit of the EWMPs is consistent with the goals and plans of the regional groundwater basin managers and water suppliers as described in Section 3.14-1. Water retailers in Los Angeles County generally have two water sources available to them: imported water supplied by a water wholesaler (e.g., Metropolitan, Castaic Lake Water Agency) or groundwater. The two large groundwater basins in Los Angeles County are adjudicated, with established water rights made available to pumpers. The pumpers' allocations are constricted to prevent over-drafting the aquifer. The groundwater managers (Water Replenishment District of Southern California, Upper Los Angeles River Area Water Master) augment the groundwater basins with imported surface water when available to meet demands.

Population growth is expected in the region and the local water suppliers have prepared urban water management plans that explain how they intend to meet the growing demand. The current conditions throughout the State of California indicate that imported water supplies will be more limited in the future than they have been historically. Emphasis is being placed on local supplies to replace imported water. For example, the Water Replenishment District of Southern California is actively pursuing a policy of Water Independence Now (WIN) that will eliminate imported water for replenishment and replace it with storm water and recycled water recharge. The LACFCD has no authority over population growth, land use jurisdiction, or water supplies. As noted in Section 5.3 of the PEIR, the augmentation of water supplies as a secondary outcome of the EWMPs would not induce growth or remove an obstacle to growth, but may help to replace the use of imported water over time as a part of the regional water supply portfolio managed by others.

Response to Comment 20-XXXX:

The term "feasibility," the noun form of "feasible," is used in the PEIR in a manner consistent with its definition, which is "possible to do" (Merriam-Webster, 2015d). The term "infeasibility," the noun form of "infeasible," is used in the PEIR in a manner consistent with its definition, which is "not feasible; impracticable" (Merriam-Webster, 2015e). The project objectives provided on page ES-3 and 2-2 are appropriate objectives for a CEQA compliance evaluation. Quantitative objectives and success criteria for water quality are mandated in the Permit. No additional or altered program objectives are necessary.

Regarding a hydrologic model, each EWMP employs water quality predictive modeling as part of the process of identifying BMP locations and designs. Each watershed within the region has focused on using predictive modeling tailored to its own needs. The Permit requires that Reasonable Assurance Analysis be conducted to predict the outcome of the BMPs to be employed throughout the individual watersheds. The PEIR evaluates the potential environmental impacts of implementing structural and non-structural BMPs. The effectiveness of each EWMP to achieve permit compliance will be evaluated by the RWQCB, which may require additional projects or management actions to ensure compliance.

In regard to cost-effectiveness, the EWMPs will summarize project costs and funding mechanisms available to implementing agencies. Implementing agencies are responsible for identifying funding mechanisms needed to effectuate Permit compliance. The PEIR does not evaluate costs or funding sources for BMP implementation since providing funding is not an environmental impact. Revenue sources will vary for each implementing agency but will likely include grant funding, low interest loans, or local fee assessment.

Each BMP will affect flood control facilities differently. Direct benefits may include reduced hyrdomodification, reduced erosion, and reduced peak flows. Retention of storm flows, whatever the volume, assists in reducing peak flows downstream. Some BMPs will reduce dry-weather flows as well. The reduction in dry weather base flow will vary from watershed to watershed and season to season and will increase over time as more BMPs are installed. A more-detailed prediction of future dry weather and wet weather flows is currently unavailable.

The project objectives are provided in Section 2.2 of the Draft PEIR.

Response to Comment 20- YYYY:

Mitigation Measure GEO-1 requires that implementing agencies conduct site specific geotechnical studies to confirm that infiltration is feasible; this mitigation measure would reduce potentially significant impacts to less than significant levels.

Response to Comment 20- ZZZZ:

The EWMPs will summarize project costs and funding mechanisms available to implementing agencies. Implementing agencies are responsible for identifying funding mechanisms needed to effectuate Permit compliance. The PEIR does not evaluate costs or funding sources for BMP implementation since providing funding is not an environmental impact. Revenue sources will vary for each implementing agency but will likely include grant funding, low interest loans, or local fee assessment.

In regard to the hydrologic model, each EWMP employs water quality predictive modeling as part of the process of identifying BMP locations and designs. Each watershed within the region has focused on using predictive modeling tailored to its own needs. A single surface water quality model for the entire County has not been employed since such an effort would provide minimal value for the amount of effort required. Further, CEQA does not require that a predictive hydrology model be conducted. The Permit requires that Reasonable Assurance Analysis be conducted to predict the outcome of the BMPs to be employed throughout the individual watersheds. The PEIR evaluates the potential environmental impacts of implementing structural and non-structural BMPs. The effectiveness of each EWMP to achieve permit compliance will be evaluated by the RWQCB, which may require additional projects or management actions to ensure compliance.

Response to Comment 20-AAAAA:

In regard to the hydrologic model, each EWMP employs water quality predictive modeling as part of the process of identifying BMP locations and designs. A single surface water quality model for the entire County has not been employed since such an effort would provide minimal value for the amount of effort required. Further, CEQA does not require that a predictive hydrology model be conducted. Each watershed within the region has focused on using predictive modeling tailored to its own needs. The Permit requires that Reasonable Assurance Analysis be conducted to predict the outcome of the BMPs to be employed throughout the individual watersheds. The PEIR evaluates the potential environmental impacts of implementing structural and non-structural BMPs. The effectiveness of each EWMP to achieve permit compliance will be evaluated by the RWQCB, which may require additional projects or management actions to ensure compliance.

In addition to the discussions on pages 3.8-20 and 3.8-21 of the PEIR, in regard to growth inducement, the PEIR acknowledges that increased stormwater recharge will augment groundwater supplies. The overall recharge volume will vary from basin to basin and from season to season and will increase over time as more BMPs are installed. This additional benefit of the EWMPs is consistent with the goals and plans of the regional groundwater basin managers and water suppliers as described in Section 3.14-1. Water retailers in Los Angeles County generally have two water sources available to them: imported water supplied by a water wholesaler (e.g., Metropolitan, Castaic Lake Water Agency) or groundwater. The two large groundwater basins in Los Angeles County are adjudicated, with established water rights made available to pumpers. The pumpers' allocations are constricted to prevent over-drafting the aquifer. The groundwater managers (Water Replenishment District of Southern California, Upper Los Angeles River Area Water Master) augment the groundwater basins with imported surface water when available to meet demands.

Population growth is expected in the region and the local water suppliers have prepared urban water management plans that explain how they intend to meet the growing demand. The current conditions throughout the State of California indicate that imported water supplies will be more limited in the future than they have been historically. Emphasis is being placed on local supplies to replace imported water. For example, the Water Replenishment District of Southern California is actively pursuing a policy of Water Independence Now (WIN) that will eliminate imported water for replenishment and replace it with storm water and recycled water recharge. The LACFCD has no authority over population growth, land use jurisdiction, or water supplies. As noted in Section 5.3 of the PEIR, the augmentation of water supplies as a secondary outcome of the EWMPs would not induce growth or remove an obstacle to growth, but may help to replace the use of imported water over time as a part of the regional water supply portfolio managed by others.

Furthermore, the PEIR evaluates the potential impacts of increased recharge to groundwater quality and groundwater levels in Impact 3.8-1. The potential for groundwater to exfiltrate in creeks, road cuts, and areas of lower elevation is recognized on page 3.8-35. However, as low flow BMPs are installed throughout the region, base flows fed from landscape runoff are predicted to decrease throughout the region. Any new contribution to surface water flows from new groundwater seepage would be accommodated by the drainage system and would reflect a more natural condition.

As stated on page 3.14-20 of the PEIR, cumulative impacts in regard to existing water supplies are anticipated to be beneficial as a result of stormwater and non-stormwater runoff infiltration and conservation BMPs implemented across the EWMP areas.

Implementation of the EWMPs would not disproportionately affect areas with lower than average incomes. Local water supplies are largely shared resources, managed by regional agencies (e.g., Metropolitan, Castaic Lake Water Agency) responsible for supplying drinking water equitably to the population. Local water retailers receive their water generally from imported water wholesalers and groundwater pumping. Groundwater recharge resulting from infiltration BMPs will occur throughout the region. Some areas will experience greater volumes of recharge than others due to the local topography and geology. However, local demographics will not influence water quality control infrastructure locations. The equitable delivery of high quality drinking water is the responsibility of water retailers as regulated by the State Water Resources Control Board and the California Department of Public Health.

Response to Comment 20-BBBBB:

It should be noted that as part of Response to Comment 4-D above, a new Mitigation Measure UTIL-1 has been added to the PEIR. Therefore, the original Mitigation Measure UTIL-1 has been renumbered to Mitigation Measure UTIL-2. Page 3.14-14 has been edited as follows:

> <u>**UTIL-1:** Prior to implementation of BMPs, the implementing agency shall conduct a search for local utilities above and below ground that could be affected by the project. The implementing agencies shall contact each utility potentially affected to address relocation of the utility if necessary to ensure access and services are maintained.</u>

Mitigation Measure UTIL-2 requires that implementing agencies consider the potential for BMPs to adversely affect downstream beneficial uses and water rights, and would reduce potentially significant impacts to less than significant levels.

Response to Comment 20-CCCCC:

It should be noted that a new Mitigation Measure UTIL-1 has been added to the PEIR. Therefore, the original Mitigation Measure UTIL-1 has been renumbered to Mitigation Measure UTIL-2.

> <u>**UTIL-1:** Prior to implementation of BMPs, the implementing agency shall conduct a search for local utilities above and below ground that could be affected by the project. The implementing agencies shall contact each utility potentially affected to address relocation of the utility if necessary to ensure access and services are maintained.</u>
>
> **UTIL-~~1~~<u>2</u>:** Prior to approval of BMPs, implementing agencies shall evaluate the potential for impacts to downstream beneficial uses, including surface water rights. Implementing agencies shall not approve BMPs that result in preventing access to previously appropriated surface water downstream.

Mitigation Measure UTIL-2 states that implement agencies shall not approve BMPs that result in preventing access to previously appropriated surface water downstream. This measure ensures the protection of downstream surface water rights and would reduce potentially significant impacts to less than significant levels. Specific projects will undergo subsequent CEQA determination prior to implementation.

In addition to the discussions on pages 3.8-20 and 3.8-21 of the PEIR, in regard to growth inducement, the PEIR acknowledges that increased stormwater recharge will augment groundwater supplies. The overall recharge volume will vary from basin to basin and from season to season and will increase over time as more BMPs are installed. This additional benefit of the EWMPs is consistent with the goals and plans of the regional groundwater basin managers and water suppliers as described in Section 3.14-1. Water retailers in Los Angeles County generally have two water sources available to them: imported water supplied by a water wholesaler (e.g., Metropolitan, Castaic Lake Water Agency) or groundwater. The two large groundwater basins in Los Angeles County are adjudicated, with established water rights made available to pumpers. The pumpers' allocations are constricted to prevent over-drafting the aquifer. The groundwater managers (Water Replenishment District of Southern California, Upper Los Angeles River Area Water Master) augment the groundwater basins with imported surface water when available to meet demands.

Population growth is expected in the region and the local water suppliers have prepared urban water management plans that explain how they intend to meet the growing demand. The current conditions throughout the State of California indicate that imported water supplies will be more limited in the future than they have been historically. Emphasis is being placed on local supplies to replace imported water. For example, the Water Replenishment District of Southern California is actively pursuing a policy of Water Independence Now (WIN) that will eliminate imported water for replenishment and replace it with storm water and recycled water recharge. The LACFCD has no authority over population growth, land use jurisdiction, or water supplies. As noted in Section 5.3 of the PEIR, the augmentation of water supplies as a secondary outcome of the EWMPs would not induce growth or remove an obstacle to growth, but may help to replace the use of imported water over time as a part of the regional water supply portfolio managed by others.

Paige Anderson

To: Crumpacker, Andrea
Subject: RE: Save Baldwin Lake at LA County Arboretum

From: Connie <conhef@earthlink.net>
Date: February 10, 2015 at 4:28:12 PM PST
To: <gbegell@dpw.lacounty.gov>
Subject: Save Baldwin Lake at LA County Arboretum

Mr. Gregg BeGell,

As a member of Los Voluntarios, the volunteer organization at the Los Angles County Arboretum and Botanical Gardens would like to tell you why the restoration of Baldwin Lake is so important to me. I have been a volunteer for many decades and give tours to the public. It is one of the most visible parts of the Arboretum and is historically significant. The lake enhances the beauty of the historic Queen Ann Cottage, the historic Adobe and the jungle area. It enables the birds and water fowl to live in on the grounds which are very important to the Arboretum. The lake is one of the few natural water features in the area and a result of the Raymond Hill Fault and at times has been a mud hole due to the drought. The lake level is only 18 inches deep now, very cloudy with the stone edging collapsing into the lake. I would like to see Baldwin Lake return to its previous beautiful self which was reportedly 18 feet deep about 100 years ago. Please do whatever is necessary to restore this critical resource and historical beauty.

Connie Heflin

Response to Comment Letter 21 (Connie Heflin – February 10, 2015)

Response to Comment Letter 21-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The PEIR assesses the environmental impacts associated with implementation of EWMPs as a form of compliance with the MS4 Permit. The restoration of Baldwin Lake is shown as a potential priority project to be implemented as part of the Rio Hondo/San Gabriel River EWMP in Figure 2-13 of the PEIR. More site investigations are needed to fully vet the proposed project and define the project scope needed to satisfy the EWMP's requirements. The City of Arcadia is the primary agency who will benefit from a water quality project at the Baldwin Lake. The City of Arcadia will likely play a major role in the decision to implement an EWMP project at Baldwin Lake.

Paige Anderson

To: Crumpacker, Andrea
Subject: RE: Baldwin Lake renovation

From: Harry Heflin [mailto:harryhef@earthlink.net]
Sent: Friday, February 13, 2015 3:40 PM
To: Gregg Begell
Subject: Baldwin Lake renovation

Dear Mr. BeGell,

I volunteer at the L.A. County Arboretum and several times a month take school children on Plant or History Tours through the Arboretum.

The students and I always walk through the Prehistoric Forest to the shore of Baldwin Lake since the lake is so interesting to the kids with all its plants, birds, turtles, and fishes, and they also enjoy the marvelous view of the Queen Ann Cottage across the lake.

But as I'm sure you know, Baldwin Lake is in a state of serious disrepair with crumbling banks and rock walls surrounding a silted-in basin that used to be about 15 feet deep but apparently now is only a foot or two deep.

I understand also that the mud and silt that have filled in the lake are potentially contaminated with residues that have washed into the lake over the years and settled on the bottom, possibly endangering the health of visitors and also of the wildlife that call the lake home.

I hope that in the near future the County will give the cleanup and renovation of Baldwin Lake the priority that it deserves in order to restore the beauty and safety of one of the very few natural lakes in California.

Studios often rent the Arboretum for 'filming', and I have to believe that restoring the lake to its former glory would attract more film-makers and as a result garner more filming revenues to help balance the budget.

Thank you kindly for your consideration of my request.

Sincerely,

Harry Heflin
M: 626-374-1970

Response to Comment Letter 22 (Harry Heflin – February 13, 2015)

Response to Comment Letter 22-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The PEIR assesses the environmental impacts associated with implementation of EWMPs as a form of compliance with the MS4 Permit. The restoration of Baldwin Lake is shown as a potential priority project to be implemented as part of the Rio Hondo/San Gabriel River EWMP in Figure 2-13 of the PEIR. More site investigations are needed to fully vet the project and define the project scope needed to satisfy the EWMP's requirements. The City of Arcadia is the primary agency who will benefit from a water quality project at the Baldwin Lake. The City of Arcadia will likely play a major role in the decision to implement an EWMP project at Baldwin Lake.

Genevieve Osmena

From: Leelee Doughty <nodoughts@dslextreme.com>
Sent: Wednesday, March 04, 2015 12:17 PM
To: Genevieve Osmena
Subject: Re: Restore Baldwin Lake

Thank you so much Genevieve (what a lovely name!) for sending my comments on. As I said, I can't be there but I look forward to hearing what happens! Leelee Doughty

On 3/3/15 8:47 AM, Genevieve Osmena wrote:

Ms. Doughty,

Thank you for your email regarding Baldwin Lake at the LA Arboretum. If you are not able to attend the stakeholder meeting on March 9, the information and materials from the meeting can be provided upon request after the meeting. See attached flyer if you wish to request those materials. I have also forwarded your email to the group members for their consideration as they continue to discuss and develop their EWMP plan.

Thanks again for your comments.

Genevieve Osmeña, P.E.
County of Los Angeles Department of Public Works East Unincorporated County MS4 Permit Compliance
Watershed Management Division
(626) 458-3978
gosmena@dpw.lacounty.gov

From: Leelee Doughty [mailto:nodoughts@dslextreme.com]
Sent: Tuesday, February 24, 2015 4:11 PM
To: Gregg Begell; Genevieve Osmena
Subject: Restore Baldwin Lake

I am very interested in the outcome of your meetings regarding the draft Rio Hondo/San Gabriel River Enhanced Watershed Management Plan (EWMP) on March 9th. Unfortunately, I will be unable to attend, but this is to say that I sincerely hope the DPW will include the restoration of Baldwin Lake in its final recommendations, for the following reasons:

1. It is eligible and scores high in 5 of the 6 criteria.(**ownership**) the Lake is publicly owned; (**opportunity site**) offers a water body nearly four acres in size; (**catchment area**) the collection basin is over 100 acres; (**likely pollutants**) cleanses runoff that likely exceeds allowances; and perhaps most importantly (**multi-use opportunities and connectivity**) offers very substantial direct public benefit.
2. Watershed Role: Baldwin Lake serves as an important collection basin for Arcadia's urban watershed, receiving runoff from over 150 acres of suburban neighborhood to the north. This officially designated watershed area served by the Lake is bounded to the west by Michillinda Avenue, to the north by the 210 freeway, to the east by Arcadia Wash, and to the south by the Arboretum and Monte Verde Drive.

I understand there are four restoration concepts the Arboretum has recommended and I agree with all of them. They are:

1. Create a bioswale at Tule Pond, where urban runoff first enters the Arboretum during storms.
2. Dredge the lake to create greater depth, thereby reducing water temperatures and enhancing water quality and ecosystem health. If Baldwin Lake is returned to its original depth, it could provide over twelve million gallons of storage capacity. Further modification could also provide aquifer recharge.
3. Stabilize the shoreline to stop erosion, restore historic character and enhance scenic quality.
4. Enhance the community value of Baldwin Lake as a key educational, scenic, wildlife, and historic resource serving over 330,000 visitors per year, including over 16,000 elementary school students. The project would provide an unrivaled opportunity to educate a broad public about regional water management, home and community water conservation, and the role of the Raymond Basin and other key water resources that sustain us.

The Arboretum has just received significant funding for, and is in the process of, creating a certified organic and sustainable garden called the Crescent Garden, demonstrating its commitment to educating children and the community about the importance of conserving and ways to use water properly in our gardens.

Thank you in advance for listening to me, a very concerned neighbor, and again, I hope you include saving Baldwin Lake per the Arboretum proposals in the final recommendations.

Sincerely, Leelee Clement Doughty, resident of Pasadena

Response to Comment Letter 23 (Leelee Doughty – February 24, 2015)

Response to Comment 23-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The PEIR assesses the environmental impacts associated with implementation of EWMPs as a form of compliance with the MS4 Permit. The restoration of Baldwin Lake is shown as a potential priority project to be implemented as part of the Rio Hondo/San Gabriel River EWMP in Figure 2-13 of the PEIR. More site investigations are needed to fully vet the proposed project and define the project scope needed to satisfy the EWMP's requirements. The City of Arcadia is the primary agency who will benefit from a water quality project at the Baldwin Lake. The City of Arcadia will likely play a major role in the decision to implement an EWMP project at Baldwin Lake.

Paige Anderson

To: Crumpacker, Andrea
Subject: RE: Enhanced Watershed Management Programs PEIR

From: Jonathan Weiss [mailto:jw@lojw.com]
Sent: Tuesday, February 24, 2015 9:31 AM
To: Gregg Begell
Subject: RE: Enhanced Watershed Management Programs PEIR

Thanks,

Here's my letter.

Jonathan Weiss

From: Gregg Begell [mailto:gbegell@dpw.lacounty.gov]
Sent: Monday, February 23, 2015 3:57 PM
To: Jonathan Weiss
Subject: RE: Enhanced Watershed Management Programs PEIR

Jonathan

Yes, the comment period is open until March 9, 2015.

You can send it to me; I'm the point of contact for the PEIR.
You can also send it through the website: www.lacoh2osheds.com.

Gregg BeGell P E
Project Manager
Project Management Division II

From: Jonathan Weiss [mailto:jw@lojw.com]
Sent: Monday, February 23, 2015 3:52 PM
To: Gregg Begell
Subject: Enhanced Watershed Management Programs PEIR

Is the comment period open? Where can I sent a comment?

Jonathan Weiss
10576 Troon Avenue
Los Angeles, California 90064-4436
Telephone: (310) 558-0484 Email: jon@expogreenway.org

February 24, 2015 Via Email

Gregg BeGell, P.E.
County of Los Angeles Department of Public Works
Project Management Division II
900 South Fremont, 5th Floor
Alhambra, California 91803
gbegell@dpw.lacounty.gov

Dear Mr. BeGell:

I write to support the Westwood Neighborhood Greenway as part of the Enhanced Watershed Management Plan (EWMP) for the Ballona Creek Watershed. The WNG will be a multi-benefit project to provide (1) urban runoff treatment, (2) native habitat, and (3) public access via transit, bicycle and pedestrian paths.

By pumping water from a perennial stream (Brown Canyon Creek) that formerly ran across the Expo ROW and the WNG area (but is now carried in the storm drain under Overland Avenue), the WNG will reduce the amount of ocean runoff and use natural and sustainable water treatment methods to remove lead, zinc, copper, and other pollutants from up to 48 million gallons of water per year. Also, the WNG will eliminate the need for potable water to irrigate both the Expo ROW and the WNG area.

As importantly, the WNG will provide unparalleled institutional BMPs, as it will be adjacent to the busiest station on the Expo Light Rail line, which itself is part of the growing Metro transit network. Sustainability education will be carried on by and offered to students and public, including USC, UCLA, Los Angeles Audubon, Dorsey High School, and Overland Avenue Elementary School.

Very truly yours,

Jonathan Weiss

Response to Comment Letter 24 (Jonathan Weiss – February 24, 2015)

Response to Comment 24-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The PEIR assesses the environmental impacts associated with implementation of EWMPs as a form of compliance with the MS4 Permit. More site investigations are needed to fully vet the proposed Westwood Neighborhood Greenway project and define the project scope needed to satisfy the EWMP's requirements. The City of Los Angeles is the primary agency who will benefit from a water quality project at the Westwood Neighborhood Greenway project. The City of Los Angeles will likely play a major role in the decision to implement an EWMP project at Westwood Neighborhood Greenway project.

Paige Anderson

To: Laura Rocha
Subject: RE: PLEASE READ THIS ONE - the Rio Hondo/San Gabriel River Enhanced Watershed Management Plan (EWMP)

From: George Brumder [mailto:brumder@earthlink.net]
Sent: Tuesday, February 24, 2015 8:21 PM
To: Genevieve Osmena; Gregg Begell
Cc: Richard Schulhof; Kenneth Hill
Subject: PLEASE READ THIS ONE - the Rio Hondo/San Gabriel River Enhanced Watershed Management Plan (EWMP)

Dear Ms. Osmena and Mr. BeGell,

I am an honorary trustee of the Los Angeles Arboretum Foundation, the County's non-profit partner in operating and funding the Los Angeles County Arboretum & Botanic Garden.

Baldwin Lake, created by Lucky Baldwin in the 1880s from a naturally-occurring wetland along the Raymond Fault, is today an important collection basin for Arcadia's urban watershed and an important and much-beloved feature of the Arboretum -- itself a wonderful resource for Southern California, with over 10,000 members and well over 300,000 visitors, including over 15,000 elementary school students, each year.

The restoration of Baldwin Lake will enhance Baldwin Lake's watershed function and, in addition, bring the public extraordinary educational, ecological and scenic benefits.

My wife Marilyn and I strongly urge that the restoration of Baldwin Lake be included as a high priority project within the Rio Hondo/San Gabriel River Enhanced Watershed Management Plan.

We thank you for your efforts in this direction.

George A. Brumder
399 California Terrace
Pasadena, CA 91105
626.795.0315

Response to Comment Letter 25 (George Brumder – February 24, 2015)

Response to Comment 25-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The PEIR assesses the environmental impacts associated with implementation of EWMPs as a form of compliance with the MS4 Permit. The restoration of Baldwin Lake is shown as a potential priority project to be implemented as part of the Rio Hondo/San Gabriel River EWMP in Figure 2-13 of the PEIR. More site investigations are needed to fully vet the proposed project and define the project scope needed to satisfy the EWMP's requirements. The City of Arcadia is the primary agency who will benefit from a water quality project at the Baldwin Lake. The City of Arcadia will likely play a major role in the decision to implement an EWMP project at Baldwin Lake.

SAVE BALDWIN LAKE

Ms. Pam Warner
2625 Las Lunas St.
Pasadena, Ca. 91107
626-683-4906
pbwarner2@gmail.com

Feb. 26, 2015

Mr. George BeGill, P.E
County of L.A. Dept. of Public Works
Project Management Division II
900 S. Fremont, 5th floor
Alhambra, Ca. 91803

Dear Mr. BeGill,

I am writing to ask for your help in saving The Los Angeles County Arboretum's Baldwin Lake, and am hoping that The Enhanced Watershed Management Plan will see fit to offer assistance.

Baldwin Lake is the heart of The Arboretum. It is historical and educational as well as part of the Rio Hondo Watershed, and is in great need of attention.

Not too long ago I saw a school child in great distress. He had fallen into the lake and was covered in slime. I will never forget his attempt at courage and the clean marks of his tears.

Baldwin Lake is an environmental, historical and education gem. It has been ignored and become a hazard, full of urban runoff and in great need of assistance. I hope you and the March 9th meeting on water quality will acknowledge this, and attempt to solve the effects of years of mismanagement.

Thank you, & Save Baldwin Lake,

Pamela B. Warner

Response to Comment Letter 26 (Pamela Warner – February 26, 2015)

Response to Comment 26-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The PEIR assesses the environmental impacts associated with implementation of EWMPs as a form of compliance with the MS4 Permit. The restoration of Baldwin Lake is shown as a potential priority project to be implemented as part of the Rio Hondo/San Gabriel River EWMP in Figure 2-13 of the PEIR. More site investigations are needed to fully vet the proposed project and define the project scope needed to satisfy the EWMP's requirements. The City of Arcadia is the primary agency who will benefit from a water quality project at the Baldwin Lake. The City of Arcadia will likely play a major role in the decision to implement an EWMP project at Baldwin Lake.

Genevieve Osmena

From: Kathleen BonEske <kbon1011@roadrunner.com>
Sent: Monday, March 02, 2015 7:36 PM
To: Genevieve Osmena
Subject: Restore Baldwin Lake

Baldwin Lake is the jewel of the LA County Botanical Gardens. It is common sense to restore this beauty.

K.R. BonEske

Response to Comment Letter 27 (Kathleen BonEske – March 2, 2015)

Response to Comment 27-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The PEIR assesses the environmental impacts associated with implementation of EWMPs as a form of compliance with the MS4 Permit. The restoration of Baldwin Lake is shown as a potential priority project to be implemented as part of the Rio Hondo/San Gabriel River EWMP in Figure 2-13 of the PEIR. More site investigations are needed to fully vet the proposed project and define the project scope needed to satisfy the EWMP's requirements. The City of Arcadia is the primary agency who will benefit from a water quality project at the Baldwin Lake. The City of Arcadia will likely play a major role in the decision to implement an EWMP project at Baldwin Lake.

Genevieve Osmena

From:	Dan Foliart <danfordf@earthlink.net>
Sent:	Friday, February 06, 2015 12:06 PM
To:	Genevieve Osmena
Subject:	Re: Baldwin Lake

Thank you.

Best regards,

Dan Foliart

on 2/5/15 2:41 PM, Genevieve Osmena at gosmena@dpw.lacounty.gov wrote:

> Mr. Foliart,
>
> Thank you for your email regarding Baldwin Lake at the LA Arboretum.
> I have added your contact information to the stakeholder list for the
> Rio Hondo/San Gabriel River Water Quality Group to receive
> notifications of future stakeholder meetings regarding the group's
> Enhanced Watershed Management Program (EWMP). We anticipate the next
> stakeholder meeting to occur in early March to discuss the progress of
> the EWMP process with interested stakeholders and members of the
> public. I have also forwarded your email to the group members for
> their consideration as they continue to discuss and develop their EWMP plan.
>
> Thanks again for your comments.
>
> Genevieve Osmeña, P.E.
> County of Los Angeles Department of Public Works East Unincorporated
> County MS4 Permit Compliance Watershed Management Division
> (626) 458-3978
> gosmena@dpw.lacounty.gov
>
> -----Original Message-----
> From: Dan Foliart [mailto:danfordf@earthlink.net]
> Sent: Monday, February 02, 2015 3:29 PM
> To: Gregg Begell; Genevieve Osmena
> Cc: Dan Foliart
> Subject: Baldwin Lake
>
> Dear Mr. BeGell and Ms.Osmena,
>
> Thank you for inviting comments regarding the Rio Hondo Enhanced
> Watershed Management Plan. Please allow me to strongly advocate for
> The Los Angeles County Arboretum¹s Baldwin Lake inclusion in this plan
> as you formulate your objectives.
>

> As you are well aware, the lake was created by Elias ^{3}Lucky^2 Baldwin
> in the late nineteenth century as the frontispiece for his grandiose
> estate and as such has become part of the lore and history of Southern
> California. The lake has played an important role in local commerce,
> serving as a backdrop for such disparate filmic contributions as the
> Tarzan movies, ^{3}Fantasy Island^2 and within the last year, Katy Perry^{1}s ^{3}Roar^2 music video.
>
> However compelling the romance of Hollywood might be to its essence,
> the joy Baldwin Lake has brought to generations of parents and
> children, far outweigh the gravitas of its celluloid legacy. As a
> father, my children were treated to a weekly sojourn to the lake,
> where catfish and carp swam and such diverse species of bird life as
> the Wood Duck, the Black-crowned Night Heron and the Double-crested
> Cormorant nested. In fact, the lake served as a real-life learning
> center for my children, as it does for thousands of our region^{1}s school children every year.
>
> It is my hope that the lake will bring the same joy to generations of
> children to come as it has for my own. However, the lake is being
> polluted to an extent that I fear that that dream may not become a
> reality. With your help this body of water that has become a run-off
> for contaminants that endanger the wildlife and the healthful use of
> Southern California families can become the fresh and unpolluted
> reservoir that it was during the Baldwin era. Please consider this
> irreplaceable gem as a top priority as you move forward into the future with this project.
>
>
>
> Sincerely yours,
>
>
>
>
>
> Dan Foliart
>
>
>
>
>
>

Response to Comment Letter 28 (Dan Foliart – March 2, 2015)

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The PEIR assesses the environmental impacts associated with implementation of EWMPs as a form of compliance with the MS4 Permit. The restoration of Baldwin Lake is shown as a potential priority project to be implemented as part of the Rio Hondo/San Gabriel River EWMP in Figure 2-13 of the PEIR. More site investigations are needed to fully vet the proposed project and define the project scope needed to satisfy the EWMP's requirements. The City of Arcadia is the primary agency who will benefit from a water quality project at the Baldwin Lake. The City of Arcadia will likely play a major role in the decision to implement an EWMP project at Baldwin Lake.

Paige Anderson

To: Laura Rocha
Subject: RE: RESTORE BALDWIN LAKE

From: Catherine Heinlein [mailto:cheinlein@apu.edu]
Sent: Monday, March 02, 2015 9:07 PM
To: Gregg Begell; Genevieve Osmena
Cc: Richard Schulhof
Subject: RESTORE BALDWIN LAKE

Dear Mr. BeGell and Ms. Osmena,

I am respectfully submitting my letter in support of the restoration project at Baldwin Lake. My letter is attached to this email.

Very Sincerely,

Catherine Heinlein

--

Catherine Heinlein, EdD, RN, PHN, RD, CDE
Assistant Professor
Certified Diabetes Educator
Registered Nurse
Registered Dietitian
School of Nursing
Azusa Pacific University
701 E. Foothill Blvd.
Azusa, CA 91702
626-815-6000 Ext. 5558

Catherine R. Heinlein
29 Genoa Street, Apt. D
Arcadia, CA 91006

March 2, 2015

Dear Mr. BeGell and Ms. Osmena,

I am writing this letter as a community member of Arcadia and volunteer at the Los Angeles County Arboretum and Botanic Garden. I could include all the statistics about Baldwin Lake that you are fully aware of, however, I am writing more to share my personal stance on the importance of protecting and preserving Baldwin Lake.

The restoration and preservation of Baldwin Lake through the collection of rain water runoff seems to make logical sense. I've been a local for many years, primarily living against the San Gabriel Mountains. It doesn't take much for a storm to flood our streets and backyards; including overflowing residents swimming pools. Why not allow runoff to come through the Arboretum?

I have been coming to the Arboretum most of my life to enjoy the plant life, birds, insects, and Baldwin Lake. It dismays me (and the students I take on medicinal plant tours) to walk by a lake that now looks more like the tar pits of La Brea. How disconcerting that our community and hard-working staff at the Arboretum have had to watch the decay and wasting of a once vibrant attraction!

You have a great number of supporters rallying for the restoration of Baldwin Lake. It is the people who devote their own time, money, and energy into this historic landmark who are here making the most noise! Please do not disappoint them (me) by allowing an opportunity to do something significant for our community slip by.

Sincerely,

Catherine R. Heinlein

Catherine Heinlein
Assistant Professor
School of Nursing
Azusa Pacific University
Arboretum Volunteer

Response to Comment Letter 29 (Catherine Heinlein – March 2, 2015)

Response to Comment 29-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The PEIR assesses the environmental impacts associated with implementation of EWMPs as a form of compliance with the MS4 Permit. The restoration of Baldwin Lake is shown as a potential priority project to be implemented as part of the Rio Hondo/San Gabriel River EWMP in Figure 2-13 of the PEIR. More site investigations are needed to fully vet the proposed project and define the project scope needed to satisfy the EWMP's requirements. The City of Arcadia is the primary agency who will benefit from a water quality project at the Baldwin Lake. The City of Arcadia will likely play a major role in the decision to implement an EWMP project at Baldwin Lake.

Paige Anderson

To: Laura Rocha
Subject: RE: Save Baldwin Lake

From: Andy E [mailto:toandye@yahoo.com]
Sent: Tuesday, March 03, 2015 1:21 PM
To: Genevieve Osmena
Subject: Save Baldwin Lake

Dear Ms. Osmena,

Please take a few moments to read the attached letter to add my voice to those already crying out for help in saving Baldwin Lake.

Thank you,
Andy Edmonds

Dear Mr. BeGell and Ms. Osmena,

Please add my voice to those already crying out for county funding to save Baldwin Lake at the LA Co Arboretum. The reasons for this project already have been pointed out via emails, letters and meetings with people much more articulate than I. I will not waste your time reiterating those points. You already know why this needs to be done and how to go about doing it.

I did previously send letters to both of you as well as Supervisor Antonovich's office but was informed that those either did not reach you or had not been counted in the official "tally". We were told to send this letter as an email attachment.

I greatly appreciate your time and consideration in funding this project.

Sincerely,

Andy Edmonds

Response to Comment Letter 30 (Andy Edmonds – March 3, 2015)

Response to Comment 30-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The PEIR assesses the environmental impacts associated with implementation of EWMPs as a form of compliance with the MS4 Permit. The restoration of Baldwin Lake is shown as a potential priority project to be implemented as part of the Rio Hondo/San Gabriel River EWMP in Figure 2-13 of the PEIR. More site investigations are needed to fully vet the proposed project and define the project scope needed to satisfy the EWMP's requirements. The City of Arcadia is the primary agency who will benefit from a water quality project at the Baldwin Lake. The City of Arcadia will likely play a major role in the decision to implement an EWMP project at Baldwin Lake.

Mr. Gregg BeGell, P.E.
County of Los Angeles
Dept. of Public Works
Project Management, Division II
900 S. Fremont Ave, 5th Floor
Alhambra, CA. 91803

March 3, 2015

RECEIVED
MAR 09 2015
DEPT. PUBLIC WORKS
PROJECT MANAGEMENT DIVISION II

Dear Mr. BeGell

As a volunteer docent at the Los Angeles County Arboretum, I am submitting a plea that Baldwin Lake becomes eligible as a Priority Project for State Funds.

For the past three years, I have given tours to visitors at the Arboretum. Baldwin Lake is always of interest and a focal point of their tour, no matter where they are from. Visitors are interested in the Lake for a variety of reasons:

The rich history surrounding the Lake provides insight to the lives of the Tongva Indians and early California history

Appeals as a site for painters and photographers

Is a santuary for over 250 species of birds as well as other creatures

Retreat and quiet spot for everyone

Appeals to movie buffs due to being the site for many films

Display of numerous trees and plants surrounding the lake

Thank you for your time and consideration
Any help you can provide will be much appreciated.

Sincerely,

Shake Mamigonian

Shake Mamigonian
1672 Loma Vista St
Pasadena, Ca 91104

shake.mamigonian@gmail.com

cc to Ms. Genevieve Osmena

Response to Comment Letter 31 (Shake Manigonian – March 3, 2015)

Response to Comment 31-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The PEIR assesses the environmental impacts associated with implementation of EWMPs as a form of compliance with the MS4 Permit. The restoration of Baldwin Lake is shown as a potential priority project to be implemented as part of the Rio Hondo/San Gabriel River EWMP in Figure 2-13 of the PEIR. More site investigations are needed to fully vet the proposed project and define the project scope needed to satisfy the EWMP's requirements. The City of Arcadia is the primary agency who will benefit from a water quality project at the Baldwin Lake. The City of Arcadia will likely play a major role in the decision to implement an EWMP project at Baldwin Lake.

Paige Anderson

To: Laura Rocha
Subject: RE: FW:

From: Gina Shaw [mailto:ginashaw@aol.com]
Sent: Tuesday, March 03, 2015 11:59 AM
To: Gregg Begell
Subject:

Dear Mr Begell,
I am writing you to urge action in regards to L.A. County Arboretum Baldwin Lake. This historic site is used to teach thousands of students about early California history. It is unique and must be preserved. It was used as a water source for the Tongva Indians as well as a resting and rejuvenating spot for countless migrating birds. Our arboretum would be greatly diminished by its loss or neglect.
I am an arboretum volunteer and former docent. I know there are many demands for funds but I hope you will place Baldwin Lake high on your priorities.
Gina Shaw, PhD

Sent from AOL Mobile Mail

Response to Comment Letter 32 (Gina Shaw – March 3, 2015)

Response to Comment 32-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The PEIR assesses the environmental impacts associated with implementation of EWMPs as a form of compliance with the MS4 Permit. The restoration of Baldwin Lake is shown as a potential priority project to be implemented as part of the Rio Hondo/San Gabriel River EWMP in Figure 2-13 of the PEIR. More site investigations are needed to fully vet the proposed project and define the project scope needed to satisfy the EWMP's requirements. The City of Arcadia is the primary agency who will benefit from a water quality project at the Baldwin Lake. The City of Arcadia will likely play a major role in the decision to implement an EWMP project at Baldwin Lake.

Paige Anderson

To: Laura Rocha
Subject: RE: Rio Hondo/San Gabriel River Enhanced Watershed Management Plan Baldwin Lake Los Angeles County Arboretum

From: Gloria Cox [mailto:gloriachriscox@aol.com]
Sent: Wednesday, March 04, 2015 8:25 PM
To: Gregg Begell; Genevieve Osmena
Subject: Rio Hondo/San Gabriel River Enhanced Watershed Management Plan Baldwin Lake Los angeles County Arboretum

Mr. Gregg BeGell, P.E.
County of Los Angeles Department of Public Works
Project Management Division II
900 South Fremont, 5th Floor
Alhambra, CA 91803
gbegell@dpw.lacounty.gov

Ms. Genevieve Osmena
County of Los Angeles Department of Public Works
Project Management Division II
900 South Fremont, 5th Floor
Alhambra, CA 91803
gosmena@dpw.lacounty.gov

March 4, 2015
Re: Rio Hondo/San Gabriel River Enhanced Watershed Management Plan

This letter is to urge you to include the restoration of **Baldwin Lake at the Los Angeles County Arboretum and Botanic Garden** as a high priority project within the Rio Hondo/San Gabriel River Enhanced Watershed Management Plan. The restoration of Baldwin Lake will both enhance watershed function and serve the public with educational, and ecological benefits. Baldwin Lake is a valuable public resource.

This Lake is publicly owned; it offers a body of water nearly four acres in size with a collection basin of over 100 acres; it cleanses runoff that exceeds allowances and it offers a very substantial direct public benefit.
At present, the lake is so shallow it creates low water oxygen levels that are harmful to the fish, turtles and a huge variety of ducks, other birds and species.

Baldwin Lake is a key educational, scenic, wildlife, and historic resource that serves the public including both elementary, high school and college students from various school district with a large percentage of them from the **underserved area** of Los Angeles Unified School District. This project would provide a huge opportunity to educate not only the students but also the general public about regional water management, home and community water conservation, and the role of the Raymond Basin and other key water resources that sustain the people of Los Angeles County.
Thank you for you consideration of this project.

Chris Cox and Gloria Cox

Response to Comment Letter 33 (Chris and Gloria Cox – March 4, 2015)

Response to Comment 33-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The PEIR assesses the environmental impacts associated with implementation of EWMPs as a form of compliance with the MS4 Permit. The restoration of Baldwin Lake is shown as a potential priority project to be implemented as part of the Rio Hondo/San Gabriel River EWMP in Figure 2-13 of the PEIR. More site investigations are needed to fully vet the proposed project and define the project scope needed to satisfy the EWMP's requirements. The City of Arcadia is the primary agency who will benefit from a water quality project at the Baldwin Lake. The City of Arcadia will likely play a major role in the decision to implement an EWMP project at Baldwin Lake.

Paige Anderson

To: Laura Rocha
Subject: RE: Baldwin Lake Restoration

From: Margaret Page [mailto:Dennis.N.Page@verizon.net]
Sent: Wednesday, March 04, 2015 3:03 PM
To: Gregg Begell; Genevieve Osmena
Subject: Baldwin Lake Restoration

I understand that my e-mail, sent to you on November 11, was not recorded, so I am re-sending it below. I will also attach it as a word document in case that is more convenient for you.

I am writing in support of the restoration of Baldwin Lake at the Los Angeles Arboretum. I have loved The Arboretum as a child, as a parent, and now as a volunteer docent. Thousands of visitors consider the lake an important reason to visit the garden, and it is a critical part of the environment of many of the birds and other animals that call The Arboretum home. On history tours, children learn how important Baldwin Lake has been since its earliest history, when Tongva Indians called their home *Aleupkigna* or *Place of Many Waters*. Our visitors have expressed dismay and concern as the water levels have declined and the quality of the water deteriorated. Please know how important Baldwin Lake is to many in our community and beyond, and take advantage of the opportunity now available to restore the health and beauty of Baldwin Lake.

Sincerely,
Margaret Page

Response to Comment Letter 34 (Margaret Page – March 4, 2015)

Response to Comment 34-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The PEIR assesses the environmental impacts associated with implementation of EWMPs as a form of compliance with the MS4 Permit. The restoration of Baldwin Lake is shown as a potential priority project to be implemented as part of the Rio Hondo/San Gabriel River EWMP in Figure 2-13 of the PEIR. More site investigations are needed to fully vet the proposed project and define the project scope needed to satisfy the EWMP's requirements. The City of Arcadia is the primary agency who will benefit from a water quality project at the Baldwin Lake. The City of Arcadia will likely play a major role in the decision to implement an EWMP project at Baldwin Lake.

Paige Anderson

To: Laura Rocha
Subject: RE: Baldwin Lake

From: Virginia Stein [mailto:ginnchazz@gmail.com]
Sent: Wednesday, March 04, 2015 9:05 AM
To: Gregg Begell
Subject: Baldwin Lake

Mr. BeGell:

I would appreciate your efforts to assist in the restoration of Baldwin Lake at the Arboretum in Arcadia. Having been a volunteer there for 35 years with over 7,000 hours of volunteer service I know how much the visitors enjoyed the walks around the lake in the good old days.

Virginia Stein

Response to Comment Letter 35 (Virginia Stein – March 4, 2015)

Response to Comment 35-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The PEIR assesses the environmental impacts associated with implementation of EWMPs as a form of compliance with the MS4 Permit. The restoration of Baldwin Lake is shown as a potential priority project to be implemented as part of the Rio Hondo/San Gabriel River EWMP in Figure 2-13 of the PEIR. More site investigations are needed to fully vet the proposed project and define the project scope needed to satisfy the EWMP's requirements. The City of Arcadia is the primary agency who will benefit from a water quality project at the Baldwin Lake. The City of Arcadia will likely play a major role in the decision to implement an EWMP project at Baldwin Lake.

Genevieve Osmena

From: Martini Arden <martini1526@yahoo.com>
Sent: Thursday, March 05, 2015 7:55 AM
To: Genevieve Osmena
Subject: Arboretum/Baldwin Lake

To All Concerned:

Please help save our Historic Baldwin Lake!!

Arboretum Volunteer/Rose Garden

Martini Arden🌹

Response to Comment Letter 36 (Martini Arden – March 5, 2015)

Response to Comment 36-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The PEIR assesses the environmental impacts associated with implementation of EWMPs as a form of compliance with the MS4 Permit. The restoration of Baldwin Lake is shown as a potential priority project to be implemented as part of the Rio Hondo/San Gabriel River EWMP in Figure 2-13 of the PEIR. More site investigations are needed to fully vet the proposed project and define the project scope needed to satisfy the EWMP's requirements. The City of Arcadia is the primary agency who will benefit from a water quality project at the Baldwin Lake. The City of Arcadia will likely play a major role in the decision to implement an EWMP project at Baldwin Lake.

Paige Anderson

To: Laura Rocha
Subject: RE: Save Baldwin Lake

From: Kristine Hannibal [mailto:kmhanni@yahoo.com]
Sent: Thursday, March 05, 2015 8:53 AM
To: Gregg Begell; Genevieve Osmena
Subject: Save Baldwin Lake

Please see attached letter asking for your help ,in funding, to restore Baldwin Lake at the L.A. Arboretum to its orginal glory, and improve the conditions of the lake for all.

Thank you so much,
-Kristine Hannibal

3/5/2015

To Whom it may concern at L.A. County Department of Public Works,

I'm writing to express my concern for the condition of Baldwin Lake at the L.A. Arboretum at this time and the future preservation of it as well. There seems to have been no proactive measures to keep this deterioration from happening in the past. The original retaining wall that was built by Lucky Baldwin is to the point of crumbling and is ready to fall over into the lake. This will cause further deterioration of the banks of the lake and will ultimately need to be fenced off to avoid any danger to visitors. There is also a need to clean out the mud and silt at the bottom of the lake that has built up over many years. This has made the lake very shallow, where it used to be 12-15ft deep, it is now only approx. 30inches deep. This clean-out would give the lake the capacity to hold more water. Currently the lake is filled with irrigation water, which is costly and doesn't help with the drought conditions in Southern California. It also covers up the deteriorating retaining wall and makes things appear as if all is well. There are also a number of pollutants that trickle into the lake from local runoff that needs to be addressed as well.

Baldwin Lake is and has always been a major draw for visitors young and old that come to visit and explore the Arboretum. It is also a major focal point for the Queen Anne Cottage that sits on the bank of the Lake. With the Hugo Reid Adobe under construction and fenced off for the last 2 years, the last thing the Arboretum needs is another major attraction to be fenced off as well. I believe this would raise many questions from members and the general public as well. Lastly, there are many animals and fish that consider the lake to be a home and a source of food. Please consider adding Baldwin Lake to your final list of EWMP projects submitted for funding, it will be money, and time well spent with a lasting impact.

Save Baldwin Lake.

Thank you,
Kristine Hannibal
Los Voluntarios member

Response to Comment Letter 37 (Kristine Hannibal – March 5, 2015)

Response to Comment 37-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The PEIR assesses the environmental impacts associated with implementation of EWMPs as a form of compliance with the MS4 Permit. The restoration of Baldwin Lake is shown as a potential priority project to be implemented as part of the Rio Hondo/San Gabriel River EWMP in Figure 2-13 of the PEIR. More site investigations are needed to fully vet the proposed project and define the project scope needed to satisfy the EWMP's requirements. The City of Arcadia is the primary agency who will benefit from a water quality project at the Baldwin Lake. The City of Arcadia will likely play a major role in the decision to implement an EWMP project at Baldwin Lake.

Paige Anderson

To: Laura Rocha
Subject: RE: Baldwin Lake at The LA Arboretum

From: EMILY ROSEDALE [mailto:emily_rosedale@yahoo.com]
Sent: Sunday, March 08, 2015 11:31 PM
To: Gregg Begell
Subject: Baldwin Lake at The LA Arboretum

Hello Mr. Gregg Be Gill, P.E.-

I am writing you to please consider helping and include **Baldwin Lake at The LA Arboretum** in the Enhanced Watershed Management Plan. I believe that Baldwin Lake is a huge part of our community and is multi-dimensional in serving the community and also by being educational. We have an opportunity to educate children and the community about water conservation and we cannot do this without the help to fund its restoration. The restoration of Baldwin Lake will both enhance watershed function AND serve the public with exceptional educational, ecological and scenic benefits. Annually, over 330,000 people visit Baldwin Lake; I myself have been going there since I was a child and hold the fondest memories of school field trips and family visits. My hope is this will continue as an Arcadia tradition and a historical landmark.

Did you know?

1. Petrochemicals and other pollutants enter the Lake as unfiltered runoff from Arcadia's urban watershed.
2. High velocity runoff flows and the unobstructed channel exacerbates shoreline erosion issues.
3. Heavy siltation continues to reduce lake depth. The original depth of 12-15 feet has been reduced to an average 30 inches.
4. Habitat quality and species diversity is degraded by diminished lake depth and low water oxygen.
5. Shoreline erosion and structural collapse continue to degrade scenic quality and reduce lake depth.
6. High bacteria counts result from abundant wildlife occupying a shallow lake with low water circulation.

I believe that this is a great opportunity to educate our youth and community about water conservation,

Thank you for your time,

Emily

Emily Rosedale-Kousoulis

Response to Comment Letter 38: (Emily Rosedale-Kousoulis – March 8, 2015)

Response to Comment 38-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The PEIR assesses the environmental impacts associated with implementation of EWMPs as a form of compliance with the MS4 Permit. The restoration of Baldwin Lake is shown as a potential priority project to be implemented as part of the Rio Hondo/San Gabriel River EWMP in Figure 2-13 of the PEIR. More site investigations are needed to fully vet the proposed project and define the project scope needed to satisfy the EWMP's requirements. The City of Arcadia is the primary agency who will benefit from a water quality project at the Baldwin Lake. The City of Arcadia will likely play a major role in the decision to implement an EWMP project at Baldwin Lake.

Response to Comment 38-B:

Refer to page 3.8-7 of the PEIR that includes a general discussion of the water quality within the Rio Hondo/San Gabriel Watershed and how it has been affected by various pollutants. Table F-3 also includes applicable TMDLs within the Rio Hondo/San Gabriel Watershed.

Response to Comment 38-C:

Refer to page 3.8-18 of the PEIR that recognizes how urbanization can increase dry weather flows within the project area; Impact 3.8-3 on page 3.8-37 of the PEIR analyzes potential impacts related to erosion and siltation resulting from implementation of the EWMPs. Mitigation Measure HYDRO-4 has been added under Impact 3.8-3 as shown below to ensure any hydromodification impacts including those related to erosion and scour remain less than significant.

> **HYDRO-4:** Prior to approving a structural BMP, the implementing agencies shall conduct an evaluation of the potential hydromodification impacts of the project. The evaluation shall recommend design measures necessary to prevent or minimize any identified impacts, including flooding, erosion and/or scour. Design measures could include velocity dissipaters and bank re-enforcement components. Implementing agencies shall include these measures in project designs.

Response to Comment 38-D:

Impact 3.8-3 on page 3.8-37 of the PEIR analyzes potential impacts related to erosion and siltation resulting from implementation of the EWMPs. Should the EWMP group decide to implement Baldwin Park restoration as an EWMP project, details regarding lake depth remediation from heavy siltation would need to be analyzed further.

Response to Comment 38-E:

Implementation of the Enhanced Watershed Management Programs as required by the MS4 Permit will involve multi-benefit regional projects that retain stormwater and non-stormwater runoff. Such benefits of water quality improvement also include habitat quality improvements. Refer to page 3.1-11 of the PEIR, which states that implementation of the structural BMPs as part of the EWMPs is anticipated to have an overall positive impact on the aesthetic environment. For example, there is anticipated to be more green space areas and less impermeable surfaces from pavement and concrete, thereby enhancing the level of greenness in the watersheds. Should the EWMP group decide to implement Baldwin Park restoration as an EWMP project, details regarding habitat restoration would need to be analyzed further.

Response to Comment 38-F:

Impact 3.8-3 on page 3.8-37 of the PEIR analyzes potential impacts related to erosion and siltation resulting from implementation of the EWMPs. Should the EWMP group decide to implement Baldwin Park restoration as an EWMP project, details regarding lake depth remediation from heavy siltation would need to be analyzed further.

Implementation of the Enhanced Watershed Management Programs as required by the MS4 Permit will involve multi-benefit regional projects that retain stormwater and non-stormwater runoff. Such benefits of water quality improvement also include habitat quality improvements. Refer to page 3.1-11 of the PEIR, which states that implementation of the structural BMPs as part of the EWMPs is anticipated to have an overall positive impact on the aesthetic environment. For example, there is anticipated to be more green space areas and less impermeable surfaces from pavement and concrete, thereby enhancing the level of greenness in the watersheds. Should the EWMP group decide to implement Baldwin Park restoration as an EWMP project, details regarding habitat restoration would need to be analyzed further.

Response to Comment 38-G:

As discussed on page 3.8-7 of the Draft PEIR, the Rio Hondo/San Gabriel Watershed in which Baldwin Lake is located, has several priority pollutants and includes not only bacteria but also nutrients, trash, metals, and sediment impacted by metals and organic compounds (DDT, PCBs, PAHs). The BMP strategy in the Upper Los Angeles River watershed and Rio Hondo watershed includes well over a hundred planned regional and centralized retention and infiltration BMPs that take advantage of the favorable groundwater recharge characteristics in defined areas of the watershed. Also planned are centralized treatment wetlands and bioinfiltration BMPs in parks and open spaces with favorable subsurface soils that promote higher infiltration rates. The BMP strategy also includes distributed smaller BMPs located throughout the urbanized areas of the watershed as retrofits in existing developments and streets. LFDs to comply with dry-weather bacteria TMDLs will also be included. Should the EWMP group decide to implement Baldwin Park restoration as an EWMP project, details regarding high bacteria counts from abundant wildlife occupying a shallow lake with low water circulation would need to be analyzed further..

Response to Comment 38-H:

Refer to page 2-1 of the PEIR, which states that educational and outreach measures would be implemented as part of EWMP non-structural BMPs.

Genevieve Osmena

From: Margaux Viera <gauxviera@gmail.com>
Sent: Sunday, March 08, 2015 1:21 PM
To: Genevieve Osmena
Cc: Sandy Snider; Pam Warner; Richard Schulhof; richard.schulhof@thearboretum.org; Ken Hill; Kenneth Hill
Subject: Fwd: Speech- Final Draft

Hello Genevieve,

Here is a copy of the speech I prepared to say at the end of tomorrow's meeting.

Thank you,
Mrs. Margaux L. Viera

Good morning. My name is Margaux Viera.

I am the great great great granddaughter of Elias Jackson "Lucky" Baldwin, who once owned Rancho Santa Anita and what is now known as, The Los Angeles Arboretum & Botanical Gardens. I am honored to be a part of The Los Angeles Arboretum's past, present and future. I am on the board of trustees and am part of the, "Save Baldwin Lake" task force. Baldwin Lake was once a natural reservoir for artesian water. Lucky Baldwin set a gold standard for water conservation when he deepened the lake basin in the late 1880's and created a water retention system that helped him irrigate acres and acres of crops. Now historic Baldwin Lake is in serious trouble. We can return Baldwin Lake to its water retention function as part of the Enhanced Watershed Management Plan, and we can also use Baldwin Lake to educate the public that the history of responsible use of water goes back much further than most people realize.

Please help to protect Baldwin Lake and it's beautiful natural resource. The Los Angeles Arboretum is very special to my family as well as to the hundreds of thousands of individuals, families and school children who visit it each year. Thank you.

Response to Comment Letter 39: (Margaraux Viera – March 9, 2015)

Response to Comment 39-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The PEIR assesses the environmental impacts associated with implementation of EWMPs as a form of compliance with the MS4 Permit. The restoration of Baldwin Lake is shown as a potential priority project to be implemented as part of the Rio Hondo/San Gabriel River EWMP in Figure 2-13 of the PEIR. More site investigations are needed to fully vet the proposed project and define the project scope needed to satisfy the EWMP's requirements. The City of Arcadia is the primary agency who will benefit from a water quality project at the Baldwin Lake. The City of Arcadia will likely play a major role in the decision to implement an EWMP project at Baldwin Lake.

Paige Anderson

To: Laura Rocha
Subject: RE: In support of Baldwin Lake restoration

From: Robin Kirk [mailto:robinkirk1@yahoo.com]
Sent: Monday, March 09, 2015 4:54 PM
To: Gregg Begell
Subject: In support of Baldwin Lake restoration

Dear Mr. Begell:
As a volunteer/docent of nearly ten years at the Arboretum I have seen the rapid degradation of Baldwin Lake.
Until now, we have felt there was no hope for its restoration. I would like to tell the visiting public that we do have hope, that we care about this resource and as a County facility we are stepping up to the responsibility of its desperately needed restoration.

Most importantly, because the lake is a collection basin for Arcadia's runoff, we have allowed its quality to be compromised with unfiltered pollutants, destabilization of its banks and siltation that threaten the viability of its storage capacity. The inclusion of the Lake in the Rio-Hondo/San Gabriel EWMP will finally give us the means to take responsibility for our lake by managing the runoff productively enabling us to restore the needed depth and give us much needed water storage capacity and aquifer recharge. We need water storage capacity and we need to be responsible for the quality of the water we share with the community and provide for our wildlife.

The inclusion of the Lake in the EWMP is a major step toward its restoration enabling the Arboretum to meet the needs of our community for a lake with water storage capacity and thereby promoting its scenic, wildlife and historic value.

Thank you for your support.

Sincerely,
Robin A. Kirk

Response to Comment Letter 40: (Robin Kirk – March 9, 2015)

Response to Comment 40-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The PEIR assesses the environmental impacts associated with implementation of EWMPs as a form of compliance with the MS4 Permit. The restoration of Baldwin Lake is shown as a potential priority project to be implemented as part of the Rio Hondo/San Gabriel River EWMP in Figure 2-13 of the PEIR. More site investigations by implementing agencies are needed to fully vet the proposed project and define the project scope needed to satisfy the EWMP's requirements. The City of Arcadia is the primary agency who will benefit from a water quality project at the Baldwin Lake. The City of Arcadia will likely play a major role in the decision to implement an EWMP project at Baldwin Lake.

Paige Anderson

To:	Laura Rocha
Subject:	RE: Comments to LACFCD Draft PEIR Enhanced Watershed Management Programs due 3.16.2015

From: Joyce Dillard [mailto:dillardjoyce@yahoo.com]
Sent: Monday, March 16, 2015 3:50 PM
To: Gregg Begell
Subject: Comments to LACFCD Draft PEIR Enhanced Watershed Management Programs due 3.16.2015

Attached.

Joyce Dillard
P.O. Box 31377
Los Angeles, CA 90031

Comments to LACFCD Draft PEIR Enhanced Watershed Management Programs due 3.16.2015

<u>You state:</u>

> *The 2012 MS4 Permit for Los Angeles County gives Permittees the option of implementing an innovative approach to Permit compliance through development of an Enhanced Watershed Management Program (EWMP). The EWMPs will identify potential and priority* ***structural and non-structural Best Management Practices (BMPs)*** *within the region's stormwater collection system to improve runoff water quality.*

And

> *The LACFCD has limited jurisdictional authority for ordinance and code enactment or enforcement and therefore is* ***limited in nonstructural BMPs to education and outreach measures. The structural watershed control measures that will be implemented by the LACFCD will be multi-benefit stormwater projects that emphasize flood risk mitigation and water conservation and supply.***

And

> ***The LACFCD has limited jurisdictional authority for ordinance and code enactment or enforcement and therefore is limited in nonstructural BMPs to education and outreach measures****. The structural watershed control measures that will be implemented by the LACFCD will be multi-benefit stormwater projects that emphasize flood risk mitigation and water conservation and supply*.
>
> ***The LACFCD has a vested interest in increasing opportunities for stormwater capture and groundwater recharge as a means of assisting local water supply augmentation****. The LACFCD will be working with the applicable Permittees and other stakeholders in all 12 EWMP watersheds to develop such projects. The EWMPs will be implemented by the Permittees that have jurisdiction within each EWMP area.* ***The implementing agencies will be responsible for the contents of the EWMPs affecting their jurisdictions and for implementing the projects developed by the EWMPs.***

<u>Comments:</u>

We do not agree that the LA County Flood Control District LACFCD qualifies as a LEAD AGENCY.

CEQA 15051(d) states:

Where the provisions of subdivisions (a), (b), and (c) leave two or more public agencies with a substantial claim to be the Lead Agency, the public agencies may by agreement designate an agency as the Lead Agency. An agreement may also provide for cooperative efforts by two or more agencies by contract, joint exercise of powers, or similar devices.

The WATERSHED MANAGEMENT GROUPS, through the Notices of Intent and/or Memorandums of Understanding have determined Lead Agencies as:

1. Ballona Creek- City of Los Angeles
2. Beach Cities- City of Redondo Beach
3. Dominguez Channel- City of Los Angeles
4. Malibu Creek- City of Calabasas
5. Marina del Rey Harbor-County of Los Angeles
6. North Santa Monica Bay Coastal- City of Malibu
7. Palos Verdes Peninsula- City of Rancho Palos Verdes
8. Rio Hondo/San Gabriel River- City of Arcadia (not City of Sierra Madre)
9. Santa Monica Bay- Jurisdictional Groups 2 & 3- City of Los Angeles
10. Upper Los Angeles River- City of Los Angeles
11. Upper San Gabriel River- County of Los Angeles
12. Upper Santa Clara River- City of Santa Clarita

You state:

The EWMPs will identify management strategies including hundreds of structural Best Management Practices (BMPs) that may be designed and implemented by the Permittees to meet permit compliance objectives.

Comments:

APPENDIX G-EWMP Proposed BMP and Priority Project Data identified proposed projects, making this PEIR irrelevant as a programming document. They are site-specific.

You state:

The PEIR analysis is not intended to focus on the site-specific construction and operation details of each management strategy and project included in the EWMP. Rather, this PEIR serves as a ***first-tier environmental document that focuses on the effects of implementing the EWMPs to reduce urban runoff pollution****. The analysis assesses worst case situations where construction or operation of projects may significantly impact environmental resources. The analysis outlines mitigation strategies to be followed by implementing agencies to avoid or minimize impacts wherever feasible.*

Comments:

URBAN RUNOFF POLLUTION is mentioned twice in the MS4 PERMIT:

ATTACHMENT A–DEFINITIONS

Structural BMP
*Any structural facility designed and constructed to mitigate the adverse impacts of storm water and **urban runoff pollution** (e.g. canopy, structural enclosure). The category may include both Treatment Control BMPs and Source Control BMPs*

And

a. Permit Structure: Watershed Management Approach and Total Maximum Daily Load (TMDL) Implementation

A single permit will ensure consistency and equitability in regulatory requirements within Los Angeles County, while watershed-based sections within the single permit will provide flexibility to tailor permit provisions to address distinct watershed characteristics and water quality issues.

*Additionally, an internal watershed-based structure comports with the Regional Water Board's Watershed Management Initiative, its watershed-based TMDL requirements, and the LACFCD's funding initiative passed in Assembly Bill 2554. Watershed-based sections will help promote watershed-wide solutions to address water quality problems, which in many cases are the most efficient and cost-effective means to address storm water and **urban runoff pollution.***

And

Project Description
*The 12 EWMPs will vary for each watershed group, **but will generally provide the opportunity for Permittees to customize their stormwater programs to achieve compliance with applicable receiving water limitations (RWLs) and water-quality-based effluent limits (WQBELs) in accordance with the MS4 Permit through implementation of stormwater best management practices (BMPs) or watershed control measures.***

*BMPs vary in function and type, with each BMP providing unique design characteristics and benefits from implementation. **The overarching goal of BMPs in the EWMP is to reduce the impact of stormwater and non-stormwater on receiving water quality and address the water quality priorities as defined by the MS4 Permit***

PEIR does not have a main focus on Receiving Water compliance required by the MS4 Permit and intention of Enhanced Watershed Management Plans.

This PEIR is unnecessary.

<u>You state:</u>

> *LACFCD is the CEQA Lead Agency for this PEIR.* ***This PEIR can be used by the LACFCD or other Permittees to streamline environmental review of individual EWMP projects***

<u>Comments:</u>

LACFCD is not the Lead Agency for any EWMP Watershed Management Group. This could only apply to their own projects.

This document covers URBAN RUNOFF and would not streamline any review.

<u>You state:</u>

> *The timeline identified in the MS4 Permit requires that Permittees submit the EWMP to the LARWQCB by June 28, 2015, in order to be in compliance with the permit conditions.* ***The LACFCD recognizes that implementation of the EWMPs may potentially result in changes to environmental conditions. As a result, the LACFCD has prepared this Program Environmental Impact Report (PEIR) in compliance with the California Environmental Quality Act (CEQA) to provide the public and the responsible and trustee agencies with information about the potential effects on the local and regional environment associated with implementation of the EWMPs. The LACFCD will submit the PEIR to its governing body, the Los Angeles County Board of Supervisors, for approval prior to submittal of the EWMPs.*** *The EWMPs will be submitted by each EWMP group to the LARWQCB.*
>
> *This PEIR describes and evaluates each of the EWMPs being prepared by the Permittees collectively. The discretionary action prompting the need for CEQA compliance is the submittal of the completed EWMPs to the LARWQCB. The EWMPs will identify management strategies including hundreds of structural Best Management Practices (BMPs) that may be designed and implemented by the Permittees to meet permit compliance objectives.* ***A few of the BMPs are currently well defined but most are yet to be fully developed under the EWMPs****. A set of priority BMPs will be detailed in each of the EWMPs; these are being developed in parallel with the PEIR. The PEIR describes the details that are available for each of the EWMPs currently under preparation by the EWMP working groups.*

<u>Comments:</u>

LACFCD and the Los Angeles County Board of Supervisors have no authority over the municipal GENERAL PLAN and Its Elements, required by each city. Neither body represents a METROPOLITAN PLANNING ORGANIZATION with its required Regional Housing Needs Assessment which related to infrastructure needs assessment.

CITY OF LOS ANGELES has not prepared its GENERAL PLAN UPDATE or the CIRCULATION ELEMENT, both critical to any MS4 compliance issues.

You state:

> ***The PEIR provides the LACFCD a foundation for any necessary future environmental review documents that focus on individual projects of the EWMPs for which the LACFCD is the designated Lead Agency****. In addition, the PEIR can provide several advantages during the development and implementation of the EWMPs that may include:*
> - *More exhaustive consideration of effects and alternatives than would be practical in an environmental impact report (EIR) for an individual BMP project.*
> - *Consideration of cumulative impacts that might not be evident in a case-by-case or project-by-project analysis.*
> - ***Consideration by LACFCD as Lead Agency of broad policy alternatives and program-wide mitigation measures early in the process when there is greater flexibility to deal with basic problems or cumulative impacts.***

Comments:

The PEIR should be limited to LACFCD projects ONLY and all other projects in Appendix G should be removed.

You state:

> *Instead, the PEIR frames the nature and magnitude of the expected environmental impacts associated with these proposed EWMP projects and identifies program mitigation measures to reduce the impacts of the projects as proposed.*

Comments:

The following Mitigation Measures are not under the LACFCD jurisdiction, per the limited jurisdiction over for ordinance and code enactment or enforcement**:**

> ***Aesthetics***
> ***Mitigation Measures***
> ***AES-1:*** *Aboveground structures shall be designed to be consistent with local zoning codes and applicable design guidelines and to minimize features that contrast with neighboring development.*
>
> ***AES-2:*** *Implementing agencies shall develop BMP maintenance plans that are approved concurrently with each structural BMP approval. The maintenance plans must include measures to ensure functionality of the structural BMPs for*

the life of the BMP. These plans may include general maintenance guidelines that apply to a number of smaller distributed BMPs.

Air Quality
Mitigation Measures

AIR-1: *Implementing agencies shall require for large Regional or Centralized BMPs the use of low-emission equipment meeting Tier II emissions standards at a minimum and Tier III and IV emissions standards where available as CARB-required emissions technologies become readily available to contractors in the region.*

AIR-2: *For large construction efforts that may result in significant air emissions, implementing agencies shall encourage contractors to use lower-emission equipment through the bidding process where appropriate.*

AIR-3: *For large construction efforts associated with Regional or Centralized BMPs, implementing agencies shall conduct a project-specific LST analysis where necessary to determine local health impacts to neighboring land uses. Where it is determined that construction emissions would exceed the applicable LSTs or the most stringent applicable federal or state ambient air quality standards, the structural BMP project shall reduce its daily construction intensity (e.g., reducing the amount of equipment used daily, reducing the amount of soil graded/excavated daily) to a level where the structural BMP project's construction emissions would no longer exceed SCAQMD's LSTs or result in pollutant emissions that would cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standards.*

AIR-4: *During planning of structural BMPs, implementing agencies shall assess the potential for nuisance odors to affect a substantial number of people. BMPs that minimize odors shall be considered the priority when in close proximity to sensitive receptors.*

Biological Resources
Mitigation Measures

BIO-1: *Prior to approving a Regional or Centralized BMP., the Permittee shall conduct an evaluation of the suitability of the BMP location. Appropriate BMP sites should avoid impacting large areas of native habitats including upland woodlands and riparian forests that support sensitive species to the extent feasible. The evaluation shall include an assessment of potential downstream impacts resulting from flow diversions.*

BIO-2: *Prior to ground disturbing activities in areas that could support sensitive biological resources, a habitat assessment shall be conducted by a qualified biologist to determine the potential for special-status wildlife species to occur* *within affected areas, including areas directly or indirectly impacted by construction or operation of the BMPs.*

BIO-3: *If a special-status wildlife species is determined to be present or potentially present within the limits of construction activities, a qualified biologist shall conduct pre-construction surveys of proposed work zones and within an appropriately sized buffer around each area as determined by a qualified biologist within 14 days prior to ground disturbing activities. Any potential habitat capable of supporting a special-status wildlife species shall be flagged for avoidance if feasible.*

BIO-4: *If avoidance of special-status species or sensitive habitats that could support special-status species (including, but not limited to, critical habitat, riparian habitat, and jurisdictional wetlands/waters) is not feasible, the Permittee shall consult with the appropriate regulating agency (USACE/USFWS or CDFW) to determine a strategy for compliance with the Endangered Species Act, California Fish and Game Code, and other regulations protecting special-status species and sensitive habitats. The Permittee shall identify appropriate impact minimization measures and compensation for permanent impacts to sensitive habitats and species in consultation with regulatory agencies. Construction of the project will not begin until the appropriate permits from the regulatory agencies are approved.*

BIO-5: *If construction and vegetation removal is proposed between February 1 and August 31, a qualified biologist shall conduct a pre-construction survey for breeding and nesting birds and raptors within 500-feet of the construction limits to determine and map the location and extent of breeding birds that could be affected by the project. Active nest sites located during the pre-construction surveys shall be avoided until the adults and young are no longer reliant on the nest site for survival as determined by a qualified biologist.*

BIO-6: *All construction areas, staging areas, and right-of-ways shall be staked, flagged, fenced, or otherwise clearly delineated to restrict the limits of construction to the minimum necessary near areas that may support special-status wildlife species as determined by a qualified biologist.*

BIO-7: *Prior to construction in areas that could support special status plants, a qualified botanist shall conduct a pre-construction floristic inventory and focused rare plant survey of project areas to determine and map the location and extent of special-status plant species populations within disturbance areas. This survey shall occur during the typical blooming periods of special-status plants with the potential to occur. The plant survey shall follow the CDFW Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (November 24, 2009).*

BIO-8: *If temporary construction-related impacts to special-status plant populations are identified within a disturbance area, the implementing agencies shall prepare and implement a special-status species salvage and replanting plan. The salvage and replanting plan shall include measures to salvage, replant, and monitor the disturbance area until native vegetation is re-established under the direction of CDFW and USFWS.*

BIO-9: *Prior to construction, a qualified wetland delineator shall be retained to conduct a formal wetland delineation in areas where potential jurisdictional resources (i.e., wetlands or drainages) subject to the jurisdiction of USACE, RWQCB, and CDFW, may be affected by the project. If jurisdictional resources are identified in the EWMP area and would be directly or indirectly impacted by individual projects, the qualified wetland delineator shall prepare a jurisdictional delineation report suitable for submittal to USACE, RWQCB, and CDFW for purposes of obtaining the appropriate permits. Habitat mitigation and compensation requirements shall be implemented prior to construction in accordance with Mitigation Measure BIO-4.*

BIO-10: *Oak trees and other protected trees shall be avoided to the extent feasible. If trees may be impacted by project construction, a certified arborist shall conduct a tree inventory of the construction impact area. If any oak trees or other protected trees will be impacted by BMP construction, the implementing agency shall obtain any required County or City permits.*

Cultural Resources
Mitigation Measures

CUL-1: *For individual EWMP projects that could impact buildings or structures (including infrastructure) 45 years old or older, implementing agencies shall ensure that a historic built environment survey is conducted or supervised by a qualified historian or architectural historian meeting the Secretary of the Interior's Professional Qualification Standards for Architectural History. Historic built environment resources shall be evaluated for their eligibility for listing in the CRHR or local register prior to the implementing agency's approval of project plans. If eligible resources that would be considered historical resources under CEQA are identified, demolition or substantial alteration of such resources shall be avoided. If avoidance is determined to be infeasible, the implementing agency shall require the preparation of a treatment plan to include, but not be limited to, photo-documentation and public interpretation of the resource. The plan will be submitted to the implementing agency for review and approval prior to implementation.*

CUL-2: *Implementing agencies shall ensure that individual EWMP projects that require ground disturbance shall be subject to a Phase I cultural resources inventory on a project-specific basis prior to the implementing agency's approval* *of project plans. The study shall be conducted or supervised by a qualified archaeologist, defined as an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for Archaeology, and shall be conducted in consultation with the local Native American representatives expressing interest. The cultural resources inventory shall include a cultural resources records search to be conducted at the South Central Coastal Information Center; scoping with the NAHC and with interested Native Americans identified by the NAHC; a pedestrian archaeological survey where deemed appropriate by the qualified archaeologist; and formal recordation of all identified archaeological resources on California Department of Parks and Recreation 523 forms and significance evaluation of such resources presented in a technical report following the guidelines in Archaeological Resource Management Reports (ARMR): Recommended Contents and Format, Department of Parks and Recreation, Office of Historic Preservation, State of California, 1990.*

If potentially significant archaeological resources are encountered during the survey, the implementing agency shall require that the resources are evaluated by the qualified archaeologist for their eligibility for listing in the CRHR and for significance as a historical resource or unique archaeological resource per CEQA Guidelines Section 15064.5. Recommendations shall be made for treatment of these resources if found to be significant, in consultation with the implementing agency and the appropriate Native American groups for prehistoric resources. Per CEQA Guidelines Section 15126.4(b)(3), preservation in place shall be the preferred manner of mitigation to avoid impacts to archaeological resources qualifying as historical resources. Methods of avoidance may include, but shall not be limited to, project re-route or re-design, project cancellation, or identification of protection measures such as capping or fencing. Consistent with CEQA Guidelines Section 15126.4(b)(3)(C), if it is demonstrated that resources cannot be avoided, the qualified archaeologist shall develop additional treatment measures, which may include data recovery or other appropriate measures, in consultation with the implementing agency, and any local Native American representatives expressing interest in prehistoric or tribal resources. If an archaeological site does not qualify as an historical resource but meets the criteria for a unique archaeological resource as defined in Section 21083.2, then the site shall be treated in accordance with the provisions of Section 21083.2.

***CUL-3:** The implementing agency shall retain archaeological monitors during ground-disturbing activities that have the potential to impact archaeological resources qualifying as historical resources or unique archaeological resources, as determined by a qualified archaeologist in consultation with the implementing agency, and any local Native American representatives expressing interest in the project. Native American monitors shall be retained for projects that have a high potential to impact sensitive Native American resources, as determined by the implementing agency in coordination with the qualified archaeologist.*

***CUL-4:** During project-level construction, should subsurface archaeological resources be discovered, all activity in the vicinity of the find shall stop and a* *qualified archaeologist shall be contacted to assess the significance of the find according to CEQA Guidelines Section 15064.5. If any find is determined to be significant, the archaeologist shall determine, in consultation with the implementing agency and any local Native American groups expressing interest, appropriate avoidance measures or other appropriate mitigation. Per CEQA Guidelines Section 15126.4(b)(3), preservation in place shall be the preferred means to avoid impacts to archaeological resources qualifying as historical resources. Methods of avoidance may include, but shall not be limited to, project re-route or re-design, project cancellation, or identification of protection measures such as capping or fencing. Consistent with CEQA Guidelines Section 15126.4(b)(3)(C), if it is demonstrated that resources cannot be avoided, the qualified archaeologist shall develop additional treatment measures, such as data recovery or other appropriate measures, in consultation with the implementing agency and any local Native American representatives expressing interest in prehistoric or tribal resources. If an archaeological site does not qualify as an historical resource but meets the criteria for a unique archaeological resource as defined in Section 21083.2, then the site shall be treated in accordance with the provisions of Section 21083.2.*

CUL-5: *For individual structural BMP projects that require ground disturbance, the implementing agency shall evaluate the sensitivity of the project site for paleontological resources. If deemed necessary, the implementing agency shall retain a qualified paleontologist to evaluate the project and provide recommendations regarding additional work, potentially including testing or construction monitoring.*

CUL-6: *In the event that paleontological resources are discovered during construction, the implementing agency shall notify a qualified paleontologist. The paleontologist will evaluate the potential resource, assess the significance of the find, and recommend further actions to protect the resource.*

CUL-7: *The implementing agency shall require that, if human remains are uncovered during project construction, work in the vicinity of the find shall cease and the County Coroner shall be contacted to evaluate the remains, following the procedures and protocols set forth in Section 15064.5 (e)(1) of the CEQA Guidelines. If the County Coroner determines that the remains are Native American, the Coroner will contact the Native American Heritage Commission, in accordance with Health and Safety Code Section 7050.5, subdivision (c), and Public Resources Code 5097.98 (as amended by AB 2641). The NAHC will then designate a Most Likely Descendant of the deceased Native American, who will engage in consultation to determine the disposition of the remains.*

Geologic and Mineral Resources
Mitigation Measures

GEO-1: *Prior to approval of infiltration BMPs, implementing agencies shall conduct a geotechnical investigation of each infiltration BMP site to evaluate infiltration suitability. If infiltration rates are sufficient to accommodate an infiltration BMP, the geotechnical investigation shall recommend design measures necessary to prevent excessive lateral spreading that could destabilize neighboring structures. Implementing agencies shall implement these measures in project designs.*

GEO-2: *Prior to installing BMPs designed to recharge local groundwater supplies, the Implementing Agency shall notify local groundwater managers including the Upper Los Angeles River Area Water Master, the Water Replenishment District of Southern California, or the San Gabriel Water Master as well as local water producers such as local municipalities and water companies. The Implementing Agency shall coordinate BMP siting efforts with groundwater managers and producers to mitigate high groundwater levels while increasing local water supplies.*

Hazards and Hazardous Materials
Mitigation Measures

HAZ-1: *Implementing agencies shall prepare and implement maintenance practices that include periodic removal and replacement of surface soils and media that may accumulate constituents that could result in further migration of constituents to sub-soils and groundwater. A BMP Maintenance Plan shall be prepared by Implementing Agencies upon approval of the individual BMP projects that identifies the frequency and procedures for removal and/or replacement of accumulated debris, surface soils and/or media (to depth where constituent concentrations do not represent a hazardous conditions and/or have the potential to migrate further and impact groundwater) to avoid accumulation of hazardous concentrations and the potential to migrate further to sub-soils and groundwater. The BMP Maintenance Plan may consist of a general maintenance guideline that applies to several types of smaller distributed BMPs. For smaller distributed BMPs on private property, these plans may consist of a maintenance covenant that includes requirements to avoid the accumulation of hazardous concentrations in these BMPs that may impact underlying sub-soils and groundwater. Structural BMPs shall be designed to prevent migration of constituents that may impact groundwater.*

HAZ-2*: Prior to the initiation of any construction requiring ground-disturbing activities in areas where hazardous material use or management may have occurred, the implementing agencies shall complete a Phase I Environmental Site Assessment (ESA) in accordance with American Society for Testing and Materials (ASTM) Standard E1527-13 for each construction site. Any recommended follow up sampling (Phase II activities) set forth in the Phase I ESA shall be implemented prior to construction. The results of Phase II studies, if necessary, shall be submitted to the local overseeing agency and any required* *remediation or further delineation of identified contamination shall be completed prior to commencement of construction.*

HAZ-3: *Implementing Agencies shall require that those BMPs that are within an airport land use plan area are compatible with criteria specified in FAA Advisory Circular No: 150/5200-33B (FAA, 2007). If the proposed BMP is within the minimum separation criteria, the Implementing Agency shall consult with the airport and collaboratively evaluate whether the potential increase in wildlife hazards can be mitigated.*

Hydrology and Water Quality
Mitigation Measures

HYDRO-1: *Prior to approving an infiltration BMP, the Permittee shall conduct an evaluation of the suitability of the BMP location. Appropriate infiltration BMP sites should avoid areas with low permeability where recharge could adversely affect neighboring subsurface infrastructure.*

HYDRO-2: *Prior to approving an infiltration BMP, the Permitee shall identify pre-treatment technologies, type, and depth of filtration media; depth to groundwater; and other design considerations necessary to prevent contaminants from impacting groundwater quality. The design shall consider stormwater quality data within the BMP's collection area to assess the need and type of treatment and filtration controls. Local design manuals and ordinances requiring minimum separation distance to groundwater shall also be met as part of the design.*

HYDRO-3: *Prior to the installation of an infiltration BMP, the Permitee shall conduct a database review for contaminated groundwater sites within a quarter mile of the proposed infiltration facility. The Permittee shall identify whether any contaminated groundwater plumes are present and whether coordination with the local and state environmental protection overseeing agency and responsible party is warranted prior to final design of infiltration facility.*

Noise
Mitigation Measures

NOISE-1: *The implementing agencies shall implement the following measures during construction as needed:*

- *Include design measures necessary to reduce the construction noise levels where feasible. These measures may include noise barriers, curtains, or shields.*
- *Place noise-generating construction activities (e.g., operation of compressors and generators, cement mixing, general truck idling) as far as possible from the nearest noise-sensitive land uses.*
- *Locate stationary construction noise sources as far from adjacent noise-sensitive receptors as possible.*

- *If construction is to occur near a school, the construction contractor shall coordinate the with school administration in order to limit disturbance to the campus. Efforts to limit construction activities to non-school days shall be encouraged.*
- *For the centralized and regional BMP projects located adjacent to noise-sensitive land uses, identify a liaison for these off-site sensitive receptors, such as residents and property owners, to contact with concerns regarding construction noise and vibration. The liaison's telephone number(s) shall be prominently displayed at construction locations.*
- *For the centralized and regional BMP projects located adjacent to noise-sensitive land uses, notify in writing all landowners and occupants of properties adjacent to the construction area of the anticipated construction schedule at least 2 weeks prior to groundbreaking.*

NOISE-2: *All structural BMPs that employ mechanized stationary equipment that generate noise levels shall comply with the applicable noise standards established by the implementing agency with jurisdiction over the structural BMP site. The equipment shall be designed with noise-attenuating features (e.g., enclosures) and/or located at areas (e.g., belowground) where nearby noise-sensitive land uses would not be exposed to a perceptible noise increase in their noise environment.*

Public Services and Recreation
Mitigation Measures

PS-1: *The Permittee implementing the EWMP project shall provide reasonable advance notification to the service providers such as fire, police, local businesses, home owners and residents of adjacent to and within areas potentially affected by the proposed EWMP project about the nature, extent and duration of construction activities. Interim updates should be provided to inform them of the status of the construction activities.*

Transportation and Circulation
Mitigation Measures

TRAF-1: *For projects that may affect traffic, implementing agencies shall require that contractors prepare a construction traffic control plan. Elements of the plan should include, but are not necessarily limited to, the following:*

- *Develop circulation and detour plans to minimize impacts to local street circulation. Use haul routes minimizing truck traffic on local roadways to the extent possible.*
- *To the extent feasible, and as needed to avoid adverse impacts on traffic flow, schedule truck trips outside of peak morning and evening commute hours.*
- *Install traffic control devices as specified in Caltrans' Manual of Traffic Controls for Construction and Maintenance Work Zones where needed to*

maintain safe driving conditions. Use flaggers and/or signage to safely direct traffic through construction work zones.

- *Coordinate with facility owners or administrators of sensitive land uses such as police and fire stations, hospitals, and schools. Provide advance notification to the facility owner or operator of the timing, location, and duration of construction activities.*

Utilities and Service Systems
Mitigation Measures

UTIL-1: *Prior to approval of BMPs, implementing agencies shall evaluate the potential for impacts to downstream beneficial uses including surface water rights. Implementing agencies shall not approve BMPs that result in preventing access to previously appropriated surface water downstream.*

UTIL-2: *Implementing agencies shall encourage construction contractors to recycle construction materials and divert inert solids (asphalt, brick, concrete, dirt, fines, rock, sand, soil, and stone) from disposal in a landfill where feasible. Implementing agencies shall incentivize construction contractors with waste minimization goals in bid specifications where feasible.*

Land Use and Agriculture Mitigation Measures were omitted as jurisdiction belongs to the Municipalities and to the County of Los Angeles for the unincorporated areas.

Alternatives should be based on Projects under the jurisdictional authority of the LACFCD only.

Joyce Dillard
P.O. Box 31377
Los Angeles, CA 90031

Response to Comment Letter 41 (Joyce Dillard – March 16, 2015)

Response to Comment 41-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The LACFCD, as a regional agency, is a member of each of the 12 EWMP working groups, and as such provides a commonality within each EWMP group. However, LACFCD does not have a special status or authority designated by the MS4 Permit over any of the other Permittees. The LACFCD will be working with the applicable Permittees in all 12 EWMP watersheds as an equal partner to identify the types and locations of BMPs needed to achieve permit compliance within each watershed. The timeline identified in the MS4 Permit requires that Permittees submit the EWMP to the LARWQCB by June 28, 2015, in order to be in compliance with the permit conditions. The LACFCD recognizes that implementation of the EWMPs may potentially result in changes to environmental conditions. The discretionary action prompting the need for CEQA compliance is the submittal of the completed EWMPs to the LARWQCB. As a result, the LACFCD, as lead agency, has prepared this Program Environmental Impact Report (PEIR) in compliance with the California Environmental Quality Act (CEQA) to provide the public and the responsible and trustee agencies with information about the potential effects on the local and regional environment associated with implementation of the EWMPs. The LACFCD will submit the PEIR to its governing body, the Los Angeles County Board of Supervisors, for approval prior to submittal of the EWMPs. The EWMPs will be submitted by each EWMP group to the LARWQCB.

Each Permittee may rely upon this PEIR, as appropriate, for BMPs within its jurisdiction. Individual projects will undergo subsequent CEQA analysis and documentation, as appropriate under the requirements of CEQA, by implementing agencies. The determinations of significance after mitigation in the PEIR apply to the LACFCD and other implementing agencies that choose to rely on this PEIR and the mitigation measures proposed herein. This PEIR can be used by the LACFCD or other Permittees to streamline environmental review of individual EWMP projects. As individual projects identified in the EWMPs are fully developed, the implementing agency (i.e., the Permittee responsible for implementing the project) will conduct CEQA analysis for individual projects, as appropriate, or may determine that no additional CEQA analysis is required or that a project is exempt from CEQA. Each implementing agency would determine the significance after mitigation for potential impacts of their proposed projects.

Response to Comment 41-B:

The PEIR acknowledges that most of the projects to be included in the EWMPs are either currently undefined or currently under development. The PEIR explains that EWMPs are being prepared that will contain road maps to permit compliance for each of the 12 watersheds, without yet being fully detailed. Appendix G includes location information about potential priority projects available at the time of publication. The use of a PEIR pursuant to CEQA Guidelines Section 15168 is intended to evaluate broad-based impacts early in the planning process and is the appropriate CEQA compliance for the EWMPs at this time. This PEIR can be used by the LACFCD or other Permittees to streamline environmental review of individual EWMP projects, as they identified and further refined. As individual projects identified in the EWMPs are moved forward, the implementing agency (i.e., the Permittee responsible for implementing the project) will conduct CEQA analysis for individual projects as appropriate or may determine that no additional CEQA analysis is required or that a project is exempt from CEQA. Each implementing agency would determine the significance after mitigation for potential impacts of their proposed projects. The PEIR provides the LACFCD a foundation for any necessary future environmental review documents that focus on individual projects of the EWMPs for which the LACFCD is the designated Lead Agency.

Response to Comment 41-C:

As noted on page 1-1 of the PEIR, the Regional Water Quality Control Board issued Order No. R4-2012-0175; NPDES No. CAS004001 in December 2012 covering discharges from multiple municipalities within the Los Angeles Region. The requirements of the MS4 permit are described in Section 1.2 of the PEIR. A primary objective of the proposed program noted on page 2-2 is to comply with the permit requirements. The EWMPs include a methodology required by the MS4 permit to evaluate the effectiveness of the BMPs as they are implemented. The commenter's opinion about the PEIR does not have the main focus on Receiving Water compliance required by the MS4 Permit and intention of Enhanced Watershed Management Plans does not address the adequacy of the PEIR. The PEIR does not critique the effectiveness on Receiving Water compliance required by the MS4 Permit, but rather it evaluates the potential environmental effects that could result from implementing the types of projects proposed in the EWMPs.

Response to Comment 41-D:

The LACFCD, as a regional agency, is a member of each of the 12 EWMP working groups, and as such provides a commonality within each EWMP group. However, LACFCD does not have a special status or authority designated by the MS4 Permit over any of the other Permittees. The LACFCD will be working with the applicable Permittees in all 12 EWMP watersheds as an equal partner to identify the types and locations of BMPs needed to achieve permit compliance within each watershed. The timeline identified in the MS4 Permit requires that Permittees submit the EWMP to the LARWQCB by June 28, 2015, in order to be in compliance with the permit conditions. The LACFCD recognizes that implementation of the EWMPs may potentially result in changes to environmental conditions. The discretionary action prompting the need for CEQA compliance is the submittal of the completed EWMPs to the LARWQCB. As a result, the LACFCD, as lead agency, has prepared this Program Environmental Impact Report (PEIR) in compliance with the California Environmental Quality Act (CEQA) to provide the public and the responsible and trustee agencies with information about the potential effects on the local and regional environment associated with implementation of the EWMPs. The LACFCD will submit the PEIR to its governing body, the Los Angeles County Board of Supervisors, for approval prior to submittal of the EWMPs. The EWMPs will be submitted by each EWMP group to the LARWQCB.

Each Permittee may rely upon this PEIR, as appropriate, for BMPs within its jurisdiction. Individual projects will undergo subsequent CEQA analysis and documentation, as appropriate under the requirements of CEQA, by implementing agencies. The determinations of significance after mitigation in the PEIR apply to the LACFCD and other implementing agencies that choose to rely on this PEIR and the mitigation measures proposed herein. This PEIR can be used by the LACFCD or other Permittees to streamline environmental review of individual EWMP projects. As individual projects identified in the EWMPs are fully developed, the implementing agency (i.e., the Permittee responsible for implementing the project) will conduct CEQA analysis for individual projects, as appropriate, or may determine that no additional CEQA analysis is needed.

Response to Comment 41-E:

The Draft PEIR acknowledges on page 1-3 that LACFCD does not have a special status or authority designated by the MS4 Permit over any of the other Permittees. The LACFCD will be working with the applicable Permittees, including with the City of Los Angeles, in the EWMP watersheds as an equal partner to identify the types and locations of BMPs needed to achieve permit compliance within each watershed. The LACFCD, as a regional agency, is a member of each of the 12 EWMP working groups, and as such provides a commonality within each EWMP group. Although each Permittee will be responsible for its own General Plan preparation and MS4 permit compliance, the LACFCD has prepared this Program Environmental Impact Report (PEIR) to provide the public and the responsible and trustee agencies with information about the potential effects on the local and regional environment associated with implementation of the EWMPs throughout the County.

Each Permittee may rely upon this PEIR, as appropriate, for BMPs within its jurisdiction. Individual projects will undergo subsequent CEQA analysis and documentation, as appropriate under the requirements of CEQA, by implementing agencies. The determinations of significance after mitigation in the PEIR apply to the LACFCD and other implementing agencies that choose to rely on this PEIR and the mitigation measures proposed herein. This PEIR can be used by the LACFCD or other Permittees to streamline environmental review of individual EWMP projects. As individual projects identified in the EWMPs are fully developed, the implementing agency (i.e., the Permittee responsible for implementing the project) will conduct CEQA analysis for individual projects, as appropriate, or may determine that no additional CEQA analysis is needed.

Response to Comment 41-F:

The MS4 Permit Section VI.C.1.g (page 48) allows for watersheds to collaborate in preparing an EWMP to achieve Permit compliance with RWLs. The intent of the EWMP is to comprehensively evaluate opportunities for collaboration on multi-benefit regional projects that retain MS4 discharges and also address flood control and/or water supply within the participating Permittees' collective jurisdictional boundaries. The LACFCD will be working with the applicable Permittees in all 12 EWMP watersheds as an equal partner to identify the types and locations of BMPs needed to achieve permit compliance within each watershed.

The LACFCD, as a regional agency, is a member of each of the 12 EWMP working groups, and as such provides a commonality within each EWMP group. The LACFCD will be working with the applicable Permittees in all 12 EWMP watersheds as an equal partner to identify the types and locations of BMPs needed to achieve permit compliance within each watershed. The LACFCD recognizes that implementation of the EWMPs may potentially result in changes to environmental conditions. The discretionary action prompting the need for CEQA compliance is the submittal of the completed EWMPs to the LARWQCB. As a result, the LACFCD, as lead agency, has prepared this Program Environmental Impact Report (PEIR) in compliance with the California Environmental Quality Act (CEQA) to provide the public and the responsible and trustee agencies with information about the potential effects on the local and regional environment associated with implementation of the EWMPs. The LACFCD will submit the PEIR to its governing body, the Los Angeles County Board of Supervisors, for approval prior to submittal of the EWMPs. The EWMPs will be submitted by each EWMP group to the LARWQCB.

Each Permittee may rely upon this PEIR, as appropriate, for BMPs within its jurisdiction. Individual projects will undergo subsequent CEQA analysis and documentation, as appropriate under the requirements of CEQA, by implementing agencies. The determinations of significance after mitigation in the PEIR apply to the LACFCD and other implementing agencies that choose to rely on this PEIR and the mitigation measures proposed herein. This PEIR can be used by the LACFCD or other Permittees to streamline environmental review of individual EWMP projects. As individual projects identified in the EWMPs are fully developed, the implementing agency (i.e., the Permittee responsible for implementing the project) will conduct CEQA analysis for individual projects, as appropriate, or may determine that no additional CEQA analysis is needed.

Response to Comment 41-G:

The LACFCD, as a regional agency, is a member of each of the 12 EWMP working groups, and as such provides a commonality within each EWMP group. However, LACFCD does not have a special status or authority designated by the MS4 Permit over any of the other Permittees and cannot enforce those mitigation measures outside their jurisdiction. The LACFCD will be working with the applicable Permittees in all 12 EWMP watersheds as an equal partner to identify the types and locations of BMPs needed to achieve permit compliance within each watershed. Each Permittee may choose to rely upon this PEIR and its identified mitigation measures, as appropriate, for BMPs within its jurisdiction. Individual projects will undergo subsequent CEQA analysis and documentation, as appropriate under the requirements of CEQA, by implementing agencies. The determinations of significance after mitigation in the PEIR apply to the LACFCD and other implementing agencies that choose to rely on this PEIR and the mitigation measures proposed herein. This PEIR can be used by the LACFCD or other Permittees to streamline environmental review of individual EWMP projects should they also adopt the findings within this PEIR. As individual projects identified in the EWMPs are fully developed, the implementing agency (i.e., the Permittee responsible for implementing the project) will conduct CEQA analysis for individual projects, as appropriate, or may determine that no additional CEQA analysis is needed with compliance with the mitigation measures identified in this PEIR.

Response to Comment 41-H:

The alternatives analyzed in the Chapter 6 of the Draft PEIR included the No Project Alternative, Non-Structural BMPs Only Alternative, and the Distributed Structural/Non-Structural BMPs Only Alternative. The majority of BMPs proposed as part of the EWMPs would be implemented within existing LACFCD facilities. However, non-structural BMPs, including street sweeping and educational programs, would be required to be implemented outside of LACFCD flood control facilities and thus outside of their jurisdiction.

LACFCD does not have a special status or authority designated by the MS4 Permit over any of the other Permittees and cannot enforce BMPs outside their jurisdiction. The LACFCD will be working with the applicable Permittees in all 12 EWMP watersheds as an equal partner to identify the types and locations of BMPs needed to achieve permit compliance within each watershed. Therefore, implementation of alternatives outside of the LACFCD jurisdiction is appropriate at this level of analysis.

Paige Anderson

To: Laura Rocha
Subject: RE: comments on PEIR for the EWMP

From: Rex Frankel [mailto:rexfrankel@yahoo.com]
Sent: Monday, March 16, 2015 4:59 PM
To: Gregg Begell
Subject: comments on PEIR for the EWMP

COMMENTS ON THE PEIR FOR THE LA COUNTY FLOOD CONTROL DISTRICT EWMPs

by Rex Frankel, March 16, 2015, 4:58PM

We agree with the concerns of the SMMC in that this plan does not discuss land acquisition, but attempts to focus its regional urban runoff compliance strategies on using the existing inadequate supply of public land and parks.

It is clear from the 3 project objectives that this project is about surface water quality, be it in creeks, rivers or the local beaches. This goal is tied to compliance with the Federal Clean Water Act as required by the consent decree between local governments and the NRDC, Heal the Bay, etc. The consent decree, unfortunately has a drawback in that compliance with numerical limits on pollutants in waterways so far is leading to a plan that shifts those pollutants to public schools, parks, street parkways as the engineering departments tries to comply while not upsetting big landowners whose properties could become parkland as part of a multiple benefit strategy. The PEIR's drafters make the mistake of forgetting the multiple benefits approach that has gained local agencies a compliance deadline of 18 years instead of 10 from the RWQCB, and therefore, this plan has forgotten the goal of creating new parkland in parks-poor Los Angeles.

Questions not answered in this PEIR: what percentage of streets in each of the 12 EWMP areas are capable of being converted into “green streets” with so-called “distributed” water cleanup facilities?
What is the potential human health risk of converting street parkways, existing heavily used public parks and school playgrounds into these pollution catching and cleaning facilities? What areas of parkway conversions or new developments with these parkway filtration facilities have been where street parking is allowed, such that people will be inclined to walk across them? What is the slip and fall risk from the public walking through them from parked cars to homes and businesses?

<u>PIECEMEALING AND THE LEGAL CONCEPT OF INDEPENDENT UTILITY</u>

A program EIR can be justified under CEQA when the individual parts of the project can stand on their own and do not require completion of the others to complete their goal. Goals of the EWMP, however, are very specific: attaining numerical compliance with the Clean Water Act's pollution limits county-wide. A PEIR might be sufficient if the goal was a general plan to improve water quality and there was no standard of success. That is not the case here. Unless all the projects are completed, the CWA and consent decree will be violated.

Instead this project has become a case of divide and conquer, so that the impacts of the full CWA compliance project at each watershed are never considered by those who have to pay for it. Instead, each sub-project will be up for impacts review separately, subject to separate public hearings, all conveniently designed to exhaust and spread out the members of the public interested in this project. The costly choice of spending billions on cleanup projects or not swimming by a drain pipe for three days after a storm is not considered here. What the taxpayers are facing is incremental tax increases to pay for this project that will have “inertia” from all the previous funds spent, wherein taxpayers who want to say no will be reminded that all which was already spent would be wasted unless the taxpayers pay even more to finish the project. That is the essence of illegal piecemealing.

This improper segmenting of one project into hundreds of small ones also biases the range of alternatives to be considered, and is itself internally inconsistent. Only one alternative, the proposed project, attains the MS4/Clean Water Act goals. But only when the entire project is built are those goals satisfied. So based on the alternatives discussion, the County is admitting this is all one project, not 100 or more smaller projects. That is why we need an EIR that analyzes the specific projects all at once.

That is all have to say at this time.
Rex Frankel

310-738-0861
6038 west 75th street, L.A. CA 90045

Response to Comment Letter 42 (Rex Frankel – March 16, 2015)

Response to Comment 42-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The objectives of the EWMPs are listed in Section 2.2. Although multi-benefit projects are encouraged, the primary goal is compliance with water quality objectives established by the MS4 Permit. The creation of new parklands can be an ancillary benefit of many projects, and LACFCD is actively promoting benefits to parks within the EWMPs. The PEIR evaluates the potential impacts of project implementation, but does not evaluate the effectiveness of the strategies for achieving Permit compliance. Nor does the PEIR evaluate the suitability of the proposed EWMP development methodologies. The EWMP process includes a mechanism for the RWQCB to determine effectiveness of the BMPs over time.

Response to Comment 42-B:

Potential regional and centralized BMP locations are included in Appendix G for each EWMP area. Distributed projects could be installed in addition to the identified locations throughout each watershed. Hundreds of distributed projects could be installed, including gutter screens and small-scale green street renovations over the next 25 years and beyond. The percentage of streets that are capable of being converted into "green streets" to benefit surface water quality is not known at this time; most of the specific projects to be included in the EWMPs are either currently undefined or currently under development.

Response to Comment 42-C:

The PEIR evaluates potential impacts to public health from implementation of BMPs on page 3.7-18. The PEIR acknowledges that storm water detention BMPs will concentrate pollutants overtime. Mitigation Measure HAZ-1 requires that BMPs receive appropriate maintenance to reduce potential impacts to public health. Each individual project will be evaluated for potential impacts to public health including slip-trip impacts and public access on an individual basis as they are developed.

It should be noted in that Mitigation Measure HAZ-1 has been revised as follows:

> **HAZ-1:** Implementing agencies shall prepare and implement maintenance practices that include periodic removal and replacement of surface soils and media that may accumulate constituents that could result in further migration of constituents to sub-soils and groundwater. A BMP Maintenance Plan shall be prepared by Implementing Agencies upon approval of the BMP projects that identifies the frequency and procedures for removal and/or replacement of accumulated debris, surface soils and/or media (to depth

where constituent concentrations do not represent a hazardous conditions and/or have the potential to migrate further and impact groundwater) to avoid accumulation of hazardous concentrations and the potential to migrate further to sub-soils and groundwater. The Maintenance Plan shall include vector control requirements. The BMP Maintenance Plan may consist of a general maintenance guideline that applies to several types of smaller distributed BMPs. For smaller distributed BMPs on private property, these plans may consist of a maintenance covenant that includes requirements to avoid the accumulation of hazardous concentrations in these BMPs that may impact underlying sub-soils and groundwater. Structural BMPs shall be designed to prevent migration of constituents that may impact groundwater.

Response to Comment 42-D:

The PEIR acknowledges that most of the projects to be included in the EWMPs are either currently undefined or currently under development. The PEIR explains that EWMPs are being prepared that will contain road maps to permit compliance for each of the 12 watersheds, without yet being fully detailed. The effectiveness of each EWMP to achieve permit compliance will be evaluated by the RWQCB, which may require additional projects or management actions to ensure compliance. The PEIR evaluates typical project types to assess potential impacts of implementing the entire program throughout the region over a long period of time. The use of a PEIR pursuant to CEQA Guidelines Section 15168 is intended to evaluate broad-based impacts early in the planning process and is the appropriate CEQA compliance for the EWMPs at this time.

Response to Comment 42-E:

The use of a PEIR pursuant to CEQA Guidelines Section 15168 is appropriate and is intended to evaluate cumulative impacts of the long-term implementation of a multi-project program in order to avoid piecemealing of impact analysis. Each Permittee may rely upon this PEIR at their discretion for approval of projects under the EWMPs. Individual projects will undergo subsequent CEQA review and documentation, as appropriate, by implementing agencies. For projects where the LACFCD will be the lead agency, the mitigation measures included in the MMRP will be incorporated.

Response to Comment 42-F:

The PEIR acknowledges that most of the specific projects to be included in the EWMPs are either currently undefined or currently under development. The PEIR explains that EWMPs are being prepared that will contain road maps to permit compliance for each of the 12 watersheds, without yet being fully detailed. The effectiveness of each EWMP to achieve permit compliance will be evaluated by the RWQCB, which may require additional projects or management actions to ensure compliance. The PEIR evaluates typical project types to assess potential impacts of implementing the entire program throughout the region over a long period of time. The use of a PEIR pursuant to CEQA Guidelines Section 15168 is appropriate and is intended to evaluate broad-based impacts early in the planning process and is the appropriate CEQA compliance for the EWMPs at this time.

Paige Anderson

To: Laura Rocha
Subject: RE: comments on the PEIR for water enhancement: thank you for considering them

From: Theresa Brady [mailto:terriebrady@gmail.com]
Sent: Wednesday, March 18, 2015 9:40 AM
To: Gregg Begell
Subject: comments on the PEIR for water enhancement: thank you for considering them

From Theresa Brady

21844 Corvo Way

Topanga, Ca 90290

To Greg Begell

Department of Public Works

When nonnative trees are being considered for removal in a water enhancement project I would like to ask that two considerations are made paramount: Their importance in mitigation of global warming and their importance as habitat.

There is a recently passed law at the state level that requires that every project consider its impact on global warming.

The second issue is illustrated by the removal of 650 eucalyptus trees in the Oxford Lagoon. There were monarch butterflies overwintering on these trees when they were felled. The monarchs can also use other large mature trees, such as coast live oak and sycamore. The Monarchs overwinter on all of these kinds of trees up and down the California Coast. However predominantly they overwinter on stands of eucalyptus. This information is available on the internet in a booklet titled “where to see the monarchs in California”. It includes many sites, the vast majority of which are groves of eucalyptus. Therefore, it is my contention that the stands of eucalyptus should be protected unless and until it has been observed that the newly established native grove has become the preferred site for the monarchs.

The Monarch has recently been considered for endangered status by the federal department of Fish and wildlife. The result of that review will be publicized soon.

I would like to see more caution and consideration in deliberating about the removal of mature trees even nonnative. Thank you for considering my comments.

Theresa Brady

Response to Comment Letter 43 (Theresa Brady – March 18, 2015)

Response to Comment 43-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

Mitigation Measures BIO-1 through BIO-9 would ensure that habitat values are not significantly impacted and would reduce potentially significant impacts to less than significant levels. The PEIR assesses green-house gas emissions and climate change in Section 3.6. The PEIR concludes that implementation of EWMPs would be consistent with greenhouse gas emissions reductions plans.

Response to Comment 43-B:

The PEIR assesses green-house gas emissions and climate change in Section 3.6. The PEIR concludes that implementation of EWMPs would be consistent with greenhouse gas emissions reductions plans.

Response to Comment 43-C:

Mitigation Measures BIO-1 through BIO-9 would ensure that habitat values are not significantly impacted and would reduce potentially significant impacts to less than significant levels.

Paige Anderson

To: Tom Barnes
Subject: RE: Public Comment - Draft EIR of the Enhanced Watershed Management Programs

From: Enrique Huerta [mailto:ehuerta28@gmail.com]
Sent: Thursday, March 12, 2015 11:09 PM
To: Gregg Begell
Subject: Public Comment - Draft EIR of the Enhanced Watershed Management Programs

Hi Gregg,

The attached pdf contains my comments on the DPEIR. Thanks for all of your hard work.

-Enrique

March 12, 2015

Enrique Huerta
At-Large Stakeholder
Los Angeles County
ehuerta28@gmail.com

County of Los Angeles Department of Public Works
Project Management Division II
ATTN: Gregg BeGell, P.E.
900 South Fremont Avenue, 5th Floor
Alhambra, CA 91803
(626) 300-3298
Sent via e-mail to gbegell@dpw.lacounty.gov

RE: Public Comment: Notice of Availability (NOA) of the Draft Program Environmental Impact Report for Enhanced Watershed Management Programs

Dear Mr. BeGell:

Thank you for preparing the Draft Program Environmental Impact Report (DPEIR) of the Enhanced Watershed Management Programs (EWMPs). My comments are in reference to the following disclosure issues:

- The criteria used to prepare this DPEIR are not tailored to assess the unique circumstances of the EWMPs. The requirements outlined in the state CEQA Guidelines are the statutory floor, rather than the limit, and not guaranteed as a safe harbor for compliance. The Los Angeles County Flood Control District maintains the discretion to modify or impose additional criteria or expand the project scope/activity as they determine appropriate.
- The environmental analysis in this DPEIR acknowledges the importance of doing a thorough and comprehensive analysis, but many sections lack substantial evidence in the form of facts, reasonable assumptions predicated on facts and expert opinion supported by facts. Since the DPEIR acknowledges that the EWMPs schedules and measures are presently incomplete, in draft form and not referenced as available for public review, the statements in this document cannot be verified by the public. Speculation, unsubstantiated opinion or narrative is not substantial evidence and undermines the informational purpose of a PEIR.
- The DPEIR draws a glaring distinction between a Program EIR and a project EIR which misses the opportunity to identify the impacts of large number of existing and fully-developed projects in the pipeline. At hand is whether or not the PEIR is providing the public and decision-makers with sufficient cumulative analysis to intelligently consider the environmental consequences of existing multi-benefit stormwater activities.
- Some of the mitigation measures identified in this DPEIR lack weight since they may go unnoticed by an implementing agency. Future projects may be categorically exempt from conducting an Initial Study resulting in projects that do not account and monitor for potential significant environmental impacts, as identified, in the DPEIR biological resources and cultural resources mitigation measures.
- The location of water supply recharge areas underlying the location of overly polluted and unfairly burdened low-income communities present environmental justice concerns resulting from the over concentration of future construction activities.
- The use of non-objective terms to frame the discussion of Climate Change.

COMMENTS ON THE CONTENT OF THE DEIR

Executive Summary – ES.2 Background

COMMENT NO. 1. According to Page No. ES-2, "The PEIR analysis is not intended to focus on the site-specific construction and operation details of each management strategy and project included in the EWMP. Rather, this PEIR serves as a first-tier environmental document that focuses on the effects of implementing the EWMPs to reduce urban runoff pollution." This seems to overlook the intent of both the new MS4 Permit, adopted November 2012 and effective December 2012 by the Los Angeles Regional Water Quality Control Board (LARWQCB), which "Encourages merging water quality watershed management approaches with the strategic Integrated Regional Water Management planning process resulting in additional economies of scale," and Section 15168(c)(5) of the 2014 California Environmental Quality Act (CEQA) Statute and Guidelines, which states that the goal is to assist in the creation of a PEIR "that deals with the effects of the program as specifically and comprehensively as possible…with a good and detailed analysis of the program, many subsequent activities could be found to be within the scope of the project described in the program EIR, and no further environmental documents would be required." The courts have recently downplayed (see Cleveland National Forest Foundation v. San Diego Association of Governments) the distinction between a Program and a project EIR in favor of environmental assessments that do a thorough job analyzing the reasonable foreseeable impacts of relevant activities – regional or site specific in nature.

In the coming decades, water supply, and conservation projects and programs will compete for limited fiscal resources with concurrent efforts to improve urban and stormwater runoff quality. With the cost of compliance with surface water quality regulations estimated to range from $43 to $284 billion (Brown and Caldwell, 1989 and Gordon, et al, 2002), jurisdictions and agencies in the Region face difficult funding choices. The integration of multiple water management strategies via multipurpose programs creates opportunities for a "one-stop-shop" analysis through a PEIR to efficiently use fiscal resources and significantly reduce the ask amount of future water resources grant funds.

There is an opportunity for synergy by collectively comparing how the existing multi-benefit stormwater projects of the 2014 Greater Los Angeles County Integrated Regional Water Management Plan (GLAC-IRWMP) database fare with the integrated goals of the EWMPs. This DPEIR does not reference the GLAC-IRWMP nor identifies any collaboration or overlap between multi-benefit activities. There are over 190 fully developed integrated water resources projects in the Los Angeles County Department of Public Works GLAC-IRWMP OPTI website. These projects in the database also identify the implementing agencies and each of the permittees. Incorporating these existing regional-scale projects into the PEIR could better determine whether the incremental effects of this program are cumulatively considerable when viewed in connection with the effects of past, present, and probable future activities.

COMMENT NO. 2. On Page ES.2, there is no reference to the location of the EWMPs for public review. It seems the individual EWMP documents are incomplete and on a parallel schedule with this PEIR. According to this paragraph, “This PEIR describes and evaluates each of the EWMPs being prepared by the Permittees collectively…A few of the BMPs are currently well defined but most are yet to be fully developed under the EWMPs. A set of priority BMPs will be detailed in each of the EWMPs; these are being developed in parallel with the PEIR. The PEIR describes the details that are available for each of the EWMPs currently under preparation by the EWMP working groups.”

Are the individual EWMPs available for public review? How can the public rely on a CEQA analysis “that deals with the effects of the program as specifically and comprehensively as possible,” when there is no reference material available for comparison purposes?

ES.4 Project Description

COMMENT NO. 3. The following text on Page ES.3 (and repeated in Chapter 2, Page No. 2-1) is difficult to understand. Please elaborate. “The Los Angeles County Flood Control District (LACFCD) has limited jurisdictional authority for ordinance and code enactment or enforcement and therefore is limited in nonstructural BMPs to education and outreach measures.”

1.1 CHAPTER 1 - Introduction

COMMENT NO. 4. On Page No. 1-1, was the new 2012 MS4 permit drafted in response or anticipation of the judgment issued by the United States Supreme Court for LACFCD vs. Natural Resources Defense Council (NRDC)? If so, please consider adding background information (or preferably, a new section) outlining the 2008 Clean Water Act citizen lawsuit filed by the NRDC and Santa Monica Baykeeper (Baykeeper). The case can be located here: http://www.scotusblog.com/case-files/cases/los-angeles-county-flood-control-district-v-national-resources-defense-council/.

It is important to provide a complete record of the reason and motivation behind the new MS4 permit. Specifically, please contextualize the need (and the targeted ecological functions that will improve the problem) by adding a description of the problem in relation to the mission of the NRDC and the Baykeeper, an ecological context, statutory background (legal challenge to Order No. R4-2006-0074, etc.), and a chronological list of events related to the ultimate Supreme Court decision finding that the Los Angeles County Flood Control District was "responsible for discharges of pollutants at the end of concrete channels in two rivers, the Los Angeles River and the San Gabriel River."

COMMENT NO. 5. On Page No. 1-1, please add a discussion pertaining to the agency partnership existing between the LARWQCB and the Los Angeles Area Environmental Justice Enforcement Collaborative. There is a concern that the piecemeal approach to the MS4 permit will overlook the importance of issuing a permit that ensures non-discrimination as it pertains to the potential for over-concentrated construction and facilities maintenance activities in these communities (San Fernando Valley, San Gabriel Valley, South-Central Los Angeles and the Southeast LA County cities) due to their prime and underlying soil infiltration characteristics (refer to the maps identified on Comment No. 13), which could produce an unfair overconcentration of environmental pollution burdens. According to Executive Order 12898, the LARWQCB is required to promote "meaningful engagement of overburdened communities in EPA's permitting process." The DPEIR states that, "The LACFCD, along with participating Permittees, has opted to exercise this option and has submitted to the LARWQCB 12 separate Notices of Intent (NOIs) for the development of EWMPs within 12 distinct watershed groups. Implementation of the EMWPs would be the responsibility of each Permittee and would occur following approval of the EWMPs by the LARWQCB." However, this piecemeal approach to the MS4 permit does not guarantee that environmental justice will be a priority.

1.2 Project Background. Reasonable Assurance Analysis.

1.3 CEQA Environmental Review Process. Purpose of the PEIR.

COMMENT NO. 6. On Page No. 1-10, there is a reference to the environmentally integrated approach of EWMPs. Specifically, "The analyses focus on the environmental effects of implementing the EWMPs as a program to improve surface water quality and increase water conservation." In an effort to avoid the displacement of pollution from one area (water bodies) to another (soil)—how environmentally sensitive is the EWMP approach? Will the physical control measures require the use of potable water for landscape maintenance (for example, according to the 2014 County of Los Angeles Department of Public Works Low Impact Development Standards Manual, "One potential problem with using green roofs in the Los Angeles County area is the long, hot and dry summers, which may kill the plants if they are not watered)? Will EWMPs maintain the same quality level for soils? How will this impact groundwater quality? What is the relevancy of the EWMPs to the Groundwater Management Plan and the California Systemwide Groundwater Elevation Monitoring?

COMMENT NO. 7. On Page No. 1-9, the sentence that reads, “Significance criteria have been *developed* for each environmental resource analyzed in this Draft PEIR,” seems troublesome since the significance criteria is cut-and-pasted from the CEQA Guidelines. Did the Technical Advisory Committees from each respective EWMP create the criteria?

COMMENT NO. 8. On Page No. 1-10, this sentence is repeated several times throughout the DPEIR: “The PEIR analysis is not intended to focus on the site-specific construction and operation details of each management strategy and project included in the EWMPs. Rather, this PEIR serves as a first-tier environmental document that focuses on the effects of implementing the EWMPs overall as a plan to reduce urban runoff pollution.” It can be found at a) Executive Summary on Page No. ES-2; and, b) Chapter 1, Section 1.1-Introduction on Page No. 1-3.

CHAPTER 2

Project Description

COMMENT NO. 9. On Page No. 2-1, the following statement, “The 12 EWMPs will vary for each watershed group, but will generally provide the opportunity for Permittees to customize their stormwater programs to achieve compliance with applicable receiving water limitations and/or water-quality-based effluent limits in accordance with the Municipal Separate Storm Sewer System (MS4) Permit through implementation of stormwater Best Management Practices (BMPs) or watershed control measures,” is repeated verbatim from the Executive Summary on Page No. ES-3.

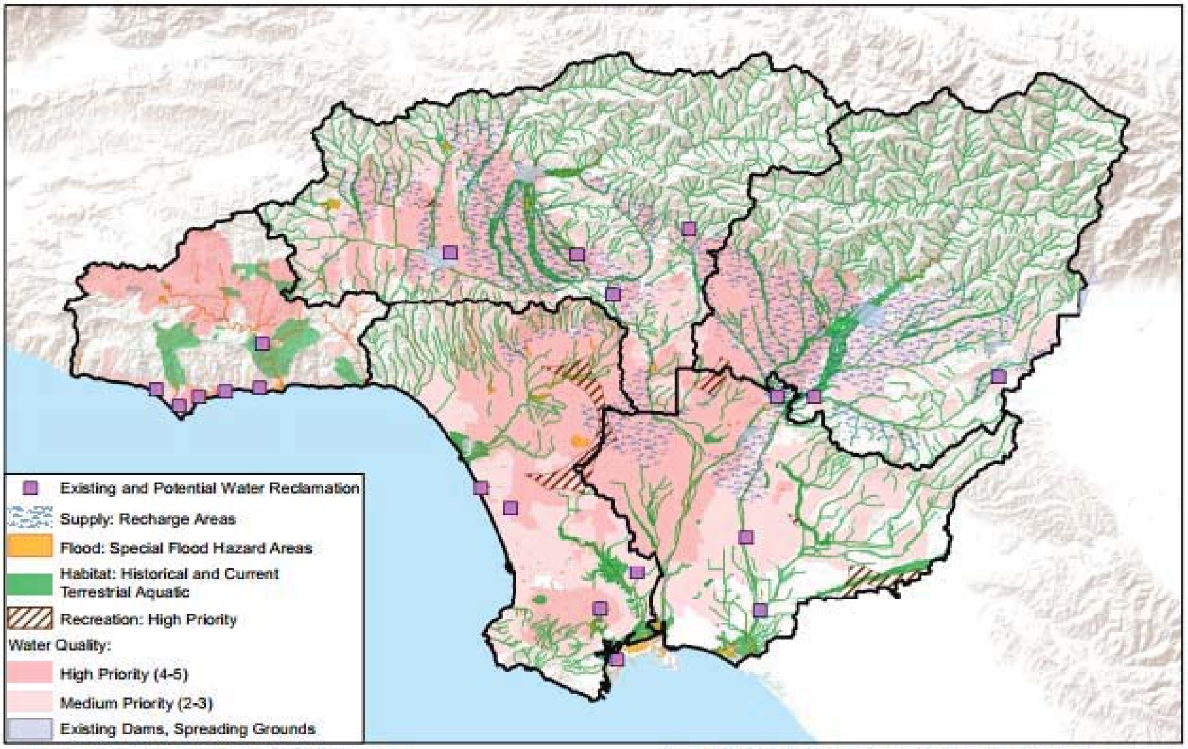
COMMENT NO. 10. On Page No. 2-1, the following statement, “Each of the Permittees identified in the MS4 permit is responsible for meeting the conditions of the permit for MS4 discharges occurring within their jurisdiction, is repeated verbatim from the Executive Summary on Page No. ES-2.

COMMENT NO. 11. On Page No. 2-7, under Section Distributed Structural BMPs – Overview and Example BMP, please add the “advantages” and “disadvantages” as identified and summarized in Appendix E, Stormwater Quality Control Measure Fact Sheets, of the 2014

County of Los Angeles Department of Public Works Low Impact Development Standards Manual, in order to compare and contrast the BMPs with a do-nothing scenario.

COMMENT NO. 12. On Page No. 2-5 under Section 2.4.1, the fifth bullet point makes reference to Planning and Land Development Programs, "which encourage the application of smart growth and low-impact development (LID) practices to development and redevelopment projects." However, "redevelopment projects" were eliminated in 2011 by order of Governor Jerry Brown when he dissolved redevelopment agencies throughout the state. I think a more appropriate and up-to-date term would be to substitute Enhanced Infrastructure Financing Districts.

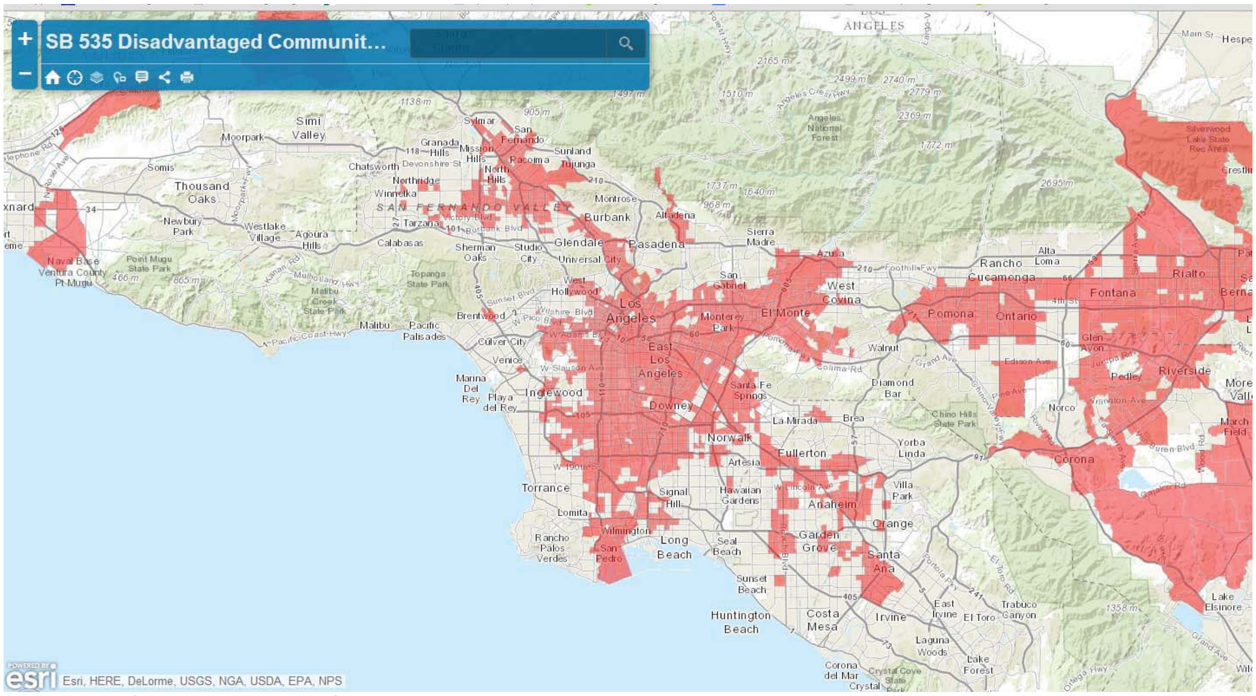
COMMENT NO. 13. On Page 2-57, consider adding a section titled Environmental Justice which discusses the unfair burden and disproportionate impacts of the proposed physical control measures on low-income and inland communities. These low-income areas, when superimposed on areas identified for their infiltration benefits, stand to overly concentrate construction and facilities maintenance activities and associated pollution. These potential recharge areas are identified as "Supply: Recharge Areas" in the 2014 GLAC-IRWMP Update and shown on the map below titled Map 5-1: GLAC Region Potential Benefits Geodatabase layers:



Note that detailed data for the NSMB Subregion is currently absent, but will be improved over time.

Map 5-1: GLAC Region Potential Benefits Geodatabase Layers

The map above identifies beneficial stormwater recharge areas that could increase the County's water supply. All of these areas are located away from the coastal areas, a hydrologic region associated with middle to upper income beach communities. Most of the areas offering stormwater recharge benefits are inland and near low-income communities like those in the San Fernando Valley, the San Gabriel Valley, South-Central Los Angeles and Southeast Los Angeles County. According to the Department of Water Resources, a Disadvantaged Community (DACs) is one whose median household income is 80% or less of the statewide average. As the following map shows (Map 2 below), DACs overlie most of these stormwater recharge areas, which can be correlated with a higher degree of future construction and operation activities associated with centralized structural, distributed structural and regional structural physical control measures that may continue to unfairly overburden these communities with added air quality, greenhouse gases, hazards and hazardous materials, land use and agricultural, noise, public service and recreation, and transportation and circulation pollution as it has historically been the case. Compounding this situation is the potential increase in the production, manufacturing, and pollution activities associated with the manufacturing of toxic construction materials like cement, plastics, and filtration/pretreatment hardware that come from factories that are also located in DACs.



Map 2 – DACs in Los Angeles County

3.2 Air Quality

3.2.1 Environmental Setting

COMMENT NO. 14. Under the Regional Setting section on Page No. 3.2-1, please include a discussion about the partnership between the LARWQCB and Los Angeles Area Environmental Justice Collaborative and the need to improve the living conditions of densely populated inland communities severely impacted by pollution stemming from traffic congestion and industrial activities. In addition, please reference current law which states that, "Under EPA's Title VI implementing regulations found at [40 C.F.R. Part 7 (PDF)](), (11 pp, 40K) EPA-funded agencies are prohibited from taking acts, including permitting actions, that are intentionally discriminatory or have a discriminatory *effect* based on race, color, or national origin." How will the LARWQCB promote, "its responsibilities under Executive Order 12898 by increasing meaningful engagement of overburdened communities in EPA's permitting process," if this DPEIR does not disclose and take into consideration the consequences of piecemealing the MS4 permit?

3.11.1 Environmental Setting

COMMENT NO. 15. The total population for Los Angeles County may not seem that significant in it of itself, but when put into a percentage of the entire population of California, the number is staggering. According to Figure 2-1 of the GLAC-IRWMP, the 2010 population of Los Angeles County represented over 25% of the entire state population. In addition, the stormwater conveyance system is among the largest in the nation and responsible for a host of diminished resources and increased pollution sinks and accumulated toxicity. Throughout the 20th Century, consumption and the one-way throughput system of stormwater conveyance became increasingly concentrated in cities that were strung together into large counties that developed adjacent to other counties and formed larger and continuous (and impervious land surfaces) megalopolis', demanding ever increasing volumes of material and water from distant sources. These megalopolis' stretch for hundreds of miles across counties and are home to millions and millions of people. Cities now cover about 2% of the global land area, but include over 60% of the total population. Los Angeles County is considered one of the largest metropolitan areas in the world.

With a region so densely populated and developed in a seemingly endless sprawl development pattern, will the increased infiltration of polluted water negatively impact an already limited amount of groundwater supply? Will the polluted water negatively affect the soil for BMPs incorporating percolation of water into underlying soils? How will the redirection of polluted water from entering water bodies and redirected to a soil medium negatively impact the ecological properties of soil as they relate to conversion, distribution, infiltration, assimilation and conversion of beneficial nutrients?

3.11.2 Regulatory Setting

COMMENT NO. 16. Under the heading, *Local*, the County General Plan, as do municipal General Plans all have procedures and mechanisms for amending land use plans, zoning plans and codes in order to accommodate changes in land use designations and densities. A General Plan and Zoning Code are not static documents. Instead, they are adaptable to changing circumstances like increases in population growth.

COMMENT NO. 17. Under the heading, *Local*, there is currently a widely used county plan that provides a vision for water resources management. The GLAC-IRWMP provides incentives for implementing sustainable stormwater capture, storage and recharge. Additionally, the GLAC IRWMP has collected an extensive list of developed projects in the pipeline for each respective

EWMP that identifies implementing agencies, permittees, and design characteristics that seem worthy of review by this PEIR.

In light of such information, do these projects comply with the MS4 permit? Have project sponsors collaborated with the agencies and permittees across the watershed to promote more cost-effective and multi-beneficial water quality improvement projects? Will the fully developed water-wide EWMPs contained in the GLAC-IRWMP OPTI database remove or reduce pollutants from dry-and-wet-weather urban runoff in a cost-effective manner? Will the fully developed water-wide EWMPs contained in the GLAC-IRWMP OPTI database reduce the impact of stormwater and non-stormwater on receiving water quality?

3.6 Greenhouse Gas Emissions – Climate Change Overview

COMMENT NO. 18. On Page No. 3.6-1, your reference language contained in the 2007 report by the International Panel on Climate Change (IPCC) seems outdated. Since 2007, climate science has made many important advances since the last IPCC assessment report, thanks to improvements in measurements and data analysis in the cryosphere, atmosphere, land, biosphere and ocean systems. Scientists also have better understanding and tools to model the role of clouds, sea ice, aerosols, small-scale ocean mixing, the carbon cycle and other processes. More observations mean that models can now be evaluated more thoroughly, and projections can be better constrained. Additionally, there is a higher level of confidence among the science community about the validity of findings as determined through evaluation of the available evidence and the degree of scientific agreement. Increasing levels of evidence and degrees of agreement are correlated with increasing confidence that climate change is directly linked to human activities and human caused.

The problematic language in question reads, "…Much of the scientific literature *suggests*…While there is some *debate* regarding this issue, it is unlikely that global climate change of the past 50 years can be explained without contribution from human activities (IPCC, 2007)." Please remove the term "suggest," since the peer-reviewed scientific literature has always maintained a direct correlation between an increase in greenhouse gases and anthropogenic activities since the 1790s with a small degree of uncertainty (refer to http://www.ipcc.ch/publications_and_data/ar4/syr/en/spms2.html). Additionally, please replace the word "debate" with the word "uncertainty." The only debate stems from the non-scientific cultural and political opinions meant to muddy the science of greenhouse gases and climate change.

Please consider replacing the outdated language I just referenced with a more up-to-date description, as contained in the 2013 Executive Summary of Climate Change 2013: The Physical Science Basis, which states, "Human activities are continuing to affect the Earth's energy budget by changing the emissions and resulting atmospheric concentrations of radiatively important gases and aerosols and by changing land surface properties. Previous assessments have already shown through multiple lines of evidence that the climate is changing across our planet, largely as a result of human activities. The most compelling evidence of climate change derives from observations of the atmosphere, land, oceans and cryosphere. Unequivocal evidence from in situ observations and ice core records shows that the atmospheric concentrations of important greenhouse gases such as carbon dioxide (CO2), methane (CH4), and nitrous oxide (N2O) have increased over the last few centuries due to anthropocentric activities. (page no. 121)"

COMMENT NO. 19. On Page No. 3.6-12, Impact Assessment, the DPEIR mentions that, "As noted, the increased concentration of GHGs in the atmosphere has been linked to global warming, which can lead to climate change," however, there is consensus in the scientific community that unless drastic measures take place soon, we will be unable to move back from our current 405 parts per million (ppm) threshold of carbon dioxide (CO_2) in the atmosphere to the necessary 350 ppm that scientists have identified as necessary to maintain a healthy environment. Furthermore, the language contained referenced above makes it seem like the scientific community does not know that this will happen. Again, the irrevocable effects of climate change will happen, unless drastic and swift measures are implemented, which does not seem likely. The United States Environmental Protection Agency states that, "CO_2 is the primary greenhouse gas emitted through human activities…Human activities are altering the carbon cycle—both by adding more CO_2 to the atmosphere and by influencing the ability of natural sinks, like forests, to remove CO_2 from the atmosphere. While CO_2 emissions come from a variety of natural sources, human-related emissions are responsible for the increase that has occurred in the atmosphere since the industrial revolution. The main human activity that emits CO_2 is the combustion of fossil fuels (coal, natural gas, and oil) for energy and transportation, although certain industrial processes and land-use changes also emit CO_2."

(http://www.epa.gov/climatechange/ghgemissions/gases/co2.html).

Chapter 5 – Growth Inducement Potential

COMMENT NO. 20. Section 5.1 CEQA Requirements. This chapter, per the CEQA "Guidelines," consider the minimum requirement for analysis. In this case, this chapter only analyzes the growth inducing effects associated with the proposed action. However, whether or not the proposed action will cause direct or indirect growth is partially addressing the underlying reason for creative sustainable programs like EWMPs. It is no secret that the population in Los Angeles County continues to grow on a daily basis and EWMPs are designed to accommodate that growth. According to the Public Policy Institute of California, population in Los Angeles County by the year 2025 will reach 11.5 million people. This represents an increase of approximately 15% from the 10,017,068 million current residents living within the EWMP project boundary (http://www.ppic.org/content/pubs/report/R_610HJR.pdf). As population increases, so does human activity resulting in the accumulation of trash, debris, chemicals, sediment or other pollutants that could adversely affect water quality if the runoff is discharged untreated. This begs the question: What effect will projected increases in population have on EWMPs? Will increased urban runoff have a negative impact on the availability of the already limited usable water supply in the region?

Response to Comment Letter 44 (Enrique Huerta – March 12, 2015)

Response to Comment 44-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These summaries of the comments in the comment letter have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

Response to Comment 44-B:

The PEIR defines typical project types in Section 2 and then in Section 3 evaluates potential impacts of implementing hundreds of these types of projects throughout the region over a long period of time. The use of a PEIR pursuant to CEQA Guidelines Section 15168 is intended to evaluate broad-based impacts early in the planning process and is the appropriate CEQA compliance for the EWMPs at this time. As projects are refined in the future, each individual project will undergo subsequent CEQA determination by the lead implementing agency prior to approval.

The 2014 Integrated Regional Water Management Plan (IRWMP) prepared by the Los Angeles County Department of Public Works is a parallel planning process that is being implemented to identify projects that may provide multiple benefits including surface water quality improvement. As stated in Chapter 1 of the Greater Los Angeles County (GLAC) 2014 IRWMP, the IRWMP reflects the region's collaborative efforts to ensure a sustainable water supply through the more efficient use of water, the protection and improvement of water quality, and environmental stewardship. The EWMPs are consistent with this IRWMP, and projects developed through the IRWMP process are being considered for inclusion within the EWMPs. However, the LACFCD would not be the lead agency for a PEIR prepared for the IRWMP, and a combined PEIR covering both the EWMP and IRWMP process is not under consideration at this time. In response to the comment the following discussion on the IRWMP is included in the Final PEIR within Section 3.8.2, Regulatory Setting.

> **Integrated Regional Water Management Plan**
>
> The 2013 Integrated Regional Water Management Plan (IRWMP) Update, approved by the Los Angeles County Board of Supervisors in 2014, was formulated to define a clear vision and direction for the sustainable management of water resources in the Greater Los Angeles County (GLAC) Region. The IRWMP, which is chaired by the Los Angeles County Flood Control District (LACFCD), covers the GLAC Region, an area of approximately 2,058 square miles, spanning from Ventura County to Orange County and from the coast to the San Gabriel Mountains. The IRWMP region includes the Los Angeles River Watershed, the Santa Monica Bay Watershed, the Dominguez Channel Watershed, and the San Gabriel River Watershed, overlapping with four of the five watersheds covered in the EWMP. Several subcommittees were involved in the IRWMP development process, covering a range of both project objectives and physical areas, to ensure successful regional collaboration. The objectives of the 2013 IRWMP Update

> include: reducing the Region's reliance on imported water; comply with water quality regulations by improving the quality of urban runoff, stormwater and wastewater; protect, restore and enhance natural processes and habitats; increase watershed friendly recreational space for all communities; reduce flood risk in flood prone areas by either increasing protection or decreasing needs using integrated flood management approaches; and adapt to and mitigate against climate change vulnerabilities.

Response to Comment 44-C:

Appendix G of the PEIR provides the location information on the priority projects that was available at the time of publication. The PEIR acknowledges that most of the projects to be included in the EWMPs are either currently undefined or currently under development. Otherwise, the PEIR defines typical project types in Section 2 and then in Section 3 evaluates potential impacts of implementing hundreds of these types of projects throughout the region over a long period of time. The use of a PEIR pursuant to CEQA Guidelines Section 15168 is intended to evaluate broad-based impacts early in the planning process and is the appropriate CEQA compliance for the EWMPs at this time.

Because project details are largely incomplete since the EWMPs are being drafted concurrently, each individual project will be subject to a CEQA compliance evaluation prior to approval by the implementing agencies as noted in Section 1 of the Draft PEIR. As individual projects identified in the EWMPs are fully developed, the implementing agency (i.e., the Permittee responsible for implementing the project) will conduct CEQA analysis for individual projects, as appropriate, or may determine that no additional CEQA analysis is required or that a project is exempt from CEQA. Each implementing agency would determine the significance after mitigation for potential impacts of its proposed projects. The public will be able to provide the Regional Water Quality Control Board with comments on the EWMPs. Upon their completion, the EWMPs shall be made available to the public for a 30-day period to allow for public comment.

The PEIR serves as a first-tier environmental document that focuses on the effects of implementing the EWMPs to reduce urban runoff pollution. The analysis assesses worst case situations where construction or operation of projects may significantly impact environmental resources. The analysis outlines mitigation strategies to be followed by the LACFCD and other implementing agencies that rely on the PEIR to avoid or minimize impacts wherever feasible.

The PEIR provides the LACFCD a foundation for any necessary future environmental review that focus on individual projects of the EWMPs for which the LACFCD is the designated Lead Agency.

Response to Comment 44-D:

The comment notes that the LACFCD does not have the authority to impose ordinances or code modifications within cities, as that authority is left to the cities. However, education and outreach efforts are effective non-structural BMPs that the LACFCD may employ throughout the County because they do not require ordinances or code modifications to achieve.

Response to Comment 44-E:

As noted on page 1-1 of the PEIR, the Regional Water Quality Control Board issued Order No. R4-2012-0175; NPDES No. CAS004001 in December 2012 covering discharges from multiple municipalities within the Los Angeles Region. The requirements of the MS4 permit are described in Section 1.2 of the PEIR. A primary objective of the proposed program noted on page 2-2 is to comply with the permit requirements. The EWMPs include a methodology required by the MS4 permit to evaluate the effectiveness of the BMPs as they are implemented. The commenter's question as to whether the abovementioned Supreme Court decision lead to the drafting of the 2012 MS4 Permit does not address the adequacy of the PEIR.

Response to Comment 44-F:

Environmental Justice was addressed in Section 3.11, *Population and Housing and Environmental Justice*. Implementation of the EWMPs would not disproportionately affect areas with lower average incomes or specific racial distributions, nor unfairly concentrate environmental pollution burdens. Structural BMPs are not expected to be concentrated in any one area or city in particular within the EWMP areas. The structural BMPs are expected to be located on public lands (e.g., schools, parks, sidewalks, and road rights-of-way) throughout the EWMP areas and would be designed to capture, convey, and/or filter stormwater and surface runoff.

Local water supplies are largely shared resources, managed by regional agencies (e.g., Metropolitan, Castaic Lake Water Agency) responsible for supplying drinking water equitably to the population. Local water retailers receive their water generally from imported water wholesalers and groundwater pumping. Groundwater recharge resulting from infiltration BMPs will occur throughout the region. Some areas will experience greater volumes of recharge than others due to the local topography and geology. However, local demographics will not influence water quality control infrastructure locations. The equitable delivery of high quality drinking water is the responsibility of water retailers as regulated by the State Water Resources Control Board and the California Department of Public Health.

Response to Comment 44-G:

A discussion of impacts to soil quality is included on pages 3.7-16 and 3.7-17 of the PEIR. Mitigation Measure HAZ-1 would reduce potential impacts to soil quality by requiring preparation and implementation of maintenance practices including periodic removal and replacement of surface soils that may accumulate constituents that could result in further migration of constituents to sub-soils and groundwater. A discussion of impacts to groundwater quality is located on pages 3.8-35 and 3.8-36 of the PEIR; implementation of Mitigation Measures HYDRO-1, HYDRO-2 and HYDRO-3 would reduce potential impacts to groundwater quality to less than significant levels. Mitigation Measure GEO-1 require that implementing agencies consult with groundwater managers prior to implementation of infiltration projects to ensure consistency with existing groundwater management plans within the South Coast Hydrologic Region; this mitigation measure would reduce potential impacts to less than significant levels. The California Statewide Groundwater Elevation Monitoring would continue to monitor groundwater levels augmented by increased stormwater recharge.

Response to Comment 44-H:

As lead agency, the County of Los Angeles Environmental Document Reporting Procedures and Guidelines adopted by the Board of Supervisors in 1987 were utilized in the environmental analysis of the PEIR. No additional significance thresholds have been adopted by the County of Los Angeles.

Response to Comment 44-I:

The commenter's statement regarding the repetition of the text from page 1-10 on pages ES-2 and 1-3 is typical since language identified in the Executive Summary (ES) is a short compilation of information found in the rest of the document. As a result, the ES is repetitious of the entire document. In this instance, the ES is summarizing language found in the Introduction. Repetition of text within the document does not affect the impact conclusions of the document.

Response to Comment 44-J:

The commenter's statement regarding the repetition of the text from page 2-1 on page ES-3 is typical since language identified in the Executive Summary (ES) is a short compilation of information found in the rest of the document. As a result, the ES is repetitious of the entire document. In this instance, the ES is summarizing language found in the Project Description. Repetition of text within the document does not affect the impact conclusions of the document.

Response to Comment 44-K:

The commenter's statement regarding the repetition of the text from page 2-1 on page ES-2 is typical since language identified in the Executive Summary (ES) is a short compilation of information found in the rest of the document. As a result, the ES is repetitious of the entire document. In this instance, the ES is summarizing language found in the Introduction. Repetition of text within the document does not affect the impact conclusions of the document.

Response to Comment 44-L:

The listing of all "advantages" and "disadvantages" of each BMP is not necessary to evaluate impacts of their implementation. Chapter 6 of the Draft PEIR includes analysis of a No Project Alternative, which is equivalent to a "do-nothing" scenario, in comparison to the proposed Program. The analysis concludes that the proposed Program itself is environmentally superior to implementation of the No Project Alternative. No addition will be made as recommended by the commenter.

Response to Comment 44-M:

The usage of the term "redevelopment project" was taken from language on page 94 the current Municipal Separate Storm Sewer System (MS4) Permit (Order No. R4-2012-0175; NPDES

Permit No. CAS004001). Redevelopment Projects are defined beginning on page 96 of the Permit. No changes are required as recommended by the commenter.

Response to Comment 44-N:

BMPs would be distributed throughout the watershed irrespective of local land uses. Though some BMPs such as infiltration BMPs are limited to areas with appropriate soils, implementation of the EWMPs would not disproportionately affect areas with lower average incomes. Environmental Justice was addressed in Section 3.11, *Population and Housing and Environmental Justice* of the PEIR. Implementation of the EWMPs would not disproportionately affect areas with lower average incomes or specific racial distributions, nor unfairly concentrate environmental pollution burdens. Structural BMPs are not expected to be concentrated in any one area or city in particular within the EWMP areas. The structural BMPs are expected to be located on public lands (e.g., schools, parks, sidewalks, and road rights-of-way) throughout the EWMP areas and would be designed to capture, convey, and/or filter stormwater and surface runoff.

The coastal EWMPs will install BMPs to address runoff water quality in similar ways as inland EWMPs. Groundwater recharge resulting from infiltration BMPs will occur throughout the region in locations with soils that accommodate infiltration. Some areas will experience greater volumes of recharge than others due to the local topography and geology. However, local demographics will not influence water quality control infrastructure locations.

Response to Comment 44-O:

Implementation of the EWMPs would not disproportionately affect areas with a specific racial distribution. The MS4 Permit does not address pollution from industrial land uses. Environmental Justice was addressed in Section 3.11, *Population and Housing and Environmental Justice*. Implementation of the EWMPs would not disproportionately affect areas with lower average incomes or specific racial distributions, nor unfairly concentrate environmental pollution burdens. Structural BMPs are not expected to be concentrated in any one area or city in particular within the EWMP areas. The structural BMPs are expected to be located on public lands (e.g., schools, parks, sidewalks, and road rights-of-way) throughout the EWMP areas and would be designed to capture, convey, and/or filter stormwater and surface runoff. To address the accumulation of contaminants in soil at BMPs, operations and maintenance plans for BMPs that might accumulate constituents in surface soils and media will be developed to include periodic removal and replacement of these potentially impacted surface materials to reduce the potential for long-term loading leading to hazardous concentrations in soils and groundwater. Implementation of Mitigation Measure HAZ-1 would reduce the potential for impacts to less-than-significant levels.

Response to Comment 44-P:

A discussion of impacts to groundwater quality is located on pages 3.8-35 and 3.8-36 of the PEIR; implementation of Mitigation Measures HYDRO-1, HYDRO-2 and HYDRO-3 would reduce potential impacts to groundwater quality to less than significant levels. The PEIR acknowledges that infiltration projects could adversely affect groundwater quality and identifies mitigation measures to minimize potential impacts. Mitigation Measure HYDRO-1 requires

Permittees to evaluate the suitability of BMP locations for groundwater recharge. Infiltration BMPs would not be suitable in areas of low permeability where subsurface structures could be adversely affected by groundwater mounding or in areas with soil contamination.

Regarding polluted water negatively affect the soil for BMPs, a discussion of impacts to soil quality is included on pages 3.7-16 and 3.7-17 of the PEIR. Mitigation Measure HAZ-1 would reduce potential impacts to soil quality by requiring preparation and implementation of maintenance practices including periodic removal and replacement of surface soils that may accumulate constituents that could result in further migration of constituents to sub-soils and groundwater. Mitigation Measure GEO-1 require that implementing agencies consult with groundwater managers prior to implementation of infiltration projects to ensure consistency with existing groundwater management plans within the South Coast Hydrologic Region; this mitigation measure would reduce potential impacts to less than significant levels. The California Statewide Groundwater Elevation Monitoring would continue to monitor groundwater levels augmented by increased stormwater recharge.

Response to Comment 44-Q:

The numerous cities encompassed by the EWMP area all have their own respective city General Plans, which may contain policies that address land use and agriculture. As implementation of the individual structural BMP projects proceed, specific policies and objectives pertaining to land use and agriculture from applicable city General Plans will be identified and evaluated on a project-by-project basis during subsequent CEQA environmental processes.

Response to Comment 44-R:

As noted on page 1-1 of the PEIR, the Regional Water Quality Control Board issued Order No. R4-2012-0175; NPDES No. CAS004001 in December 2012 covering discharges from multiple municipalities within the Los Angeles Region. The requirements of the MS4 permit are described in Section 1.2 of the PEIR. A primary objective of the proposed program noted on page 2-2 is to comply with the permit requirements. The EWMPs include a methodology required by the MS4 permit to evaluate the effectiveness of the BMPs as they are implemented. The projects are a part of MS4 compliance.

Each EWMP group comprises many permittees who are working together to develop cost-effective and multi-benefit water quality improvement projects.

Projects that infiltrate runoff will remove the associated pollutants. As described in the PEIR, Mitigation Measures HYDRO-1 through HYDRO-3 would lessen potential impacts from naturally occurring pollutants to a less than significant level. Mitigation Measure HYDRO-3 has been edited as follows:

> **HYDRO-3:** Prior to the installation of an infiltration BMP, the Permittee shall conduct a database review for contaminated groundwater sites within a quarter mile of the proposed infiltration facility. <u>The database review shall include locations of on-site wastewater treatment systems that could be affected by the BMP.</u> The Permittee shall identify

whether any contaminated groundwater plumes or leach fields are present and whether coordination with the local and state environmental protection overseeing agency and responsible party is warranted prior to final design of infiltration facility.

Furthermore, Mitigation Measure HYDRO-4 has been added, which would reduce any hydromodification impacts including related to erosion and scour, thereby reducing sedimentation of water and resulting impacts to water quality.

HYDRO-4: Prior to approving a structural BMP, the implementing agencies shall conduct an evaluation of the potential hydromodification impacts of the project. The evaluation shall recommend design measures necessary to prevent or minimize any identified impacts, including flooding, erosion and/or scour. Design measures could include velocity dissipaters and bank re-enforcement components. Implementing agencies shall include these measures in project designs.

The PEIR defines typical project types in Section 2 and then in Section 3 evaluates potential impacts of implementing hundreds of these types of projects throughout the region over a long period of time. The use of a PEIR pursuant to CEQA Guidelines Section 15168 is intended to evaluate broad-based impacts early in the planning process and is the appropriate CEQA compliance for the EWMPs at this time. As projects are refined in the future, each individual project will undergo subsequent CEQA determination by the lead implementing agency prior to approval.

The 2014 Integrated Regional Water Management Plan (IRWMP) prepared by the Los Angeles County Department of Public Works is a parallel planning process that is being implemented to identify projects that may provide multiple benefits including surface water quality improvement. As stated in Chapter 1 of the Greater Los Angeles County (GLAC) 2014 IRWMP, the IRWMP reflects the region's collaborative efforts to ensure a sustainable water supply through the more efficient use of water, the protection and improvement of water quality, and environmental stewardship. The EWMPs are consistent with this IRWMP, and projects developed through the IRWMP process are being considered for inclusion within the EWMPs. The following discussion on the IRWMP is included in the Final PEIR within Section 3.8.2, Regulatory Setting.

Integrated Regional Water Management Plan

The 2013 Integrated Regional Water Management Plan (IRWMP) Update, approved by the Los Angeles County Board of Supervisors in 2014, was formulated to define a clear vision and direction for the sustainable management of water resources in the Greater Los Angeles County (GLAC) Region. The IRWMP, which is chaired by the Los Angeles County Flood Control District (LACFCD), covers the GLAC Region, an area of approximately 2,058 square miles, spanning from Ventura County to Orange County and from the coast to the San Gabriel Mountains. The IRWMP region includes the Los Angeles River Watershed, the Santa Monica Bay Watershed, the Dominguez Channel Watershed, and the San Gabriel River Watershed, overlapping with four of the five watersheds covered in the EWMP. Several subcommittees were involved in the IRWMP development process, covering a range of both project objectives and physical areas, to ensure successful regional collaboration. The objectives of the 2013 IRWMP Update include: reducing the Region's reliance on imported water; comply with water quality regulations by improving the quality of urban runoff, stormwater and wastewater; protect, restore and enhance natural processes and habitats; increase watershed friendly recreational space for all communities; reduce flood risk in flood prone areas by either increasing protection or decreasing needs using integrated flood management approaches; and adapt to and mitigate against climate change vulnerabilities.

The EWMPs may include project developed for the IRWMP. The EWMPs are consistent with the IRWMP and share goals of multi-beneficial projects that promote increased local water supplies and water quality protection.

Response to Comment 44-S:

Section 3.6 describes the regulatory background that shapes our current greenhouse gas emissions regulations. The discussion provides an accurate summary of the history of the scientific evaluation of the issue. The PEIR evaluates the potential emissions associated with temporary construction activities. No modifications are required.

Response to Comment 44-T:

The discussion provides accurate summarizes of the history of the scientific evaluation of the issue. The PEIR evaluates the potential emissions associated with temporary construction activities. No modifications are required.

Response to Comment 44-U:

The purpose of CEQA is to analyze the effects of the project on the environment, and not the effects of the environment on the project. The implementation of water efficient practices such as stormwater harvesting and recharge would assist in increasing reliability of water supplies, but would not directly or indirectly induce growth or remove an obstacle to growth.

Paige Anderson

To: Neal Shapiro
Subject: RE: Announcing the Release of the EWMP PEIR

Gregg:

In lieu of getting the Word doc for tracking changes, here are my written comments for the Executive Summary, since I'll be out rest of week.
I'm not sure I will read the rest of the chapters. My point is that the PEIR needs to emphasize the water supply goal, offsetting potable water use, harvesting for direct and passive uses, just as much or more so than water Quality, throughout the document.

If my comments have merit to include, if you need me to go through other parts of the EIR to add similar text, I can.

Best regards,
neal

Neal Shapiro, CPSWQ®, CSM
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www.sustainablesm.org/runoff

"Give a man a fish and you feed him for a day; teach a man to fish and you feed him for a lifetime." Maimonides

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From: Gregg Begell [mailto:gbegell@dpw.lacounty.gov]
Sent: Monday, January 26, 2015 7:03 AM
To: Neal Shapiro
Subject: RE: Announcing the Release of the EWMP PEIR

Neal

Thank you for your interest, we are interested in seeing your comments.

Gregg BeGell P E
Project Manager
Project Management Division II

From: Neal Shapiro [mailto:Neal.Shapiro@SMGOV.NET]
Sent: Sunday, January 25, 2015 10:00 PM
To: Gregg Begell
Subject: Re: Announcing the Release of the EWMP PEIR

I have what I consider a critically important addition to the argument for EWMP BMP projects. The document fails to include adequately and properly water supply, rain harvesting for direct uses locally to reduce dependence on imported. I can send a marked up peir to demonstrate my point and important edits to better make the case. The document is short changing and/or ignoring half the importance of a BMP.

Respectively
Neal

Sent from my Verizon Wireless 4G LTE DROID

Los Angeles County Flood Control District <gbegell@dpw.lacounty.gov> wrote:

ANNOUNCING THE RELEASE OF THE EWMP PEIR

Dear Stakeholder or Interested Party,

The Program Environmental Impact Report (PEIR) for the Enhanced Watershed Management Program (EWMP) has been released for public review. Please check www.LACoH2Osheds.com for more information.

Thank you for your continued interest in the project.

Click here for an informational fact sheet

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EXECUTIVE SUMMARY

ES.1 Introduction

The Los Angeles County Flood Control District (LACFCD) has prepared this Draft Program Environmental Impact Report (Draft PEIR) to provide the public and responsible and trustee agencies with information about the potential effects, both beneficial and adverse, on the local and regional environment associated with implementation of the Enhanced Watershed Management Programs (proposed program). This Draft PEIR has been prepared pursuant to the California Environmental Quality Act (CEQA) of 1970 (amended), codified at California Public Resources Code Sections 21000 et. seq., and the CEQA Guidelines in the Code of Regulations, Title 14, Division 6, Chapter 3.

This document is being circulated to local, state and federal agencies, and to interested organizations and individuals who may wish to review and comment on the Draft PEIR. Publication of this Draft PEIR marks the beginning of a 45-day public review period, during which written comments may be directed to the address below. Comments on the project should be directed to:

Gregg BeGell, P.E.
County of Los Angeles Department of Public Works
Project Management Division II
900 South Fremont Avenue, 5th Floor
Alhambra, CA 91803
gbegell@dpw.lacounty.gov

ES.2 Background

The Los Angeles County Flood Control District (LACFCD) was created in 1915 when the State Legislature adopted the Los Angeles County Flood Control Act to provide flood risk management, water conservation, and recreation and aesthetic enhancement within its boundaries. The LACFCD owns and maintains a broad network of flood control facilities that convey stormwater to the local rivers and ultimately to the ocean. The LACFCD is governed as a separate entity by the County of Los Angeles Board of Supervisors, and is operated by the County's Department of Public Works. The LACFCD, the County of Los Angeles, and 84 incorporated cities within Los Angeles County (collectively referred to as Permittees) are covered under a Municipal Separate Storm Sewer System (MS4) Permit (Order No. R4-2012-0175; National Pollutant Discharge Elimination System [NPDES] Permit No. CAS004001) for the discharge of urban runoff to waters of the United States. The purpose of the MS4 Permit is to achieve and

(A) insert ⊛ and to harvest stormwater for beneficial uses.

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maintain water quality objectives to protect beneficial uses of the receiving waters in the Los Angeles region. Each of the Permittees identified in the MS4 permit is responsible for meeting the conditions of the permit for MS4 discharges occurring within their jurisdiction.

The 2012 MS4 Permit for Los Angeles County gives Permittees the option of implementing an innovative approach to Permit compliance through development of an Enhanced Watershed Management Program (EWMP). The EWMPs will identify potential and priority structural and non-structural Best Management Practices (BMPs) within the region's stormwater collection system to improve runoff water quality. ⊛ The LACFCD, along with participating Permittees, has opted to exercise this option and has submitted to the LARWQCB 12 separate Notices of Intent (NOIs) for the development of EWMPs within 12 distinct watershed groups (refer to **Figure 1-1**). Implementation of the EMWPs would be the responsibility of each Permittee and would occur following approval of the EWMPs by the LARWQCB. (A)

The LACFCD, as a regional agency, is a member of each of the 12 EWMP working groups, and as such provides a commonality within each EWMP group. However, LACFCD does not have a special status or authority designated by the MS4 Permit over any of the other Permittees. The LACFCD will be working with the applicable Permittees in all 12 EWMP watersheds as an equal partner to identify the types and locations of BMPs needed to achieve permit compliance within each watershed.

The timeline identified in the MS4 Permit requires that Permittees submit the EWMP to the LARWQCB by June 28, 2015, in order to be in compliance with the permit conditions. The LACFCD recognizes that implementation of the EWMPs may potentially result in changes to environmental conditions. As a result, the LACFCD has prepared this Program Environmental Impact Report (PEIR) in compliance with the California Environmental Quality Act (CEQA) to provide the public and the responsible and trustee agencies with information about the potential effects on the local and regional environment associated with implementation of the EWMPs. The LACFCD will submit the PEIR to its governing body, the Los Angeles County Board of Supervisors, for approval prior to submittal of the EWMPs. The EWMPs will be submitted by each EWMP to the LARWQCB.

insert (C) For The EWMPs, a few...

This PEIR describes and evaluates each of the EWMPs being prepared by the Permittees collectively. The discretionary action prompting the need for CEQA compliance is the submittal of the completed EWMPs to the LARWQCB. The EWMPs will identify management strategies including hundreds of structural Best Management Practices (BMPs) ~~that~~ may be designed and implemented by the Permittees to meet permit compliance objectives. ⊛ ~~A~~ few of the BMPs are currently well defined but most are yet to be fully developed under the EWMPs. A set of priority BMPs will be detailed in each of the EWMPs; these are being developed in parallel with the PEIR. The PEIR describes the details that are available for each of the EWMPs currently under preparation by the EWMP working groups. (B) (C)

The PEIR analysis is not intended to focus on the site-specific construction and operation details of each management strategy and project included in the EWMP. Rather, this PEIR serves as a first-tier environmental document that focuses on the effects of implementing the EWMPs to

(B) insert ⊛ To date, 100s of BMPs exist in The region harvesting and treating rain/stormwater for passive and active beneficial uses, such as landscape infiltration and storage, and storage for direct non-potable uses.

RB-AR 9609

Comment Letter 45

reduce urban runoff pollution. The analysis assesses worst case situations where construction or operation of projects may significantly impact environmental resources. The analysis outlines mitigation strategies to be followed by implementing agencies to avoid or minimize impacts wherever feasible.

LACFCD is the CEQA Lead Agency for this PEIR. This PEIR can be used by the LACFCD or other Permittees to streamline environmental review of individual EWMP projects. As individual projects identified in the EWMPs are fully developed, the implementing agency (i.e., the Permittee responsible for implementing the project) will conduct CEQA analysis for individual projects as appropriate or may determine that no additional CEQA analysis is required or that a project is exempt from CEQA.

ES.3 Project Objectives

The primary goals and objectives of the EWMPs are:

- To collaborate among agencies (Permittee jurisdictions) within each ~~across the~~ watershed to promote more cost-effective and multi-beneficial water quality and supply improvement projects to comply with the MS4 Permit.
- To develop watershed-wide EWMPs that will, once implemented, remove or reduce pollutants from dry- and wet-weather urban runoff in a cost-effective manner.
- To reduce the impact of stormwater and non-stormwater on receiving water quality. and increase local water resources

ES.4 Project Description

The 12 EWMPs will vary for each watershed group, but will generally provide the opportunity for Permittees to customize their stormwater programs to achieve compliance with applicable receiving water limitations (RWLs) and water-quality-based effluent limits (WQBELs) in accordance with the MS4 Permit through implementation of stormwater best management practices (BMPs) or watershed control measures. BMPs vary in function and type, with each BMP providing unique design characteristics and benefits from implementation. The overarching goal(s) of BMPs in the EWMPs ~~is~~ are to reduce the impact of stormwater and non-stormwater on receiving water quality and address the water quality priorities as defined by the MS4 Permit, and to supplement local water supply and reduce dependence on imported water. The development of each EWMP will involve the evaluation and selection of multiple BMP types, including nonstructural (institutional) and distributed, centralized, and regional structural watershed control measures, that will be implemented to meet compliance goals and strategies under the 2012 MS4 Permit. The LACFCD has limited jurisdictional authority for ordinance and code enactment or enforcement and therefore is limited in nonstructural BMPs to education and outreach measures. The structural watershed control measures that will be implemented by the LACFCD will be multi-benefit stormwater projects that emphasize flood risk mitigation and water conservation and supply.

plural "s"

insert

yes! talk up supply

The LACFCD has a vested interest in increasing opportunities for stormwater capture and groundwater recharge as a means of assisting local water supply augmentation. The LACFCD will be working with the applicable Permittees and other stakeholders in all 12 EWMP or other storage and use strategies ~~where groundwater recharge~~ is NOT feasible.

watersheds to develop such projects. The EWMPs will be implemented by the Permittees that have jurisdiction within each EWMP area. The implementing agencies will be responsible for the contents of the EWMPs affecting their jurisdictions and for implementing the projects developed by the EWMPs..

and store water for beneficial uses.

Structural control measures are constructed BMPs that reduce the impact of stormwater and non-stormwater on receiving water quality. They are broken into three categories:

- ***Distributed Structural BMPs***, which treat and store runoff close to the source and are typically implemented at a single- or few-parcel level (e.g., facilities typically serving a contributing area less than one acre).
- ***Centralized Structural BMPs***, which treat and store runoff from a contributing area of multiple parcels (e.g., facilities typically serving a contributing area on the order of tens or hundreds of acres or larger).
- ***Regional Structural BMPs***, which are meant to retain the 85th percentile storm over 24 hours from a contributing area. Generally, the 85th percentile storm is approximately 0.75 inches over 24 hours and which treat and store runoff for beneficial uses

Be consistent

Whether distributed, centralized, or regional, the major structural BMP functions are infiltration, treatment, and storage, which may be used individually or in combination:

- ***Infiltration***, where runoff is directed to percolate into the underlying soils. Infiltration generally reduces the volume of runoff and can increase~~s~~ groundwater recharge.
- ***Treatment***, where pollutants are removed through various unit processes, including filtration, settling, sedimentation, sorption, straining, and biological or chemical transformations.
- ***Storage***, where runoff is captured, stored (detained), and slowly released into downstream waters or retained for local beneficial use to replace potable water. Storage can reduce the peak flow rate from a site, but does not directly reduce runoff volume.

Critical to include Retention

The types of structural BMPs to be implemented will vary between EWMPs, but most EMWPs will include a variety of distributed, centralized, and regional BMPs.

These are policies, actions, and activities which are intended to minimize or eliminate pollutant sources and promote local water resources. Most institutional BMPs are implemented to meet Minimum Control Measure (MCM) requirements in the MS4 permit; MCMs are considered a subset of institutional BMPs. These BMPs are not constructed, but may have costs associated with the procurement and installation of items such as signage or spill response kits

ES.5 Project Alternatives

An EIR must describe a range of reasonable alternatives to the proposed project or alternative project locations that could feasibly attain most of the basic project objectives and would avoid or substantially lessen any of the significant environmental impacts to the proposed project. The alternatives analysis must include the "No Project Alternative" as a point of comparison. The No Project Alternative includes existing conditions and reasonably foreseeable future conditions that would exist if the proposed project were not approved (CEQA Guidelines §15126.6).

ES.6 Summary of Impacts

Table ES-1, at the end of this chapter, presents a summary of the impacts and mitigation measures identified for the proposed project. The complete impact statements and mitigation measures are presented in Chapter 3. The level of significance for each impact was determined using significance criteria (thresholds) developed for each category of impacts; these criteria are presented in the appropriate sections of Chapter 3. Significant impacts are those adverse environmental impacts that meet or exceed the significance thresholds; less-than-significant impacts would not exceed the thresholds. Table ES-1 indicates the measures that will avoid, minimize, or otherwise reduce significant impacts to a less-than-significant level if implemented by the Permittees.

ES.7 Areas of Controversy

Several comment letters from agency and public comments were received during the scoping period. Public comments received are provided in Appendix A of this PEIR. Some of the comments from non-governmental organizations and the public expressed concerns regarding the lack of project-specific details provided in the NOP for individual BMPs. Several comments were received questioning the funding strategies to be employed by Permittees. The full list of comments highlighting areas of potential controversy received during the public scoping period is included in Appendix A.

ES.8 Issues to be Resolved

Section 15123(b)(3) of the *CEQA Guidelines* requires that an EIR contain issues to be resolved, which includes the choice among alternatives and whether or how to mitigate significant impacts. The following major issues are to be resolved:

- Determine whether the PEIR adequately describes the environmental impacts of the proposed program;
- Choose among alternatives;
- Determine whether the recommended mitigation measures should be adopted or modified; and
- Determine whether additional mitigation measures need to be applied to the project.

Response to Comment Letter 45 (City of Santa Monica – March 12, 2015)

Response to Comment 45-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

Page 47 of the revised MS4 Permit (Order No. R4-2012-0175) states that watershed management programs (including EWMPs) allow the permittees to address the highest watershed priorities, including complying with receiving water limitations and total maximum daily load provisions. According to page 48 of the revised MS4 Permit, an EWMP is a form of compliance with the MS4 Permit provisions that comprehensively evaluates opportunities within watershed management areas for collaboration on multi-benefit regional projects that, wherever feasible, retain (i) all non-storm water runoff and (ii) all storm water runoff from the 85th percentile, 24-hour storm event for the drainage areas tributary to the projects, while also achieving other benefits including flood control and water supply. Therefore, flood control and water supply are listed as secondary benefits of EWMP implementation (as opposed to the primary purpose of protecting water quality), and therefore do not require the kind of emphasis as suggested by the commenter. As a result, the handwritten text edits provided by the commenter regarding water supply, as well as other minor text edits, were not included as revisions.

Paige Anderson

To: Sarah Hays
Subject: RE: Westwood Neighborhood Greenway

-----Original Message-----
From: Sarah Hays [mailto:sirrahh@sbcglobal.net]
Sent: Friday, February 27, 2015 11:53 AM
To: Gregg Begell - Consultant
Subject: Westwood Neighborhood Greenway

Please see attached letter of support for Westwood Neighborhood Greenway. Thank you.

10509 Blythe Avenue • Los Angeles California 90064 • 310/558-3538 • sirrahh@sbcglobal.net

27 February 2015

Gregg BeGell, P.E.
County of Los Angeles Department of Public Works
Project Management Division II
900 South Fremont, 5th Floor
Alhambra, California 91803
gbegell@dpw.lacounty.gov

Dear Mr. BeGell:

I am writing in support of the Westwood Neighborhood Greenway, Project 193 of your Enhanced Watershed Management Plan (EWMP) for the Ballona Creek Watershed. The Greenway will be a multi-benefit project which will provide (1) urban runoff treatment, (2) native habitat, and (3) public access via transit, bicycle and pedestrian paths.

By pumping water from the storm drain under Overland Avenue and daylighting this water in a stream flowing through the project area, the Greenway will use natural and sustainable water treatment methods to remove pollutants from up to 48 million gallons of water per year. Also, the Greenway project will eliminate the need for potable water to irrigate both the Expo ROW and the Greenway area.

But one exceptional feature of the Greenway project is that it will be adjacent to the busiest station on the Expo Light Rail line, which itself is part of the growing Metro transit network. Commuters riding the train or waiting for their train at the Westwood/Rancho Park Station will see it. Students walking either to school or to take the train or bus to school will see it. Signage will make it an education on watershed health for everyone who passes. And educational programs led by LA Audubon and Rancho Santa Ana Botanic Garden will introduce the Greenway to even more students; high-school-age interns can do water-quality studies as a part of their science curriculum; elementary school students can come to the Greenway to discuss watersheds and how to protect them. The adjacency to the Expo Line links the Greenway to many schools including USC, UCLA, Dorsey High School, Foshay Learning Center, Santa Monica High School, and Overland Avenue Elementary School.

Thank you for your support of this wonderful project!

Sincerely,

Sarah M Hays

Response to Comment Letter 46 (Sarah Hays – February 27, 2015)

Response to Comment 46-A:

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The PEIR assesses the environmental impacts associated with implementation of EWMPs as a form of compliance with the MS4 Permit. More site investigations are needed to fully vet the proposed Westwood Neighborhood Greenway project and define the project scope needed to satisfy the EWMP's requirements. The City of Los Angeles is the primary agency who will benefit from a water quality project at the Westwood Neighborhood Greenway project. The City of Los Angeles will likely play a major role in the decision to implement an EWMP project at Westwood Neighborhood Greenway project.

11.3 PUBLIC MEETING COMMENT SUMMARIES AND RESPONSES

This section excerpts those spoken comments transcribed during the public meetings that specifically pertain to the scope and content of the PEIR.

The six public meetings that were made available for public comments are listed below:

- Public Meeting 1 (Florence-Firestone Service Center – January 29, 2015)
- Public Meeting 2 (LA County Fire Camp – February 3, 2015)
- Public Meeting 3 (San Pedro Service Center – February 5, 2015)
- Public Meeting 4 (Topanga Library – February 10, 2015)
- Public Meeting 5 (Hacienda Heights Community Center – February 11, 2015)
- Public Meeting 6 (East Los Angeles Library – February 17, 2015)

Response to Public Meeting 1 Comments (Florence-Firestone Service Center – January 29, 2015)

7807 S. Compton Ave., Los Angeles, CA 90001
6:00 P.M. – 8:00 P.M.

The commenter is inquiring as to whether Grey Water Plumbing is legal.

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The commenter is referred to the Los Angeles County Department of Building and Safety or local municipal building department for further information regarding grey water plumbing. A plumbing permit is typically required to be obtained from the jurisdictional agency in which the grey water system would be located, prior to the erection, construction, reconstruction, installation, relocation or alteration of any graywater system.

Under State regulations, graywater is defined as untreated wastewater that has not been contaminated by toilet waste or unhealthy bodily wastes. Graywater includes wastewater from bathtubs, showers, bathroom washbasins, clothes washing machines, and laundry tubs, but does not include wastewater from kitchen sinks or dishwashers. A graywater system uses graywater for subsurface irrigation and may include tanks, valves, filters, pumps or other appurtenances along with piping and receiving landscape. Graywater should not be used in spray irrigation and should not be allowed to pond, runoff or be discharged directly into or reach any storm water system or any surface body of water. Additionally, graywater shall not be used to irrigate root crops or edible parts of food crops that touch the soil.

Response to Public Meeting 2 Comments (LA County Fire Camp – February 3, 2015)

4810 Oak Grove Drive, La Cañada Flintridge, CA 91011
6:00 P.M. – 8:00 P.M.

No comments were received at this meeting.

Response to Public Meeting 3 Comments (San Pedro Service Center – February 5, 2015)

769 W. Third St., San Pedro, CA 90731
6:00 P.M. – 8:00 P.M.

No comments were received at this meeting.

Response to Public Meeting 4 Comments (Topanga Library – February 10, 2015)

122 N. Topanga Canyon Blvd., Topanga, CA 90290
6:00 P.M. – 8:00 P.M.

Response to Comment PM4-A:

The commenter asks how the PEIR deals with open space areas.

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

The PEIR assumes that BMPs may be installed in any location, whether urbanized or previously undisturbed. The impact analysis assumes some projects may be proposed in open space areas and evaluates impact avoidance and minimization measures. The PEIR provides maps in Appendix G to the PEIR showing prospective locations for BMPs. The locations are broadly distributed throughout the watersheds. The LACFCD acknowledges that BMPs are not limited to urban areas but may be installed throughout a watershed if necessary to achieve water quality objectives. The PEIR acknowledges on page 1-11 that BMPs may be proposed in any location including open space areas. The impact analysis and mitigation measures have been prepared to reflect the wide diversity of potential project locations and evaluate worse-case conditions that may include the presence of sensitive habitats.

Response to Comment PM4-B:

The commenter is inquiring as to whether this area (Topanga Canyon) is differentiated from urban areas.

The project area is generally differentiated by the Watershed Management Areas delineated by the Regional Water Quality Control Board, shown on Figure 2-1 of the Draft PEIR. As a result of the programmatic nature of the Draft PEIR, many of the subareas located within the Watershed Management Areas were not differentiated.

The PEIR assumes that BMPs may be installed in any location, whether urbanized or previously undisturbed. The impact analysis assumes some projects may be proposed in open space areas and evaluates impact avoidance and minimization measures. The PEIR provides maps in Appendix G to the PEIR showing prospective locations for BMPs. The locations are broadly distributed throughout the watersheds. The LACFCD acknowledges that BMPs are not limited to urban areas but may be installed throughout a watershed if necessary to achieve water quality objectives. The PEIR acknowledges on page 1-11 that BMPs may be proposed in any location including open space areas. The impact analysis and mitigation measures have been prepared to reflect the wide diversity of potential project locations and evaluate worse-case conditions that may include the presence of sensitive habitats.

Because project details are largely incomplete since the EWMPs are being drafted concurrently, each individual project will be subject to a CEQA compliance evaluation prior to approval by the implementing agencies as noted in Section 1 of the Draft PEIR. As individual projects identified in the EWMPs are fully developed, the implementing agency (i.e., the Permittee responsible for implementing the project) will conduct CEQA analysis for individual projects, as appropriate, or may determine that no additional CEQA analysis is required or that a project is exempt from CEQA. Each implementing agency would determine the significance after mitigation for potential impacts of its proposed projects.

The PEIR serves as a first-tier environmental document that focuses on the effects of implementing the EWMPs to reduce urban runoff pollution. The analysis assesses worst case situations where construction or operation of projects may significantly impact environmental resources. The analysis outlines mitigation strategies to be followed by the LACFCD and other implementing agencies that rely on the PEIR to avoid or minimize impacts wherever feasible.

The PEIR provides the LACFCD a foundation for any necessary future environmental review that focus on individual projects of the EWMPs for which the LACFCD is the designated Lead Agency.

Response to Comment PM4-C:

The commenter states that there are fewer engineered channels in open space areas.

The PEIR assumes that BMPs may be installed in any location, whether urbanized or previously undisturbed. The impact analysis assumes some projects may be proposed in open space areas and evaluates impact avoidance and minimization measures. The PEIR provides maps in Appendix G to the PEIR showing prospective locations for BMPs. The locations are broadly distributed throughout the watersheds. The LACFCD acknowledges that BMPs are not limited to urban areas but may be installed throughout a watershed if necessary to achieve water quality objectives. The PEIR acknowledges on page 1-11 that BMPs may be proposed in any location including open space areas. The impact analysis and mitigation measures have been prepared to reflect the wide diversity of potential project locations and evaluate worse-case conditions that may include the presence of sensitive habitats. The project area is generally differentiated by the Watershed Management Areas delineated by the Regional Water Quality Control Board, shown on Figure 2-1 of the Draft PEIR. As a result of the programmatic nature of the Draft PEIR, many of the subareas located within the Watershed Management Areas were not differentiated.

Because project details are largely incomplete since the EWMPs are being drafted concurrently, each individual project will be subject to a CEQA compliance evaluation prior to approval by the implementing agencies as noted in Section 1 of the Draft PEIR. As individual projects identified in the EWMPs are fully developed, the implementing agency (i.e., the Permittee responsible for implementing the project) will conduct CEQA analysis for individual projects, as appropriate, or may determine that no additional CEQA analysis is required or that a project is exempt from

CEQA. Each implementing agency would determine the significance after mitigation for potential impacts of its proposed projects.

The PEIR serves as a first-tier environmental document that focuses on the effects of implementing the EWMPs to reduce urban runoff pollution. The analysis assesses worst case situations where construction or operation of projects may significantly impact environmental resources. The analysis outlines mitigation strategies to be followed by the LACFCD and other implementing agencies that rely on the PEIR to avoid or minimize impacts wherever feasible.

The PEIR provides the LACFCD a foundation for any necessary future environmental review that focus on individual projects of the EWMPs for which the LACFCD is the designated Lead Agency.

Response to Comment PM4-D:

The commenter states that the Los Angeles River is being evaluated for re-design. The commenter is asking if there is an intention to cement over the creeks in the watershed.

The EWMPs are developing projects to retain stormwater within the watershed as much as possible. Cementing creeks would act to increase the speed of water conveyed toward the ocean, which is opposite to one of the many goals of the EWMP Program. However, some projects will include armoring to protect certain areas from erosion, which may require additional concrete.

Response to Comment PM4-E:

The commenter is asking if Madera Creek was on the priority project list.

Priority projects identified at the time of publication of the PEIR are included in Appendix G. Madera Creek improvements are currently not identified on the priority projects list for the North Santa Monica Bay Coastal Watersheds EWMP.

Response to Comment PM4-F:

The commenter is inquiring as to whether the priority projects will be included as examples of proposed projects in PEIR.

Priority projects identified at the time of publication of the PEIR are included in Appendix G. Examples of regional, centralized and distributed BMP projects are identified in Chapter 2, *Project Description*, of the Draft PEIR.

Response to Comment PM4-G:

The commenter inquires as to whether the PowerPoint from the presentation is on the website.

Yes, the PowerPoint from the public meeting is available on the following website: www.LACoH2Osheds.com.

Response to Comment PM4-H:

The commenter asks if there are any priority projects in the Topanga Creek watershed.

Priority projects identified at the time of publication of the PEIR are included in Appendix G. Projects have been identified in the North Santa Monica Bay Coastal Watersheds for Topanga.

Response to Comment PM4-I:

The commenter states that Caltrans is not a Permittee, and asks if the County is working with Caltrans in cooperation.

Caltrans is not a Permittee of the MS4 Permit and is therefore not an active member of the EWMP development groups. Stormwater conveyance facilities owned by Caltrans facilities are covered under a separate stormwater discharge permit. However, Caltrans shares responsibility for certain TMDLs with MS4 Permittees and continues to work collaboratively with MS4 Permittees in addressing the TMDLs.

Response to Comment PM4-J:

The commenter asks if the permittees will engage with Caltrans for individual projects.

Caltrans is not a Permittee of the MS4 Permit and is therefore not an active member of the EWMP development groups. Stormwater conveyance facilities owned by Caltrans facilities are covered under a separate stormwater discharge permit. However, Caltrans shares responsibility for certain TMDLs with MS4 Permittees and continues to work collaboratively with MS4 Permittees in addressing the TMDLs.

Response to Comment PM4-K:

The commenter inquires about the extent Caltrans needs to engage to achieve results. Caltrans is not a Permittee of the MS4 Permit and is therefore not an active member of the EWMP development groups. Stormwater conveyance facilities owned by Caltrans facilities are covered under a separate stormwater discharge permit. However, Caltrans shares responsibility for certain TMDLs with MS4 Permittees and continues to work collaboratively with MS4 Permittees in addressing the TMDLs.

Response to Comment PM4-L:

The commenter asks if we can identify projects where we can engage with Caltrans. For example on SR 27, SR 1, US 101, or any State Route in the County.

Caltrans is not a Permittee of the MS4 Permit and is therefore not an active member of the EWMP development groups. Stormwater conveyance facilities owned by Caltrans facilities are covered under a separate stormwater discharge permit. However, Caltrans shares responsibility for certain TMDLs with MS4 Permittees and continues to work collaboratively with MS4 Permittees in addressing the TMDLs.

Response to Comment PM4-M:

The commenter asks what the County's degree of influence is in the ULARA Watershed.

LACFCD is a participant of the Upper Los Angeles River EWMP. LACFCD owns and maintains flood control facilities in unincorporated areas of the watershed, and is a partner with the watershed group to develop BMPs. Appendix G of the PEIR includes priority projects as identified at the time of publication of the PEIR for the Upper Los Angeles River watershed (Figure 2-14).

Response to Comment PM4-N:

The commenter asks what projects are being proposed in the north slope of the SM Mountains – headwaters to the LA River.

LACFCD is a participant of the Upper Los Angeles River EWMP. LACFCD owns and maintains flood control facilities in unincorporated areas of the watershed, and will partner with the watershed group to develop BMPs. Appendix G of the PEIR includes priority projects as identified at the time of publication of the PEIR for the watershed.

Response to Comment PM4-O:

The commenter asks how the inclusion of open natural space and parkland will affect water quality estimates within the EWMPs.

The water quality modeling underway for each watershed incorporates existing open space areas. Areas that are restored from developed areas to open space may provide water quality benefits and can be reflected in the EWMP adaptive management process. Some of the structural BMPs associated with the proposed program are anticipated to be located on existing parkland, as these open space areas offer ample area for potential subsurface spreading and infiltration.

Response to Comment PM4-P:

The commenter inquires as to whether we can calculate carbon footprint of undeveloped/preserved space.

Areas that are restored from developed areas to open space may provide water quality benefits and reduce carbon emissions. However, existing open space areas are part of the baseline condition.

Response to Comment PM4-Q:

The commenter inquires as to whether preservation can be a BMP, and how we can get preservation to be a BMP.

A variety of BMP types are defined in the EWMP Work Plans and NOIs. Section 2.4, EWMP BMP Types, provides an overview of non-structural and structural BMP types that will be part of the EWMPs. Additional information and figures on the location and distribution of potential and priority BMPs based on available data at the time of publication of the PEIR, are presented in Section 2.5, *EWMP Watershed Characteristics and BMP Implementation Strategies*.

Response to Comment PM4-R:

The commenter asks if restoration qualifies as a BMP.

Creek/river/floodplain/estuary restoration is identified as a potential Centralized Structural BMPs. Table 2-2 of the Draft PEIR describes the sub-types of distributed, centralized, and regional structural BMPs that form the basis of the water quality improvements proposed in the EWMPs. Creek, river, and estuary restoration projects provide a unique opportunity to restore natural cleansing processes, reestablish habitats and address impacts from hydromodification and urban runoff. These projects are the only BMPs that are implemented within the receiving water.

Response to Comment PM4-S:

The commenter asks what residents in Topanga need to be concerned with, as this EWMP is such big picture.

The PEIR assumes that BMPs may be installed in any location, whether urbanized or previously undisturbed. The impact analysis assumes some projects may be proposed in open space areas and evaluates impact avoidance and minimization measures. The PEIR provides maps in Appendix G to the PEIR showing prospective locations for BMPs. The locations are broadly distributed throughout the watersheds. The LACFCD acknowledges that BMPs are not limited to urban areas but may be installed throughout a watershed if necessary to achieve water quality objectives. The PEIR acknowledges on page 1-11 that BMPs may be proposed in any location including open space areas. The impact analysis and mitigation measures have been prepared to reflect the wide diversity of potential project locations and evaluate worse-case conditions that may include the presence of sensitive habitats. The project area is generally differentiated by the Watershed Management Areas delineated by the Regional Water Quality Control Board, shown on Figure 2-1 of the Draft PEIR.

Because project details are largely incomplete since the EWMPs are being drafted concurrently, each individual project will be subject to a CEQA compliance evaluation prior to approval by the implementing agencies as noted in Section 1 of the Draft PEIR. As individual projects identified in the EWMPs are fully developed, the implementing agency (i.e., the Permittee responsible for implementing the project) will conduct CEQA analysis for individual projects, as appropriate, or may determine that no additional CEQA analysis is required or that a project is exempt from CEQA. Each implementing agency would determine the significance after mitigation for potential impacts of its proposed projects.

The PEIR serves as a first-tier environmental document that focuses on the effects of implementing the EWMPs to reduce urban runoff pollution. The analysis assesses worst case situations where construction or operation of projects may significantly impact environmental resources. The analysis outlines mitigation strategies to be followed by the LACFCD and other implementing agencies that rely on the PEIR to avoid or minimize impacts wherever feasible.

The PEIR provides the LACFCD a foundation for any necessary future environmental review that focus on individual projects of the EWMPs for which the LACFCD is the designated Lead Agency. The Topanga watershed includes large open space areas with steep slopes and natural creeks. BMPs in these areas may be considered that slow runoff down to reduce scouring and erosion and promote infiltration. Appendix G of the PEIR includes priority projects identified at the time of publication.

Response to Comment PM4-T:

The commenter asks how he/she can find out and participate in the EWMP process.

Information on the development of the EWMPs is posted on the following website: www.LACoH2Osheds.com. The public is encouraged to attend meetings as they are posted.

Response to Comment PM4-U:

The commenter asks if there is an assessment of existing resource management plans being considered to ensure goals and objectives. These could either inform or conflict with the proposed project.

The PEIR summarizes land use management plans within the Section 3.9, *Land Use* and Section 3.3, *Biological Resources*. The Santa Monica Mountains Conservancy Plan, Los Angeles County General Plan Significant Ecological Areas, and local tree preservation ordinances are described on page 3.3-16. The PEIR evaluates consistency with local land use plans in Impact 3.9-2 on page 3.9-34.

Response to Comment PM4-V:

The commenter inquires as to whether this compliance process can assist with goals and objectives of other plans and programs.

Although the primary goals of resource plans may be different, multiple benefits are achievable. As noted on page 1-5 of the PEIR, implementation of BMPs through the EWMP process may result in ancillary benefits to water supply, flood control, and recreation.

Response to Comment PM4-W:

The commenter asks if LADWP will send responses to all meeting participants in tonight's meeting.

Responses to public agency comments will be made available to commenters within 10 days prior to the consideration of the adequacy of the PEIR by the Board of Supervisors as required by Section 15088 of the CEQA Guidelines. The responses and the Final PEIR will be available on-line at www.LACoH2Osheds.com.

Response to Comment PM4-X:

The commenter asks when permittees will go to RWQCB with their final projects.

The EWMPs will be submitted to the RWQCB by June 28, 2015.

Response to Comment PM4-Y:

The commenter asks when LA watershed meetings will take place.

Information pertaining to this project and meetings related to this project will be available on-line at www.LACoH2Osheds.com.

Response to Public Meeting 5 Comments (Hacienda Heights Community Center – February 11, 2015)

1234 Valencia Avenue, Hacienda Heights CA 91745
6:00 P.M. – 8:00 P.M.

Response to Comment PM5-A:

The commenter asks who should be called if one observes someone irrigating when it rains.

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

Each city and water utility in the County may impose differing outdoor water use restrictions during this period of drought. Please contact your local water purveyor. For enquiries and information regarding lawn watering restrictions and reporting in Los Angeles, please call the following hot-line: 1-888-CLEAN LA (1-888-253-2652). One can also visit www.CleanLA.com.

Response to Comment PM5-B:

The commenter inquires about the regulations in place to control irrigation wasting.

In regard to irrigation wasting, each city and water utility in the County may impose differing outdoor water use restrictions during this period of drought. Please contact your local water purveyor. For enquiries and information regarding lawn watering restrictions and reporting in Los Angeles, please call the following hot-line: 1-888-CLEAN LA (1-888-253-2652). One can also visit www.CleanLA.com.

Response to Comment PM5-C:

The commenter is inquiring about the benefits of a PEIR compared to an individual EIR.

The rationale for preparing a PEIR is described on page 1-3. The PEIR defines typical project types in Section 2 and then in Section 3 evaluates potential impacts of implementing hundreds of these types of projects throughout the region over a long period of time. The use of a PEIR pursuant to CEQA Guidelines Section 15168 is intended to evaluate broad-based impacts early in the planning process and is the appropriate CEQA compliance for the EWMPs at this time. As projects are refined in the future, each individual project will undergo subsequent CEQA determination by the lead implementing agency prior to approval.

Response to Comment PM5-D:

The commenter asks if these projects improve drinking water.

The PEIR discusses potential impacts to local groundwater basins on page 3.8-35. The projects under the EWMPs include regional centralized retention and infiltration projects that can recharge local aquifers. These projects can augment local water supplies. Local water supplies are largely shared resources, managed by regional agencies (e.g., Metropolitan, Castaic Lake Water Agency) responsible for supplying drinking water equitably to the population. Local water retailers receive their water generally from imported water wholesalers and groundwater pumping. Groundwater recharge resulting from infiltration BMPs will occur throughout the region. Some areas will experience greater volumes of recharge than others due to the local topography and geology. The delivery of high quality drinking water is the responsibility of water retailers as regulated by the State Water Resources Control Board and the California Department of Public Health.

Response to Comment PM5-E:

The commenter asks if the projects can be used to help save trees in local parks.

As described in Section 2 of the PEIR, several types of BMPs would promote multiple benefits to water supply, flood control and recreation. Some projects (e.g., rain barrels) may include the capture, retention, and re-use of both dry weather flows and stormwater flows to supplement irrigation of community parks to help preserve native trees and other landscape.

Response to Comment PM5-F:

The commenter is asking if the PEIR assesses the issue of public health, in particular mosquito breeding habitat. The commenter also suggests that Operation and Maintenance (O&M) issues need to address this concern.

The PEIR discusses potential impacts to public health in Impact 3.7-2. The PEIR acknowledges that accumulation of contaminants in BMPs over time could result in hazardous conditions. Mitigation Measure HAZ-1 is included to ensure that maintenance plans are prepared and implemented to reduce the risk to public health. BMPs may detain water that stagnates or generates odors. Other vectors such as mosquitos and rodents could be attracted to standing water. Local vector control agencies would employ measures to reduce public health impacts from areas of standing water in cooperation with the LACFCD. In Response to Comment 20-GG above, Mitigation Measure HAZ-1 has been revised as follows:

> **HAZ-1:** Implementing agencies shall prepare and implement maintenance practices that include periodic removal and replacement of surface soils and media that may accumulate constituents that could result in further migration of constituents to sub-soils and groundwater. A BMP Maintenance Plan shall be prepared by Implementing Agencies upon approval of the BMP projects that identifies the frequency and procedures for removal and/or replacement of accumulated debris, surface soils and/or media (to depth where constituent concentrations do not represent a hazardous conditions and/or have the potential to migrate further and impact groundwater) to avoid accumulation of hazardous concentrations and the potential to migrate further to sub-soils and groundwater. <u>The Maintenance Plan shall include vector control requirements.</u> The BMP Maintenance Plan may consist of a general maintenance guideline that applies to several types of smaller

distributed BMPs. For smaller distributed BMPs on private property, these plans may consist of a maintenance covenant that includes requirements to avoid the accumulation of hazardous concentrations in these BMPs that may impact underlying sub-soils and groundwater. Structural BMPs shall be designed to prevent migration of constituents that may impact groundwater.

Response to Comment PM5-G:

The commenter identifies that the key issue is Operation and Maintenance. He explains that sedimentation and vegetation growth results in ponding of water, which creates vector breeding habitats, a serious public health issue.

The PEIR discusses potential impacts to public health in Impact 3.7-2. The PEIR acknowledges that accumulation of contaminants in BMPs over time could result in hazardous conditions. Mitigation Measure HAZ-1 is included to ensure that maintenance plans are prepared and implemented to reduce the risk to public health. BMPs may detain water that stagnates or generates odors. Other vectors such as mosquitos and rodents could be attracted to standing water. Local vector control agencies would employ measures to reduce public health impacts from areas of standing water in cooperation with the LACFCD. Mitigation Measure HAZ-1 has been revised as follows:

HAZ-1: Implementing agencies shall prepare and implement maintenance practices that include periodic removal and replacement of surface soils and media that may accumulate constituents that could result in further migration of constituents to sub-soils and groundwater. A BMP Maintenance Plan shall be prepared by Implementing Agencies upon approval of the BMP projects that identifies the frequency and procedures for removal and/or replacement of accumulated debris, surface soils and/or media (to depth where constituent concentrations do not represent a hazardous conditions and/or have the potential to migrate further and impact groundwater) to avoid accumulation of hazardous concentrations and the potential to migrate further to sub-soils and groundwater. <u>The Maintenance Plan shall include vector control requirements.</u> The BMP Maintenance Plan may consist of a general maintenance guideline that applies to several types of smaller distributed BMPs. For smaller distributed BMPs on private property, these plans may consist of a maintenance covenant that includes requirements to avoid the accumulation of hazardous concentrations in these BMPs that may impact underlying sub-soils and groundwater. Structural BMPs shall be designed to prevent migration of constituents that may impact groundwater.

Response to Comment PM5-H:

The commenter expresses that maintenance plans need to define frequency of O&M, and it needs to address issues such as creation of habitats which restrict and/or limit O&M activities.

The PEIR discusses potential impacts to public health in Impact 3.7-2. The PEIR acknowledges that accumulation of contaminants in BMPs over time could result in hazardous conditions. Mitigation Measure HAZ-1 is included to ensure that maintenance plans are prepared and implemented to reduce the risk to public health. BMPs may detain water that stagnates or generates odors. Other vectors such as mosquitos and rodents could be attracted to standing water. Local vector control agencies would employ measures to reduce public health impacts from areas of standing water in cooperation with the LACFCD.

Response to Comment PM5-I:

The commenter is asking if citizen/community groups can be encouraged to help with maintenance such as removing trash at curb inlets.

The PEIR discusses potential impacts to public health in Impact 3.7-2. The PEIR acknowledges that accumulation of contaminants in BMPs over time could result in hazardous conditions. Mitigation Measure HAZ-1 is included to ensure that maintenance plans are prepared and implemented to reduce the risk to public health. BMPs may detain water that stagnates or generates odors. Other vectors such as mosquitos and rodents could be attracted to standing water. Local vector control agencies would employ measures to reduce public health impacts from areas of standing water in cooperation with the LACFCD. Each BMP would require its own maintenance plan. Maintenance plans would not rely on public volunteers, but many watershed clean-up activities could be supported by volunteer organizations.

Response to Comment PM5-J:

The commenter is inquiring about how detailed the evaluation of impacts to downstream resources is in the PEIR.

The PEIR evaluates the potential for impact to downstream biological resources in Impact 3.3-1 and Impact 3.3-2. Mitigation Measures BIO-1 through BIO-8 were identified to ensure that significant impacts would be avoided. Mitigation Measure BIO-1 requires that project implementers conduct a biological assessment of downstream resources prior to project approval to ensure downstream beneficial uses are not adversely affected. Because these impacts vary between site and project type, this measure is best performed on a site by site basis.

Response to Public Meeting 6 Comments (East Los Angeles Library – February 17, 2015)

4837 3rd Street, Los Angeles, CA 90022
6:00 P.M. – 8:00 P.M.

Response to Comment PM6-A:

The commenter requests a two week extension for public comment submittal.

Thank you for submitting comments to the Los Angeles County Board of Supervisors (Board of Supervisors), governing Board of the Los Angeles County Flood Control District regarding the Proposed Program (or "Program"). These comments have been noted and will be provided to the Board of Supervisors for their consideration at such time as the Project is considered by the Board of Supervisors.

A one-week extension was granted and notice of the extension was sent to interested parties. The public comment period ended March 16, 2015.

Response to Comment PM6-B:

The commenter recommends having more interactive mapping tool that allows the community to type in an address and see what projects are planned and/or prioritized near them.

This suggestion will be passed to the County Flood Control District as part of the EWMP preparation.

Response to Comment PM6-C:

The commenter suggests that the EWMP should consider projects in areas where flooding frequently occurs in the LA River and Ballona Creek EWMP areas that can capture storm water and reduce flooding.

This suggestion will be passed on to the County Flood Control District as part of the EWMP preparation.

Response to Comment PM6-D:

The commenter suggests that the EWMP should look into railroad crossing flooding because the pumps are currently undersized.

This suggestion will be passed on to the County Flood Control District as part of the EWMP preparation.

Response to Comment PM6-E:

The commenter inquires about how priority projects are identified in the EWMP.

Priority projects undergo a detailed analysis that includes a site review and project evaluation, including an evaluation of soil types, land use, potential for multi-benefit projects and other factors which identified them as a priority. The Permit requires that a Reasonable Assurance Analysis be conducted using modeling tools to predict water quality benefits of the overall group of projects within a EWMP. Appendix G of the PEIR includes priority projects identified at the time of publication.

Response to Comment PM6-F:

The commenter inquires why there aren't more priority projects in the East Los Angeles community.

Maps showing the planned and priority projects have not yet been finalized, but there are BMPs planned throughout the watershed in all neighborhoods. The distributed BMPs that are not shown on the maps include projects such as Green Streets that will have wide distribution and will be located throughout the urban areas. Appendix G of the PEIR includes priority projects identified at the time of publication.

Response to Comment PM6-G:

The commenter is inquiring about the discretionary action for the PEIR.

The discretionary action prompting the need for CEQA compliance is the submittal of the completed EWMPs to the LARWQCB. As a result, the LACFCD, as lead agency, has prepared this Program Environmental Impact Report (PEIR) in compliance with the California Environmental Quality Act (CEQA) to provide the public and the responsible and trustee agencies with information about the potential effects on the local and regional environment associated with implementation of the EWMPs. The LACFCD will submit the PEIR to its governing body, the Los Angeles County Board of Supervisors, for approval prior to submittal of the EWMPs. The EWMPs will be submitted by each EWMP group to the LARWQCB.

Response to Comment PM6-H:

The commenter is asking if the PEIR includes an economic analysis.

The EWMPs will summarize project costs and funding mechanisms available to implementing agencies. Implementing agencies are responsible for identifying funding mechanisms needed to effectuate Permit compliance. The PEIR does not evaluate costs or funding sources for BMP implementation since providing funding is not an environmental impact. Revenue sources will vary for each implementing agency but will likely include grant funding, low interest loans, or local fee assessment.

Response to Comment PM6-I:

The commenter is asking if the certification by the Board of Directors includes a means to pay for the program.

The EWMPs will summarize project costs and funding mechanisms available to implementing agencies. The Board of Directors is certifying the PEIR and approving the submittal of the EWMPS to meet the requirements of the MS4 Permit. This discretionary action does not include providing funds for any specific project.

Response to Comment PM6-J:

The commenter is asking if the system can be maintained, and what the cost is for such maintenance.

Mitigation Measure HAZ-1 is included in the PEIR to ensure that maintenance plans are prepared and implemented to reduce the risk to public health. As stated in Mitigation Measure HAZ-1, the plans shall identify the frequency and procedures for removal and/or replacement of accumulated debris, surface soils and/or media to avoid accumulation of hazardous concentrations and the potential to migrate further to sub-soils and groundwater. Mitigation Measure HAZ-1 has been revised as follows:

> **HAZ-1:** Implementing agencies shall prepare and implement maintenance practices that include periodic removal and replacement of surface soils and media that may accumulate constituents that could result in further migration of constituents to sub-soils and groundwater. A BMP Maintenance Plan shall be prepared by Implementing Agencies upon approval of the BMP projects that identifies the frequency and procedures for removal and/or replacement of accumulated debris, surface soils and/or media (to depth where constituent concentrations do not represent a hazardous conditions and/or have the potential to migrate further and impact groundwater) to avoid accumulation of hazardous concentrations and the potential to migrate further to sub-soils and groundwater. <u>The Maintenance Plan shall include vector control requirements.</u> The BMP Maintenance Plan may consist of a general maintenance guideline that applies to several types of smaller distributed BMPs. For smaller distributed BMPs on private property, these plans may consist of a maintenance covenant that includes requirements to avoid the accumulation of hazardous concentrations in these BMPs that may impact underlying sub-soils and groundwater. Structural BMPs shall be designed to prevent migration of constituents that may impact groundwater.

The EWMPs will summarize project costs and funding mechanisms regarding operations and maintenance available to implementing agencies. Implementing agencies are responsible for identifying funding mechanisms needed to effectuate Permit compliance. The PEIR does not evaluate costs or funding sources for BMP implementation since providing funding is not an environmental impact. Revenue sources will vary for each implementing agency but will likely include grant funding, low interest loans, or local fee assessment.

Response to Comment PM6-K:

The commenter is inquiring about what would happen if a project is planned that is not currently covered or listed in the PEIR.

The PEIR acknowledges that most of the projects to be included in the EWMPs are either currently undefined or currently under development. Appendix G of the PEIR includes priority projects identified at the time of publication. Some background on the MS4 Permit is provided in Section 1, explaining the policies guiding the implementation of the BMPs. As noted in Section 1, each individual project will undergo subsequent CEQA determination by the lead implementing agency prior to approval.

Response to Comment PM6-L:

The commenter is asking if the PEIR identifies the process to update the PEIR if and/or when the project/program changes.

Because project details are largely incomplete since the EWMPs are being drafted concurrently, each individual project will be subject to a CEQA compliance evaluation prior to approval by the implementing agencies as noted in Section 1 of the Draft PEIR. As individual projects identified in the EWMPs are fully developed, the implementing agency (i.e., the Permittee responsible for implementing the project) will conduct CEQA analysis for individual projects, as appropriate, or may determine that no additional CEQA analysis is required or that a project is exempt from CEQA. Each implementing agency would determine the significance after mitigation for potential impacts of its proposed projects.

The PEIR serves as a first-tier environmental document that focuses on the effects of implementing the EWMPs to reduce urban runoff pollution. The analysis assesses worst case situations where construction or operation of projects may significantly impact environmental resources. The analysis outlines mitigation strategies to be followed by the LACFCD and other implementing agencies that rely on the PEIR to avoid or minimize impacts wherever feasible.

The PEIR provides the LACFCD a foundation for any necessary future environmental review that focus on individual projects of the EWMPs for which the LACFCD is the designated Lead Agency.

Response to Comment PM6-M:

The commenter is inquiring about the methods used to reach out to community members that don’t have computers.

Notices of the public meetings were posted at the meeting sites, advertisements were placed in local papers and a list of over700 stakeholders was contacted through email. It was noted that the library has computers that provided free of charge use to the community.

Response to Comment PM6-N:

The commenter is asking about what projects are being considered to improve the trash screening curb inlet devices.

LADPW is continuing to investigate new devices and BMPs that provide more effective trash screening and pollutant removal. These distributed BMPs will continue to be implemented throughout the watershed as needed.

Response to Comment PM6-O:

The commenter is recommending that the PEIR reference the 2004 Landscaping Guidelines, Plant Palettes LA River Master Plan.

The 1996 Los Angeles River Master Plan provides design goals for the enhancement of multiple beneficial uses provided by the Los Angeles River. The landscape guidelines were updated in 2004. The landscape guidelines are specific to the Los Angeles River. Development of the EWMPs is consistent with this Master Plan.

11.4 REFERENCES

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CHAPTER 12 CLARIFICATIONS AND MODIFICATIONS

12.1 Introduction

The following clarifications and revisions are intended to update the Draft EIR in response to the comments received during the public review period. These changes, which have been incorporated into the Draft EIR, constitute the Final EIR, to be presented to the County of Los Angeles Board of Supervisors for certification and approval. These modifications clarify, amplify, or make insignificant changes to the EIR. Revisions to the EIR have not resulted in new significant impacts or mitigation measures or increased the severity of an impact. None of the criteria for recirculation set forth in the CEQA Guidelines section 15088.5(a) have been met, and recirculation of the EIR is not required.

CEQA Guidelines Section 15088.5(a):

(a) A lead agency is required to recirculate an EIR when significant new information is added to the EIR after public notice is given of the availability of the draft EIR for public review under Section 15087 but before certification…"Significant new information" requiring recirculation include, for example, a disclosure showing that:

(1) A new significant environmental impact would result from the project or from a new mitigation measure proposed to be implemented.
(2) A substantial increase in the severity of an environmental impact would result unless mitigation measures are adopted that reduce the impact to a level of insignificance.
(3) A feasible project alternative or mitigation measure considerably different from the others previously analyzed would clearly lessen the environmental impacts of the project, but the project's proponents decline to adopt it.
(4) The draft EIR was so fundamentally and basically inadequate and conclusory in nature that meaningful public review and comment were precluded.

The revisions compiled in this Chapter do not constitute "Significant new information" noted in Section 15088.5(a)(1) since no new significant environmental impacts have been identified following the publication of the Draft PEIR. Although new mitigation measures have been added based on input from commenters to ensure impacts remain less than significant, these new measures would not in and of themselves result in significant impacts nor do they represent that a new impact was identified. Rather, the measures provide for greater assurance of less than significant impacts.

The revisions compiled in this Chapter do not constitute "Significant new information" noted in Section 15088.5(a)(2) since none of the modifications would result in a substantial increase in impacts already identified. Rather, the revisions are designed to further reduce the potential for significant impacts.

The revisions compiled in this Chapter do not constitute "Significant new information" noted in Section 15088.5(a)(3) since no new alternatives have been identified that would clearly lessen impacts.

Finally, the revisions compiled in this Chapter do not constitute "Significant new information" noted in Section 15088.5(a)(4) since the PEIR is not fundamentally and basically inadequate and conclusory in nature. The PEIR compiles information available at the time of publication to assist in evaluating the values and risks of moving forward with a Permit compliance program. The PEIR as an advanced planning tool is meant to set the stage for future analysis of projects within the program as they are proposed for implementation as explained in Chapter 1 on pages 1-10 and 1-11.

12.2 Clarification and Modifications

The changes to the Draft EIR are listed by section and page number. Text which has been removed is shown in this chapter with a strikethrough line, while text that has been added is shown with an underline. All of the changes shown in this section have also been made in the corresponding Final EIR sections. Minor editorial corrections (e.g., typographical, grammatical, etc.) have been made throughout the document and are not indicated by strikethrough or underline text. The addition of the cumulative impact conclusions shown as underlined in Table ES-1 do not reflect new conclusions, but rather that the conclusions from Chapter 3 have been compiled into the table, since they were inadvertently left off the table in the Draft EIR. Please refer to Chapter 11, *Response to Comments*, for referenced comment letters and corresponding comments.

See next page showing entire Table ES-1 containing Mitigation Measure refinements.

TABLE ES-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE ENHANCED WATERSHED MANAGEMENT PROGRAMS

Impacts	Mitigation Measures	Significance before Mitigation	Significance if Mitigation is Implemented
Aesthetics			
3.1-1: The proposed program could create a substantial adverse effect on a scenic vista.	**AES-1:** Aboveground structures shall be designed to be consistent with local zoning codes and applicable design guidelines and to minimize features that contrast with neighboring development.	Significant	Less than significant
3.1-2: The proposed program could substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.	Implement Mitigation Measure ~~Implementation of~~ AES-1	Significant	Less than significant
3.1-3: The proposed program could substantially degrade the existing visual character or quality of the site and its surroundings.	Implement Mitigation Measure ~~Implementation of~~ AES-1 **AES-2:** Implementing agencies shall develop BMP maintenance plans that are approved concurrently with each structural BMP approval. The maintenance plans must include measures to ensure functionality of the structural BMPs for the life of the BMP. These plans may include general maintenance guidelines that apply to a number of smaller distributed BMPs.	Significant	Less than significant
3.1-4: The proposed program could create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.	None required	Less than significant	Not applicable
Cumulative Aesthetics Impacts	Implement Mitigation Measures AES-1 and AES-2	Significant	Less than significant
Air Quality			
3.2-1: The project could conflict with or obstruct implementation of the applicable air quality plan.	None required	Less than significant	Not applicable
3.2-2: The project could violate any air quality standard or contribute substantially to an existing or projected air quality violation.	**AIR-1:** Implementing agencies shall require for large Regional or Centralized BMPs the use of low-emission equipment meeting Tier II emissions standards at a minimum and Tier III and IV emissions standards where available as CARB-required emissions technologies become readily available to contractors in the region	Significant	Significant and unavoidable for construction; Less than significant for operations.

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Impacts	Mitigation Measures	Significance before Mitigation	Significance if Mitigation is Implemented
	AIR-2: For large construction efforts that may result in significant air emissions, implementing agencies shall encourage contractors to use lower-emission equipment through the bidding process where appropriate.		
3.2-3: The program could result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).	Implement Mitigation Measures ~~Implementation of~~ AIR-1 and AIR-2	Significant	Significant and unavoidable for construction; less than significant for operations.
3.2-4: The project could expose sensitive receptors to substantial pollutant concentrations.	**AIR-3:** For large construction efforts associated with Regional or Centralized BMPs, implementing agencies shall conduct a project-specific LST analysis where necessary to determine local health impacts to neighboring land uses. Where it is determined that construction emissions would exceed the applicable LSTs or the most stringent applicable federal or state ambient air quality standards, the structural BMP project shall reduce its daily construction intensity (e.g., reducing the amount of equipment used daily, reducing the amount of soil graded/excavated daily) to a level where the structural BMP project's construction emissions would no longer exceed SCAQMD's LSTs or result in pollutant emissions that would cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standards.	Significant	Less than significant
3.2-5: The proposed program could create objectionable odors affecting a substantial number of people.	**AIR-4:** During planning of structural BMPs, implementing agencies shall assess the potential for nuisance odors to affect a substantial number of people. BMPs that minimize odors shall be considered the priority when in close proximity to sensitive receptors.	Significant	Less than significant
Cumulative Air Quality Impacts	Implement Mitigation Measures AIR-1 through AIR-2	Significant	Significant and unavoidable for construction; less-than-significant for operations
Biological Resources			
3.3-1: The proposed project could have a	**BIO-1:** Prior to approving a Regional or Centralized BMP.,	Significant	Less than significant

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Impacts	Mitigation Measures	Significance before Mitigation	Significance if Mitigation is Implemented
substantial adverse effect, either directly or through habitat modifications, on any sensitive species identified as special-status in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.	the Permittee shall conduct an evaluation of the suitability of the BMP location. Appropriate BMP sites should avoid impacting large areas of native habitats including upland woodlands and riparian forests that support sensitive species to the extent feasible. The evaluation shall include an assessment of potential downstream impacts resulting from flow diversions. **BIO-2:** Prior to ground disturbing activities in areas that could support sensitive biological resources, a habitat assessment shall be conducted by a qualified biologist to determine the potential for special-status wildlife species to occur within affected areas, including areas directly or indirectly impacted by construction or operation of the BMPs. **BIO-3:** If a special-status wildlife species is determined to be present or potentially present within the limits of construction activities, a qualified biologist shall conduct pre-construction surveys of proposed work zones and within an appropriately sized buffer around each area as determined by a qualified biologist within 14 days prior to ground disturbing activities. Any potential habitat capable of supporting a special-status wildlife species shall be flagged for avoidance if feasible. **BIO-4:** If avoidance of special-status species or sensitive habitats that could support special-status species (including, but not limited to, critical habitat, riparian habitat, and jurisdictional wetlands/waters) is not feasible, the Permittee shall consult with the appropriate regulating agency (USACE/USFWS or CDFW) to determine a strategy for compliance with the Endangered Species Act, California Fish and Game Code, and other regulations protecting special-status species and sensitive habitats. The Permittee shall identify appropriate impact minimization measures and compensation for permanent impacts to sensitive habitats and species in consultation with regulatory agencies. Construction of the project will not begin until the appropriate permits from the regulatory agencies are approved. **BIO-5:** If construction and vegetation removal is proposed between February 1 and August 31, a qualified biologist shall conduct a pre-construction survey for breeding and nesting birds and raptors within 500-feet of the construction limits to determine and map the location and extent of breeding birds that could be affected by the project. Active nest sites located		

Impacts	Mitigation Measures	Significance before Mitigation	Significance if Mitigation is Implemented
	during the pre-construction surveys shall be avoided until the adults and young are no longer reliant on the nest site for survival as determined by a qualified biologist. **BIO-6:** All construction areas, staging areas, and right-of-ways shall be staked, flagged, fenced, or otherwise clearly delineated to restrict the limits of construction to the minimum necessary near areas that may support special-status wildlife species as determined by a qualified biologist. **BIO-7:** Prior to construction in areas that could support special status plants, a qualified botanist shall conduct a pre-construction floristic inventory and focused rare plant survey of project areas to determine and map the location and extent of special-status plant species populations within disturbance areas. This survey shall occur during the typical blooming periods of special-status plants with the potential to occur. The plant survey shall follow the CDFW Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (November 24, 2009). **BIO-8:** If temporary construction-related impacts to special-status plant populations are identified within a disturbance area, the implementing agencies shall prepare and implement a special-status species salvage and replanting plan. The salvage and replanting plan shall include measures to salvage, replant, and monitor the disturbance area until native vegetation is re-established under the direction of CDFW and USFWS.		
3.3-2: The proposed project could have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS.	Implement Mitigation Measures BIO-1 through BIO-8	Significant	Less than significant
3.3-3: The proposed project could have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.	Implement BIO-1 through BIO-8 **BIO-9:** Prior to construction, a qualified wetland delineator shall be retained to conduct a formal wetland delineation in areas where potential jurisdictional resources (i.e., wetlands or drainages) subject to the jurisdiction of USACE, RWQCB, and CDFW, may be affected by the project. If jurisdictional resources are identified in the EWMP area and would be	Significant	Less than significant

RB-AR 9644

Impacts	Mitigation Measures	Significance before Mitigation	Significance if Mitigation is Implemented
	directly or indirectly impacted by individual projects, the qualified wetland delineator shall prepare a jurisdictional delineation report suitable for submittal to USACE, RWQCB, and CDFW for purposes of obtaining the appropriate permits. Habitat mitigation and compensation requirements shall be implemented prior to construction in accordance with Mitigation Measure BIO-4.		
3.3-4: The proposed project could interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.	None required	Less than significant	Not applicable
3.3-5: The proposed project could conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.	**BIO-10:** Oak trees and other protected trees shall be avoided to the extent feasible. If trees may be impacted by project construction, a certified arborist shall conduct a tree inventory of the construction impact area. If any oak trees or other protected trees will be impacted by BMP construction, the implementing agency shall obtain any required County or City permits.	Significant	Less than significant
3.3-6: The proposed project could conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.	None required	Less than significant	Not applicable
<u>Cumulative Biological Resources Impacts</u>	<u>Implement Mitigation Measures BIO-1 through BIO-10</u>	<u>Significant</u>	<u>Less than significant</u>
Cultural Resources			
3.4-1: The proposed program could cause a substantial adverse change in the significance of an historical resource as defined in §15064.5.	**CUL-1:** For individual EWMP projects that could impact buildings or structures (including infrastructure) 45 years old or older, implementing agencies shall ensure that a historic built environment survey is conducted or supervised by a qualified historian or architectural historian meeting the Secretary of the Interior's Professional Qualification Standards for Architectural History. Historic built environment resources shall be evaluated for their eligibility for listing in the CRHR or local register prior to the implementing agency's approval of project plans. If eligible resources that would be considered historical resources under CEQA are identified,	Significant	Significant and Unavoidable

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Impacts	Mitigation Measures	Significance before Mitigation	Significance if Mitigation is Implemented
	demolition or substantial alteration of such resources shall be avoided. If avoidance is determined to be infeasible, the implementing agency shall require the preparation of a treatment plan to include, but not be limited to, photo-documentation and public interpretation of the resource. The plan will be submitted to the implementing agency for review and approval prior to implementation. **CUL-2:** Implementing agencies shall ensure that individual EWMP projects that require ground disturbance shall be subject to a Phase I cultural resources inventory on a project-specific basis prior to the implementing agency's approval of project plans. The study shall be conducted or supervised by a qualified archaeologist, defined as an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for Archaeology, and shall be conducted in consultation with the local Native American representatives expressing interest. The cultural resources inventory shall include a cultural resources records search to be conducted at the South Central Coastal Information Center; scoping with the NAHC and with interested Native Americans identified by the NAHC; a pedestrian archaeological survey where deemed appropriate by the qualified archaeologist; and formal recordation of all identified archaeological resources on California Department of Parks and Recreation 523 forms and significance evaluation of such resources presented in a technical report following the guidelines in *Archaeological Resource Management Reports (ARMR): Recommended Contents and Format*, Department of Parks and Recreation, Office of Historic Preservation, State of California, 1990. If potentially significant archaeological resources are encountered during the survey, the implementing agency shall require that the resources are evaluated by the qualified archaeologist for their eligibility for listing in the CRHR and for significance as a historical resource or unique archaeological resource per *CEQA Guidelines* Section 15064.5. Recommendations shall be made for treatment of these resources if found to be significant, in consultation with the implementing agency and the appropriate Native American groups for prehistoric resources. Per *CEQA Guidelines* Section 15126.4(b)(3), preservation in place shall be the preferred manner of mitigation to avoid impacts to		

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Impacts	Mitigation Measures	Significance before Mitigation	Significance if Mitigation is Implemented
	archaeological resources qualifying as historical resources. Methods of avoidance may include, but shall not be limited to, project re-route or re-design, project cancellation, or identification of protection measures such as capping or fencing. Consistent with *CEQA Guidelines* Section 15126.4(b)(3)(C), if it is demonstrated that resources cannot be avoided, the qualified archaeologist shall develop additional treatment measures, which may include data recovery or other appropriate measures, in consultation with the implementing agency, and any local Native American representatives expressing interest in prehistoric or tribal resources. If an archaeological site does not qualify as an historical resource but meets the criteria for a unique archaeological resource as defined in Section 21083.2, then the site shall be treated in accordance with the provisions of Section 21083.2. **CUL-3:** The implementing agency shall retain archaeological monitors during ground-disturbing activities that have the potential to impact archaeological resources qualifying as historical resources or unique archaeological resources, as determined by a qualified archaeologist in consultation with the implementing agency, and any local Native American representatives expressing interest in the project. Native American monitors shall be retained for projects that have a high potential to impact sensitive Native American resources, as determined by the implementing agency in coordination with the qualified archaeologist. **CUL-4:** During project-level construction, should subsurface archaeological resources be discovered, all activity in the vicinity of the find shall stop and a qualified archaeologist shall be contacted to assess the significance of the find according to *CEQA Guidelines* Section 15064.5. If any find is determined to be significant, the archaeologist shall determine, in consultation with the implementing agency and any local Native American groups expressing interest, appropriate avoidance measures or other appropriate mitigation. Per *CEQA Guidelines* Section 15126.4(b)(3), preservation in place shall be the preferred means to avoid impacts to archaeological resources qualifying as historical resources. Methods of avoidance may include, but shall not be limited to, project re-route or re-design, project		

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Impacts	Mitigation Measures	Significance before Mitigation	Significance if Mitigation is Implemented
	cancellation, or identification of protection measures such as capping or fencing. Consistent with *CEQA Guidelines* Section 15126.4(b)(3)(C), if it is demonstrated that resources cannot be avoided, the qualified archaeologist shall develop additional treatment measures, such as data recovery or other appropriate measures, in consultation with the implementing agency and any local Native American representatives expressing interest in prehistoric or tribal resources. If an archaeological site does not qualify as an historical resource but meets the criteria for a unique archaeological resource as defined in Section 21083.2, then the site shall be treated in accordance with the provisions of Section 21083.2.		
3.4-2: The program could cause a substantial adverse change in the significance of unique archaeological resources as defined in §15064.5.	Implement Mitigation Measures~~Implementation of~~ CUL-2 through CUL-4	Significant	Less than significant
3.4-3: The program could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	**CUL-5:** For individual structural BMP projects that require ground disturbance, the implementing agency shall evaluate the sensitivity of the project site for paleontological resources. If deemed necessary, the implementing agency shall retain a qualified paleontologist to evaluate the project and provide recommendations regarding additional work, potentially including testing or construction monitoring. **CUL-6:** In the event that paleontological resources are discovered during construction, the implementing agency shall notify a qualified paleontologist. The paleontologist will evaluate the potential resource, assess the significance of the find, and recommend further actions to protect the resource.	Significant	Less than significant
3.4-4: The program could disturb any human remains, including those interred outside of a formal cemetery.	**CUL-7:** The implementing agency shall require that, if human remains are uncovered during project construction, work in the vicinity of the find shall cease and the County Coroner shall be contacted to evaluate the remains, following the procedures and protocols set forth in Section 15064.5 (e)(1) of the CEQA Guidelines. If the County Coroner determines that the remains are Native American, the Coroner will contact the Native American Heritage Commission, in accordance with Health and Safety Code Section 7050.5, subdivision (c), and Public Resources Code 5097.98 (as amended by AB 2641). The NAHC will then designate a Most	Significant	Less than significant

RB-AR 9648

Impacts	Mitigation Measures	Significance before Mitigation	Significance if Mitigation is Implemented
	Likely Descendant of the deceased Native American, who will engage in consultation to determine the disposition of the remains.		
Cumulative Cultural Resources Impacts	Implement Mitigation Measures CUL-1 through CUL-7.	Significant	Significant and unavoidable
Geologic and Mineral Resources			
3.5-1: The proposed program could locate new facilities in areas susceptible to seismic impacts such as (1) rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault, (2) strong seismic groundshaking, or (3) seismically induced liquefaction or landslides, which could expose people, structures, or habitat to potential risk of loss, damage, injury, or death.	None required	Less than significant	Not applicable
3.5-2: The proposed program could result in substantial soil erosion or the loss of topsoil.	None required	Less than significant	Not applicable
3.5-3: The proposed program could be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the program, and potentially result in on-site or off-site non-seismically induced geologic hazards such as landslides, lateral spreading, subsidence, collapse or sinkholes, settlement, or slope failure.	**GEO-1:** Prior to approval of infiltration BMPs, implementing agencies shall conduct a geotechnical investigation of each infiltration BMP site to evaluate infiltration suitability. If infiltration rates are sufficient to accommodate an infiltration BMP, the geotechnical investigation shall recommend design measures necessary to prevent excessive lateral spreading that could destabilize neighboring structures. Implementing agencies shall implement these measures in project designs.	Significant	Less than significant
3.5-4: The proposed program could be located on expansive soil as defined in 24 CCR 1803.5.3 of the California Building Code (2013), creating substantial risks to life or structures.	None required	Less than significant	Not applicable
3.5-5: The proposed program could have soils incapable of adequately supporting the use of a septic tank or alternative	None required	Less than significant	Not applicable

RB-AR 9649

Impacts	Mitigation Measures	Significance before Mitigation	Significance if Mitigation is Implemented
wastewater treatment systems where sewers are not available for the disposal of wastewater.			
3.5-6: The proposed program could result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state or a locally important mineral resource recovery site delineated on a local General Plan, Specific Plan, or other land use plan.	None required	Less than significant	Not applicable
Cumulative Geologic Resources Impacts	Implement Mitigation Measure GEO-1 **GEO-2:** Prior to installing BMPs designed to recharge local groundwater supplies, the Implementing Agency shall notify local groundwater managers including the Upper Los Angeles River Area Water Master, the Water Replenishment District of Southern California, or the San Gabriel Water Master as well as local water producers such as local municipalities and water companies. The Implementing Agency shall coordinate BMP siting efforts with groundwater managers and producers to mitigate high groundwater levels while increasing local water supplies.	Significant	Less than significant
Greenhouse Gas Emissions			
3.6-1: The proposed program could generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.	None required	Less than significant	Not applicable
3.6-2: The proposed program could conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.	None required	Less than significant	Not applicable
Cumulative Greenhouse Gas Emissions Impacts	None required	Less than significant	Not applicable
Hazards and Hazardous Materials			
3.7-1: The proposed program would create a significant hazard to the public or the	None required	Less than significant	Not applicable

RB-AR 9650

Impacts	Mitigation Measures	Significance before Mitigation	Significance if Mitigation is Implemented
environment through the routine transport, use, or disposal of hazardous materials or the accidental release during construction and maintenance activities.			
3.7-2: The proposed program could create a significant hazard to the public or the environment through the accumulation of potentially hazardous materials into BMPs.	**HAZ-1:** Implementing agencies shall prepare and implement maintenance practices that include periodic removal and replacement of surface soils and media that may accumulate constituents that could result in further migration of constituents to sub-soils and groundwater. A BMP Maintenance Plan shall be prepared by Implementing Agencies upon approval of the individual BMP projects that identifies the frequency and procedures for removal and/or replacement of accumulated debris, surface soils and/or media (to depth where constituent concentrations do not represent a hazardous conditions and/or have the potential to migrate further and impact groundwater) to avoid accumulation of hazardous concentrations and the potential to migrate further to sub-soils and groundwater. <u>The Maintenance Plan shall include vector control requirements.</u> The BMP Maintenance Plan may consist of a general maintenance guideline that applies to several types of smaller distributed BMPs. For smaller distributed BMPs on private property, these plans may consist of a maintenance covenant that includes requirements to avoid the accumulation of hazardous concentrations in these BMPs that may impact underlying sub-soils and groundwater. Structural BMPs shall be designed to prevent migration of constituents that may impact groundwater.	Significant	Less than significant
3.7-3: The proposed program could emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing school.	<u>Implement Mitigation Measure</u> ~~Implementation of~~ HAZ-1	Less than significant	Not applicable
3.7-4: The proposed program could be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, could create a significant hazard to the public or the	**HAZ-2:** Prior to the initiation of any construction requiring ground-disturbing activities in areas where hazardous material use or management may have occurred, the implementing agencies shall complete a Phase I Environmental Site Assessment (ESA) in accordance with American Society for Testing and Materials (ASTM) Standard E1527-13 for each construction site. Any recommended	Significant	Less than significant

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Impacts	Mitigation Measures	Significance before Mitigation	Significance if Mitigation is Implemented
environment.	follow up sampling (Phase II activities) set forth in the Phase I ESA shall be implemented prior to construction. The results of Phase II studies, if necessary, shall be submitted to the local overseeing agency and any required remediation or further delineation of identified contamination shall be completed prior to commencement of construction.		
3.7-5: For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, for a project within the vicinity of a private airstrip, the project could result in a safety hazard for people residing or working in the project area.	**HAZ-3:** Implementing Agencies shall require that those BMPs that are within an airport land use plan area are compatible with criteria specified in FAA Advisory Circular No: 150/5200-33B (FAA, 2007). If the proposed BMP is within the minimum separation criteria, the Implementing Agency shall consult with the airport and collaboratively evaluate whether the potential increase in wildlife hazards can be mitigated.	Significant	Less than significant
3.7-6: The proposed program could impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.	None required	Less than significant	Not applicable
3.7-7: The proposed program could expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.	None required	Less than significant	Not applicable
<u>**Cumulative Hazards and Hazardous Materials Impacts**</u>	<u>Implement Mitigation Measures HAZ-1, HAZ-2 and HAZ 3</u>	<u>Significant</u>	<u>Less than significant</u>
Hydrology and Water Quality			
<u>**3.8-1:** The proposed project would violate water quality standards or waste discharge requirements or further degrade water quality.</u>	<u>None required</u>	<u>Less than significant</u>	<u>Not applicable</u>
3.8-~~1~~<u>2</u>: The proposed project would result in higher groundwater levels and could potentially affect groundwater quality.	**HYDRO-1:** Prior to approving an infiltration BMP, the Permittee shall conduct an evaluation of the suitability of the BMP location. Appropriate infiltration BMP sites should avoid areas with low permeability where recharge could adversely affect neighboring subsurface infrastructure. **HYDRO-2:** Prior to approving an infiltration BMP, the	Significant	Less than significant

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Impacts	Mitigation Measures	Significance before Mitigation	Significance if Mitigation is Implemented
	Permitee shall identify pre-treatment technologies, type, and depth of filtration media; depth to groundwater; and other design considerations necessary to prevent contaminants from impacting groundwater quality. The design shall consider stormwater quality data within the BMP's collection area to assess the need and type of treatment and filtration controls. Local design manuals and ordinances requiring minimum separation distance to groundwater shall also be met as part of the design. **HYDRO-3:** Prior to the installation of an infiltration BMP, the Permitee shall conduct a regulatory database review for contaminated groundwater sites within a quarter mile of the proposed infiltration facility. The review shall include locations of on-site wastewater treatment systems. The Permittee shall identify whether any contaminated groundwater plumes or leach fields are present within close proximity to the BMP location that could be affected by infiltrated water and whether coordination with the local and state environmental protection overseeing agency and responsible party is warranted prior to final design of infiltration facility.		
3.8-~~2~~3: The proposed project could substantially alter the existing drainage pattern of a site or area through the alteration of the course of a stream or river, or by other means, in a manner that would result in substantial erosion or siltation on- or off-site.	~~None required~~**HYDRO-4:** Prior to approving a structural BMP, the implementing agencies shall conduct an evaluation of the potential hydromodification impacts of the project. The evaluation shall recommend design measures necessary to prevent or minimize any identified impacts, including flooding, erosion and/or scour. Design measures could include velocity dissipaters and bank re-enforcement components. Implementing agencies shall include these measures in project designs.	Less than significant	Not applicable
3.8-~~3~~4: The project could substantially alter the existing drainage pattern of a site or area through the alteration of the course of a stream or river or, by other means, substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site.	Implement Mitigation Measures HYDRO-4	Less than significant	Not applicable
3.8-~~4~~5: The proposed project could create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide	None required	Less than significant	Not applicable

Impacts	Mitigation Measures	Significance before Mitigation	Significance if Mitigation is Implemented
substantial additional sources of polluted runoff.			
3.8-~~5~~6: The project could place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other authoritative flood hazard delineation map.	None required	No impact	Not applicable
3.8-~~6~~7: The project could place within a 100-year flood hazard area structures that would impede or redirect flood flows.	None required	Less than significant	Not applicable
3.8-~~7~~8: The proposed project could expose structures to a significant risk of loss, including flooding as a result of the failure of a levee or dam.	None required	Less than significant	Not applicable
3.8-~~8~~9: The proposed project could place structures in areas subject to inundation by seiche, tsunami, or mudflow.	None required	Less than significant	Not applicable
Cumulative Hydrology and Water Quality Impacts	None required	Less than significant	Not applicable
Land Use and Agriculture			
3.9-1: The proposed program could physically divide an established community.	None required	No Impact	Not applicable
3.9-2: The proposed program could conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the program (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.	None required	No Impact	Not applicable
3.9-3: The proposed program could conflict with any applicable habitat conservation plan or natural community conservation	None required	No Impact	Not applicable

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Impacts	Mitigation Measures	Significance before Mitigation	Significance if Mitigation is Implemented
plan.			
3.9-4: The proposed program could convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use. The proposed program could involve other changes in the existing environment which, due to their location or nature, could result in conversion of agricultural land to non-agricultural use or conversion of forest land to non-forest use.	None required	No Impact	Not applicable
3.9-5: The proposed program could conflict with existing zoning for agricultural use, or a Williamson Act contract.	None required	No Impact	Not applicable
3.9-6: The proposed program could conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g)). The proposed program could result in the loss of forest land or conversion of forest land to non-forest use.	None required	No Impact	Not applicable
Cumulative Land Use and Agriculture Impacts	None required	Less than significant	Not applicable
Noise			
3.10-1: The proposed program could result in exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of	**NOISE-1:** The implementing agencies shall implement the following measures during construction as needed:: • Include design measures necessary to reduce the construction noise levels where feasible. These measures may include noise barriers, curtains, or shields.	Significant	Significant and unavoidable for construction; less than significant for operations

Impacts	Mitigation Measures	Significance before Mitigation	Significance if Mitigation is Implemented
other agencies.	• Place noise-generating construction activities (e.g., operation of compressors and generators, cement mixing, general truck idling) as far as possible from the nearest noise-sensitive land uses. • Locate stationary construction noise sources as far from adjacent noise-sensitive receptors as possible. • If construction is to occur near a school, the construction contractor shall coordinate the with school administration in order to limit disturbance to the campus. Efforts to limit construction activities to non-school days shall be encouraged. • For the centralized and regional BMP projects located adjacent to noise-sensitive land uses, identify a liaison for these off-site sensitive receptors, such as residents and property owners, to contact with concerns regarding construction noise and vibration. The liaison's telephone number(s) shall be prominently displayed at construction locations. • For the centralized and regional BMP projects located adjacent to noise-sensitive land uses, notify in writing all landowners and occupants of properties adjacent to the construction area of the anticipated construction schedule at least 2 weeks prior to groundbreaking. **NOISE-2:** All structural BMPs that employ mechanized stationary equipment that generate noise levels shall comply with the applicable noise standards established by the implementing agency with jurisdiction over the structural BMP site. The equipment shall be designed with noise-attenuating features (e.g., enclosures) and/or located at areas (e.g., belowground) where nearby noise-sensitive land uses would not be exposed to a perceptible noise increase in their noise environment.		
3.10-2: The proposed program could result in exposure of persons to, or generation of, excessive groundborne vibration.	None required	Less than significant	Not applicable
3.10-3: The proposed program could result in a substantial permanent increase in ambient noise levels in the project vicinity	~~Implementation of~~ Implement Mitigation Measures NOISE-1 and NOISE-2	Significant	Less than significant

RB-AR 9656

Impacts	Mitigation Measures	Significance before Mitigation	Significance if Mitigation is Implemented
above levels existing without the project.			
3.10-4: The proposed program could result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.	~~Implementation of~~ <u>Implement Mitigation Measure</u> NOISE-1	Significant	Significant and unavoidable
3.10-5: For a project located within an airport land use plan area, or, where such a plan has not been adopted, in an area within 2 miles of a public airport or public use airport, implementation of the proposed program could expose people residing or working in the area to excessive noise levels.	None required	Less than significant	Not applicable
3.10-6: For a project located in the vicinity of a private airstrip, the proposed program could expose people residing or working in the project area to excessive noise levels.	None required	Less than significant	Not applicable
<u>**Cumulative Noise Impacts**</u>	<u>Implement Mitigation Measures NOISE-1 and NOISE-2</u>	<u>Significant</u>	<u>Significant and unavoidable for construction; less than significant for operation</u>
Population and Housing and Environmental Justice			
3.11-1: Implementation of the proposed program could induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure).	None required	No Impact	Not applicable
3.11-2: Implementation of the proposed program could displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere.	None required	No Impact	Not applicable

Impacts	Mitigation Measures	Significance before Mitigation	Significance if Mitigation is Implemented
3.11-3: Implementation of the proposed program could displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.	None required	No Impact	Not applicable
3.11-4: Implementation of the proposed program could affect the health or environment of minority or low income populations disproportionately.	None required	Less than significant	Not applicable
Cumulative Population and Housing and Environmental Justice Impacts	None required	No impact	Not applicable
Public Services and Recreation			
3.12-1: The proposed program could result in substantial adverse physical impacts associated with the provision of, or the need for, new or physically altered governmental fire protection facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for fire protection services.	**PS-1:** The Permittee implementing the EWMP project shall provide reasonable advance notification to the service providers such as fire, police, local businesses, home owners and residents of adjacent to and within areas potentially affected by the proposed EWMP project about the nature, extent and duration of construction activities. Interim updates should be provided to inform them of the status of the construction activities.	Significant	Less than significant
3.12-2: The proposed program could result in substantial adverse physical impacts associated with the provision of, or the need for, new or physically altered governmental police protection facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for police protection services.	None required	Less than significant	Not applicable
3.12-3: The proposed program could result in substantial adverse physical impacts associated with the provision of, or the need for, new or physically altered schools, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios,	None required	Less than significant	Not applicable

RB-AR 9658

Impacts	Mitigation Measures	Significance before Mitigation	Significance if Mitigation is Implemented
response times, or other performance objectives for schools.			
3.12-4: The proposed program could increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.	None required	Less than significant	Not applicable
3.12-5: The proposed program could include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.	None required	Less than significant	Not applicable
Cumulative Public Services and Recreation Impacts	Implement Mitigation Measure PS-1	Less than significant	Not applicable
Transportation and Circulation			
3.13-1: The proposed program could intermittently and temporarily increase traffic levels and traffic delays due to vehicle trips generated by construction workers and construction vehicles on area roadways.	**TRAF-1:** For projects that may affect traffic, implementing agencies shall require that contractors prepare a construction traffic control plan. Elements of the plan should include, but are not necessarily limited to, the following: • Develop circulation and detour plans to minimize impacts to local street circulation. Use haul routes minimizing truck traffic on local roadways to the extent possible. • To the extent feasible, and as needed to avoid adverse impacts on traffic flow, schedule truck trips outside of peak morning and evening commute hours. • Install traffic control devices as specified in Caltrans' Manual of Traffic Controls for Construction and Maintenance Work Zones where needed to maintain safe driving conditions. Use flaggers and/or signage to safely direct traffic through construction work zones. • Coordinate with facility owners or administrators of sensitive land uses such as police and fire stations, hospitals, and schools. Provide advance notification to the facility owner or operator of the timing, location, and duration of construction activities.	Significant	Less than significant

Impacts	Mitigation Measures	Significance before Mitigation	Significance if Mitigation is Implemented
3.13-2: Construction of the proposed program could potentially cause traffic safety hazards for vehicles, bicyclists, and pedestrians on public roadways, and could increase traffic hazards due to possible road wear.	None required	Less than significant	Not applicable
3.13-3: The proposed program could result in inadequate emergency access during construction.	None required.	Less than significant	Not applicable
3.13-4: Construction of the proposed program could contribute to cumulative impacts to traffic and transportation (traffic congestion, traffic safety, and emergency vehicle access).	Implement Mitigation Measure ~~Implementation of~~ TRAF-1	Significant	Less than significant
Utilities and Service Systems			
3.14-1: Implementation of the proposed program could exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board or result in the construction of new treatment facilities or expansion of existing facilities if the wastewater treatment provider has inadequate capacity to serve the proposed program.	~~None required~~ **UTIL-1:** Prior to implementation of BMPs, the implementing agency shall conduct a search for local utilities above and below ground that could be affected by the project. The implementing agencies shall contact each utility potentially affected to address relocation of the utility if necessary to ensure access and services are maintained.	Less than significant	Not applicable
3.14-2: The proposed program could require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.	None required	Less than significant	Not applicable
3.14-3: The proposed program could require new or expanded water supply resources or entitlements or require or result in the construction of new water facilities or expansion of existing facilities, the construction of which could cause	Implement Mitigation Measure UTIL-1. **UTIL-~~1~~2:** Prior to approval of BMPs, implementing agencies shall evaluate the potential for impacts to downstream beneficial uses including surface water rights. Implementing agencies shall not approve BMPs that result in preventing access to previously appropriated surface water downstream.	Significant	Less than significant

RB-AR 9660

Impacts	Mitigation Measures	Significance before Mitigation	Significance if Mitigation is Implemented
significant environmental effects.			
3.14-4: The proposed program could be served by a landfill with insufficient permitted capacity to accommodate the project solid waste disposal needs or the project could not comply with federal, state, and local statutes and regulations related to solid waste.	**UTIL-~~2~~3:** Implementing agencies shall encourage construction contractors to recycle construction materials and divert inert solids (asphalt, brick, concrete, dirt, fines, rock, sand, soil, and stone) from disposal in a landfill where feasible. Implementing agencies shall incentivize construction contractors with waste minimization goals in bid specifications where feasible.	Significant	Less than significant
3.14-5: Construction and operation of the proposed program would require additional energy use that could result in wasteful consumption, affect local and regional energy supplies, or conflict with applicable energy efficiency policies or standards.	None required	Less than significant	Not applicable
Cumulative Utilities and Service Systems Impacts	Implement Mitigation Measures UTIL-1, UTIL-2 and UTIL-3	Significant	Less than significant

Section	**Chapter 1, Introduction**
Page	**Clarification/Revision**

1-1 Text has been added regarding EWMP benefits in Chapter 1, *Introduction* as shown below.

The MS4 Permit gives Permittees the option of implementing an innovative approach to permit compliance through development of an Enhanced Watershed Management Program (EWMP). Development of an EWMP is optional, but allows Permittees a longer timeline to develop and implement Best Management Practices (BMPs) needed to achieve compliance. The EWMPS will result in additional benefits including provision of open space and parkland, habitat creation, and stormwater retention. Permittees not preparing Watershed Management Programs must achieve compliance within a year of permit adoption. The EWMPs will identify potential and priority structural and non-structural ~~Best Management Practices (~~BMPs~~)~~ within the region's stormwater collection system to improve runoff water quality. The LACFCD, along with participating Permittees, has opted to exercise this option and has submitted to the LARWQCB 12 separate Notices of Intent (NOIs) for the development of EWMPs within 12 distinct watershed groups (refer to **Figure 1-1**). Implementation of the EMWPs would be the responsibility of each Permittee and would occur following approval of the EWMPs by the LARWQCB.

1-3 Text has been added regarding EWMP preparation in Chapter 1, *Introduction* as shown below.

The timeline identified in the MS4 Permit requires that Permittees who elect to prepare Watershed Management Programs submit them ~~the EWMP~~ to the LARWQCB by June 28, 2015, in order to be in compliance with the permit conditions. The LACFCD recognizes that implementation of the EWMPs may potentially result in changes to environmental conditions. As a result, the LACFCD has prepared this Program Environmental Impact Report (PEIR) in compliance with the California Environmental Quality Act (CEQA) to provide the public and the responsible and trustee agencies with information about the potential effects on the local and regional environment associated with implementation of the EWMPs. The LACFCD will submit the PEIR to its governing body, the Los Angeles County Board of Supervisors, for approval prior to submittal of the EWMPs. The EWMPs will be submitted by each EWMP group to the LARWQCB.

1-3 Text has been added regarding EWMP preparation in Chapter 1, *Introduction* as shown below.

The PEIR analysis is not intended to focus on the site-specific construction and operation details of each management strategy and project included in the

EWMP. Rather, this PEIR serves as a first-tier environmental document that focuses on the effects of implementing the EWMPs to reduce urban runoff pollution anywhere in the watershed. The analysis assesses worst case situations where construction or operation of projects may significantly impact environmental resources whether in urban environments or previously undisturbed open space. The analysis outlines mitigation strategies to be followed by the LACFCD and other implementing agencies that rely on this PEIR to avoid or minimize impacts wherever feasible. The determinations of significance after mitigation in this PEIR will apply to the LACFCD and other implementing agencies that rely on this PEIR and the mitigation measures proposed herein.

1-11 The LACFCD acknowledges that BMPs are not limited to urban areas but may be installed throughout a watershed if necessary to achieve water quality objectives. Text has been added in Chapter 1, *Introduction* as shown below.

The analysis assesses worst case situations where construction or operation of projects may significantly impact environmental resources. The analysis also considers potential impacts and mitigation for BMPs implemented in less developed and urbanized areas of the EWMP where water quality issues may exist that are not directly linked to urbanization but are still regulated under the MS4 Permit. The analysis outlines mitigation strategies to be followed by Implementing Agencies to avoid or minimize impacts wherever feasible. Exact locations and BMP designs are not defined. Rather, the overall compliance strategy of BMP type, quantity, and geographic distribution is assessed on a cumulative, regional scale.

1-12 Table 1-1 has been revised to include the full list of commenters on the NOP. Text has been added in Chapter 1, *Introduction* as shown below.

TABLE 1-1
NOP COMMENTERS

	Date	Name	Organization
1	10/16/2014	Enrique Huerta	At-Large Stakeholder (Downey, CA)
2	10/23/2014	Enrique Huerta	At-Large Stakeholder (Downey, CA)
3	10/28/2014	George Ball	Citizen
4	10/29/2014	Jane Williams	Los Angeles County Arboretum
5	10/27/2014	Kenneth Hill	Los Angeles County Arboretum Foundation, President
6	10/23/2014	Marsha Perez	Citizen, Los Angeles County Arboretum
7	09/29/2014	Rex Frankel	Ballona Ecosystem Education Project, Director
8	10/29/2014	Rex Frankel	Ballona Ecosystem Education Project, Director
9	10/29/2014	Tom Williams	Sierra Club, Water Committee

	Date	Name	Organization
10	10/08/2014	Elizabeth Byrne Debreu	Los Angeles Arboretum Foundation
11	09/29/2014	Dianna Watson	Department of Transportation
12	09/24/2014	Deirdre West	Metropolitan Water District
13	09/25/2014	Katy Sanchez	NAHC
14	09/29/2014	Douglas Fay	Citizen
15	09/29/2014	Donna Murray	Citizen
16	09/29/2014	Joyce Dillard	Citizen
17	10/03/2014	Patricia McPherson	Grassroots Coalition
18	10/14/2014	Jane Florentinus	Citizen
19	10/29/2014	Dale Carter	Arboretum volunteer and docent
20	08/29/2014	Scott Morgan	State Clearinghouse
21	10/21/2014	L. Gayle San Miguel	Citizen
22	9/16/2014	Richard Schulhof	Los Angeles County Arboretum and Botanic Garden
23	10/28/2014	George Ball	Citizen
24	12/1/2014	William Lincoln	Citizen
25	11/11/2014	Margaret Page	Citizen
26	12/2/2014	Pat Wilmot	Citizen
27	12/17/2014	Margaux Viera	Citizen
28	10/19/2014	Sandy Snider	Citizen

Section **Chapter 2, Project Description**

Page **Clarification/Revision**

2-18 The Wildlife Road project is anticipated to be complete in early 2015 as opposed to August 2014. The correct date has been updated in Chapter 2, *Project Description*, as shown below.

Construction work on the Wildlife Road Storm Drain Improvements project was scheduled to begin March 2014 and continue through ~~August 2014~~early 2015.

2-25 The picture caption containing “Flat” gate should be changed to “flap” gate when referring to the Marie Canyon low-flow diversion system. The correction has been made in Chapter 2, *Project Description*, as shown below.

Marie Canyon Low-Flow Diversion – Fla~~t~~p Gate Diverting flow to treatment unit for bacteria

2-31 In Table 2-4, “treating stormwater and urban runoff prior to the entering into…" should read, “treating stormwater and dry-weather runoff prior to flowing into…"

The correction has been made in Chapter 2, *Project Description*, as shown below.

The Project consists of the installation of different types of biofilters at nine catch basins within the City of Malibu Right of Way, treating stormwater and dry-weather ~~urban~~ runoff prior to ~~the entering of flows~~ flowing into City-owned catch basins, which discharge to privately owned storm drain systems.

2-31	The sentence portion reading, "with potential to incorporate harvest and use systems for Malibu Drains" should be deleted. The sentence, "Three types of biofilters are contemplated; pre-manufactured and custom designed biofilters" should read, **"**Two types of biofilters are included; pre-manufactured and custom designed biofilters." The corrections have been made in Chapter 2, *Project Description*, as shown below.

The Project includes a combination of biofilters, and flow control~~, with potential to incorporate harvest and use systems for Malibu drains~~. ~~Three~~Two types of biofilters are ~~contemplated~~ included; small footprint biofilters, biofilters with volume control, and harvest and use systems.

2-37	In Table 2-4, "compliance with Malibu Creek Bacteria TMDL requirements" should be changed to "compliance with Santa Monica Bay and Malibu Creek Bacteria TMDL requirements." The corrections have been made in Chapter 2, *Project Description*, as shown below.

The project exceeds requirements to put over 300 acres of Malibu (including City Hall) into full compliance with Santa Monica Bay and Malibu Creek Bacteria TMDL requirements, providing a capture volume consistent with Los Angeles Standard Urban Stormwater Mitigation Plan requirements (assuming no upstream LID or source control measures).

Section	**Section 3.1, Aesthetics**
Page	**Clarification/Revision**
3.1-2	"Large-acreage residential properties" should be changed to large-acre and rural residential properties." The corrections have been made in Section 3.1, *Aesthetics*, as shown below.

The Malibu Creek area contains mostly undeveloped mountain areas, large-acreage and rural residential properties, and many natural streams, while Ballona Creek is predominantly channelized and highly developed with both residential and commercial properties (LARWQCB, 2011).

Section	**Section 3.2, Air Quality**
Page	**Clarification/Revision**
3.2-1	The sentence that states "The majority of the County is highly urbanized and consists of several cities, communities, and unincorporated areas" should be

changed to "The majority of the County is highly urbanized with some adjacent rural areas and consists of several cities, communities, and unincorporated areas." The corrections have been made in Section 3.2, *Air Quality*, as shown below.

The majority of the County is highly urbanized with some adjacent rural areas and consists of several cities, communities, and unincorporated areas."

Section **Section 3.3, Biological Resources**

Page **Clarification/Revision**

3.3-2 The sentence that states "These watersheds are characterized by dense residential development along the coast and less development and greater open space areas inland" should be changed to "These watersheds are characterized by dense residential development immediately along the coast and less development and greater open space areas as you move off the shoreline and head inland." The corrections have been made in Section 3.3, *Biological Resources*, as shown below.

These watersheds are characterized by dense residential development immediately along the coast and less development and greater open space areas as you move off the shoreline and head inland.

3.3-19 The text including "Malibu watershed" needs to be updated to read "Malibu Creek watershed" (this needs to be added to all instances in which "Malibu Creek Watershed" is the intent). The change has been included in Section 3.3, *Biological Resources*, as shown below.

This potential effect is most likely to occur within suburban areas, which are more prevalent in the Santa Clara River watershed, Malibu Creek watershed, and San Gabriel watershed.

3.3-20 These conditions may be most prevalent in the Santa Clara River watershed, Malibu Creek Watershed, the Upper Los Angeles River Watershed, and San Gabriel River Watershed where suburban landscape irrigation runoff has created isolated patches of riparian vegetation.

3.3-21 **Northern Coastal EWMP Watersheds *(Malibu Creek and Upper Santa Monica Bay)***

3.3-24 Groundwater seepage would continue to support the major riparian corridors in the Malibu Creek, Santa Clara, Upper Los Angeles, and San Gabriel watersheds.

3.3-26 Groundwater seepage would continue to support the major riparian corridors in the Malibu Creek, Santa Clara, Upper Los Angeles, and San Gabriel watersheds.

3.3-30 Under the cumulative impact discussion, the Mitigation Measures heading should be updated to match the mitigation measures referenced in the cumulative impact discussion.

Implementation of BMPs would ensure compliance with Section 402 of the CWA that requires MS4s to reduce dry-weather flows in this region. Although compliance with Section 402 of the CWA may result in a reduction of wetlands in the region supported by surface flow, the infiltration of surface water into the ground would offset the potential impact, resulting in a less than significant cumulative impact to biological resources in the region.

Mitigation Measures: ~~None required~~ Implement Mitigation Measures BIO-1 through BIO-10.

Significance Determination: Less than significant

Section **Section 3.5, Geologic Resources**

Page **Clarification/Revision**

3.5-28 Mitigation Measure GEO-1 is referred to as reducing cumulative impacts in the cumulative impacts discussion but its implementation is not listed under the Mitigation Measures heading for cumulative impacts. The change has been included in Section 3.5, *Geological Resources*, as shown below.

Mitigation Measures:

Implement Mitigation Measure GEO-1.

GEO-2: Prior to installing BMPs designed to recharge the local groundwater supplies, the Implementing Agency shall notify local groundwater managers, including the Upper Los Angeles River Area Water Master, the Water Replenishment District of Southern California, or the San Gabriel Water Master as well as local water producers such as local municipalities and water companies. The Implementing Agency shall coordinate BMP siting efforts with groundwater managers and producers to mitigate high groundwater levels while increasing local water supplies.

Section **Section 3.7, Hazards and Hazardous Materials**

Page **Clarification/Revision**

3.7-17 Mitigation Measure HAZ-1 has been modified to ensure that vector control plans are incorporated into BMP maintenance plans. The change has been included in Section 3.7, *Hazards and Hazardous Materials*, as shown below.

HAZ-1: Implementing agencies shall prepare and implement maintenance practices that include periodic removal and replacement of surface soils and media that may accumulate constituents that could result in further migration of constituents to sub-soils and groundwater. A BMP Maintenance Plan shall be prepared by Implementing Agencies upon approval of the BMP projects that identifies the frequency and procedures for removal and/or replacement of accumulated debris, surface soils and/or media (to depth where constituent concentrations do not represent a hazardous conditions and/or have the potential to migrate further and impact groundwater) to avoid accumulation of hazardous concentrations and the potential to migrate further to sub-soils and groundwater. The Maintenance Plan shall include vector control requirements. The BMP Maintenance Plan may consist of a general maintenance guideline that applies to several types of smaller distributed BMPs. For smaller distributed BMPs on private property, these plans may consist of a maintenance covenant that includes requirements to avoid the accumulation of hazardous concentrations in these BMPs that may impact underlying sub-soils and groundwater. Structural BMPs shall be designed to prevent migration of constituents that may impact groundwater.

3.7-23 Mitigation Measure HAZ-3 has been incorporated into the cumulative impact discussion and listed mitigation measures. The change has been included in Section 3.7, *Hazards and Hazardous Materials*, as shown below.

Cumulative Impact Discussion

Structural (Regional, Centralized, and Distributed) BMPs

BMPs would be constructed throughout the watersheds. Most of the distributed BMPs would be small in scale and would not result in cumulatively significant impacts due to increased hazards from construction or operation. However, the combination of BMPs throughout the region would change the flow paths of stormwater and urban runoff that currently occurs in the region, resulting in the retention of pollutants generally within the soil of the BMPs that use soil for filtration and retention. Mitigation Measure HAZ-1 would reduce the potential for concentrations of these pollutants to result in localized hazardous conditions at individual BMP locations. Mitigation Measure HAZ-2 would mitigate the accumulation of contaminants in soil at BMPs. For all BMPs within an airport land use area, Mitigation Measure HAZ-3 would require them to be compatible with FAA criteria. BMPs within the minimum separation criteria would trigger collaboration with the airport regarding potential wildlife hazard mitigation. Cumulatively, throughout the region, the retention and treatment of pollutants within each watershed and the reduction of pollutant loading in waterways will substantially benefit water and sediment quality of the region's habitats, rivers, and beaches. Therefore, the project's potential contribution to cumulative effects on hazards and hazardous materials is considered beneficial.

Mitigation Measures:

Implement Mitigation Measures HAZ-1, ~~and~~ HAZ-2 and HAZ-3.

Section	**Section 3.8, Hydrology and Water Quality**
Page	**Clarification/Revision**
3.8-4	The sentence that includes, "in the urbanized areas along Santa Monica Bay" should be changed to "in the urbanized areas along central and south Santa Monica Bay." The corrections have been made in Section 3.8, *Hydrology and Water Quality*, as shown below. In the urbanized areas along central and south Santa Monica Bay, the streams have been channelized.
3.8-6	The sentence containing, "address bacteria loading" should be changed to "prevent possible bacteria loading." The corrections have been made in Section 3.8, *Hydrology and Water Quality*, as shown below. Key BMP strategies are to ~~address~~ prevent possible bacteria loading to the beaches and inland waters, but because of the lower development and largely decentralized infrastructure, LFDs are not the only strategy to address this priority issue.
3.8-27	Los Angeles County is part of a General Exception of ASBS discharge prohibitions. The corrections have been made in Section 3.8, *Hydrology and Water Quality*, as shown below. In ~~March~~ 2012, the SWRCB adopted a General Exception and its amendments (Resolutions 2012-0012 and 2012-0031), ~~(SWRCB, 2012b)~~, which exempts certain listed dischargers including Los Angeles County from certain Ocean Plan ASBS discharge prohibitions. The conditions in the General Exception are designed to protect beneficial uses of the receiving water, yet allow continuation of essential public services, such as flood control, slope stability, erosion prevention, maintenance of the natural hydrologic relationship between terrestrial and marine ecosystems, public health and safety, public recreation and coastal access, commercial and recreational fishing, navigation, and essential military operations (national security) ~~(SWRCB, 2012b)~~.
3.8-27	The following sentence required clarification regarding ASBS dischargers. The corrections have been made in Section 3.8, *Hydrology and Water Quality*, as shown below. The General Exception designates the LACFCD, the City of Malibu, the California Department of Parks and Recreation and the California Department of Transportation (Caltrans) as dischargers to ASBS 24, Laguna Point to Latigo Point.~~, and the California.~~

3.8-27 Within the sentence containing "provided that it," "it" should be changed to "the discharge:" The corrections have been made in Section 3.8, *Hydrology and Water Quality*, as shown below.

The General Exception authorizes these dischargers to discharge into ASBS 24, provided that ~~it~~ the discharge:

3.8-29 Text has been added under the Local Regulations header to describe the status of Salt and Nutrient Management Plans in the region. The corrections have been made in Section 3.8, *Hydrology and Water Quality*, as shown below.

Salt and Nutrient Management Plans

In February 2009, the State Water Resources Control Board adopted Resolution No. 2009-0011, which established a statewide Recycled Water Policy. The Recycled Water Policy encourages increased use of recycled water and local stormwater, together with enhanced water conservation. It also requires local water and wastewater entities, together with local salt and nutrient (S/N) contributing stakeholders to develop Salt and Nutrient Management Plans (SNMPs) for each groundwater basin in California in a way that optimizes recycled water use while ensuring protection of groundwater supply and beneficial uses, agricultural beneficial uses, and human health. The Recycled Water Policy encourages development of regional S/N management strategies rather than relying on the past local RWQCB approach of imposing requirements on individual recycled water projects with no recognition of the relative and cumulative impacts when all projects and loading sources are considered regionally. Accordingly, the SNMP is intended to provide support and justification for elimination of separate anti-degradation analyses and individual site monitoring requirements for proposed recycled water projects and so that the vast majority of proposed recycled water projects may be streamlined. The intent of this streamlined permitting process is to expedite the implementation of recycled water projects in a manner that complies with State and Federal water quality laws. The SNMPs will be approved by the Regional Water Quality Control Boards (RWQCBs).

The Central and West Coast Basins SNMP was developed by the Water Replenishment District of Southern California (WRD) as the lead agency. The SNMP was submitted to LARWQCB for approval in November 2014, and was approved as a Basin Plan Amendment on February 12, 2015. The Upper Los Angeles River Area (ULARA) SNMP is currently being prepared by the ULARA Watermaster. An SNMP for the Santa Clarita River Valley East Subbasin is being prepared by a group of local stakeholders comprised of Castaic Lake Water Agency (CLWA), City of Santa Clarita, Los Angeles County Flood Control District (LACFCD), Newhall County Water District (NCWD), San Gabriel & Lower Los Angeles Rivers and Mountains Conservancy, Sanitation Districts of Los Angeles County (SDLAC) and Valencia Water Company (VWC).

3.8-30 Text has been added regarding the Los Angeles Integrated Regional Water Management Plan in Section 3.8.2, *Hydrology and Water Quality, Regulatory Setting.*

Integrated Regional Water Management Plan

The 2013 Integrated Regional Water Management Plan (IRWMP) Update, approved by the Los Angeles County Board of Supervisors in 2014, was formulated to define a clear vision and direction for the sustainable management of water resources in the Greater Los Angeles County (GLAC) Region. The IRWMP, which is chaired by the Los Angeles County Flood Control District (LACFCD), covers the GLAC Region, an area of approximately 2,058 square miles, spanning from Ventura County to Orange County and from the coast to the San Gabriel Mountains. The IRWMP region includes the Los Angeles River Watershed, the Santa Monica Bay Watershed, the Dominguez Channel Watershed, and the San Gabriel River Watershed, overlapping with four of the five watersheds covered in the EWMP. Several subcommittees were involved in the IRWMP development process, covering a range of both project objectives and physical areas, to ensure successful regional collaboration. The objectives of the 2013 IRWMP Update include: reducing the Region's reliance on imported water; comply with water quality regulations by improving the quality of urban runoff, stormwater and wastewater; protect, restore and enhance natural processes and habitats; increase watershed friendly recreational space for all communities; reduce flood risk in flood prone areas by either increasing protection or decreasing needs using integrated flood management approaches; and adapt to and mitigate against climate change vulnerabilities.

3.8-36 Mitigation Measure HYDRO-3 has been revised as follows in Section 3.8, *Hydrology and Water Quality*.

HYDRO-3: Prior to the installation of an infiltration BMP, the Permittee shall conduct a regulatory database review for contaminated groundwater sites within a quarter mile of the proposed infiltration facility. The review shall include locations of on-site wastewater treatment systems. The Permittee shall identify whether any contaminated groundwater plumes or leach fields are present and whether coordination with the local and state environmental protection overseeing agency and responsible party is warranted prior to final design of infiltration facility.

3.8-37 Mitigation Measure HYDRO-4 has been added as follows in Section 3.8, *Hydrology and Water Quality*.

Structural (Regional, Centralized, and Distributed) BMPs

The proposed structural BMPs would be designed to minimize off-site discharge of urban runoff pollutants including siltation and sedimentation. Many of the structural BMPs would include on-site infiltration of stormwater runoff which would also be effective in minimizing erosion or transport of sedimentation into receiving waters. Through increased infiltration prior to discharge into receiving waters, flows within existing streams or rivers would receive reduced stormwater flow volumes thereby decreasing flow energies. Furthermore, as part of implementation of Mitigation Measure HYDRO-4, implementing agencies would design BMP discharge locations to minimize any hydromodification impacts including erosion and scour. As a result, the potential for erosion or siltation within existing streams or rivers would be reduced and the potential impact less than significant.

Mitigation Measures: ~~None required~~

HYDRO-4: Prior to approving a structural BMP, the implementing agencies shall conduct an evaluation of the potential hydromodification impacts of the project. The evaluation shall recommend design measures necessary to prevent or minimize any identified impacts, including flooding, erosion and/or scour. Design measures could include velocity dissipaters and bank re-enforcement components. Implementing agencies shall include these measures in project designs.

3.8-38 The following sentence should be revised from "Drainage patterns would change through implementation of these non-structural institutional BMPs, implementation of LID strategies, which include on-site infiltration, that would minimize off-site flows as well as the potential for erosion and off-site siltation" to "Drainage patterns would change through implementation of these non-structural institutional BMPs. However, implementation of LID strategies, which include on-site infiltration, would minimize off-site flows as well as the potential for erosion and off-site siltation." The corrections have been made in Section 3.8, *Hydrology and Water Quality*, as shown below.

Drainage patterns would change through implementation of these non-structural institutional BMPs~~,~~. ~~h~~However implementation of LID strategies, which include on-site infiltration, ~~that~~ would minimize off-site flows as well as the potential for erosion and off-site siltation.

3.8-39 The sentence, "The structural BMPs would also provide improvements to water quality of receiving waters" should read, "The structural BMPs would also provide protections to water quality of receiving waters." The corrections have been made in Section 3.8, *Hydrology and Water Quality*, as shown below.

"The structural BMPs would also provide ~~improvements~~ protections to water quality of receiving waters."

3.8-39 The sentence containing, "BMPs but would be designed to improve water quality and reduce stormwater flow volumes" should read, "BMPs but would be designed to improve runoff water quality and reduce stormwater flow volumes." The change has been included in Section 3.8, *Hydrology and Water Quality*, as shown below.

"BMPs but would be designed to improve runoff water quality and reduce stormwater flow volumes"

Section	Section 3.9, Land Use and Agriculture
Page	**Clarification/Revision**

3.9-1 The sentence, "The majority of the County is highly urbanized and consists of several cities, communities and unincorporated areas" be changed to "The majority of the County is highly urbanized with some adjacent rural areas and consists of several cities, communities and unincorporated areas." The change has been included in Section 3.9, *Land Use and Agriculture*, as shown below.

The majority of the County is highly urbanized with some adjacent rural areas and consists of several cities, communities and unincorporated areas."

3.9-1 The sentence, "The EWMP agencies have no jurisdiction over the land that is owned by the State of California (i.e., California Department of Fish and Wildlife, the State Lands Commission, and the California Department of Transportation) or the U.S. Government" should be revised to add the California Department of Parks and Recreation and the National Parks Service. The change has been included in Section 3.9, *Land Use and Agriculture*, as shown below.

The EWMP agencies have no jurisdiction over the land that is owned by the State of California (i.e., California Department of Parks and Recreation, California Department of Fish and Wildlife, the State Lands Commission, and the California Department of Transportation) or the U.S. Government (i.e., National Parks Service).

3.9-28 Low Impact Development (LID) standards are required to be in place within the jurisdictions of Permittees that have chosen EWMPs as their form of compliance with the MS4 Permit. Therefore, a statement regarding LID ordinance requirements should be added. Page 3.9-28 of the Program EIR has been updated to reflect this information as shown below.

Other Cities LID

Various other cities within the County also have LID standards or guidance. The revised MS4 Permit states that permittees that choose to collaborate on the development of a Watershed Management Program (or preparers of an EWMP) shall demonstrate that there are LID ordinances in place and/or have commenced development of a LID ordinance meeting the requirements of this the MS4's Planning and Land Development Program within 60 days of the MS4 effective date (December 28, 2012) and have a draft ordinance within six months of the effective date. The goals, objectives, and content of the LID document are similar to that of the County and City of Los Angeles, and are not referenced here.

3.9-36 "Creek" needs to be added to all instances in which "Malibu Creek Watershed" is the intent. The change has been included in Section 3.9, *Land Use and Agriculture*, as shown below.

Only small areas of Designated Prime, Unique and Important Farmlands exist within the EWMP area, limited to the Santa Clara and Malibu Creek Watersheds.

3.9-38 The statement, "EWMPs would be implemented in already established urban areas" be revised to read, "EWMPs would be implemented in already established developed areas." The change has been included in Section 3.9, *Land Use and Agriculture*, as shown below.

EWMPs would be implemented in already established urban developed areas.

Section	Section 3.14, Utilities and Service Systems
Page	**Clarification/Revision**

3.14-14 Mitigation Measure UTIL-1 has been added to the project. The change has been included in Section 3.14, *Utilities and Service Systems*, as shown below.

Construction requiring ground disturbance could encounter buried utilities including water supply infrastructure. As part of Mitigation Measure UTIL-1, ~~the project design,~~ Implementing Agencies ~~would be required to identify the potential for underground utilities and determine whether they would need to be relocated to accommodate the BMP. As standard construction practices require, Implementing Agencies~~ would conduct an underground utility search prior to excavation and would coordinate with utility providers in advance to ensure no disruption in services to the utility customers. With implementation of UTIL-1, i~~I~~mpacts to water supply infrastructure would be less than significant.

3.14-14 Mitigation Measure UTIL-1 has been added to the project. The change has been included in Section 3.14, *Utilities and Service Systems*, as shown below.

Mitigation Measures: ~~None required~~

UTIL-1: Prior to implementation of BMPs, the implementing agency shall conduct a search for local utilities above and below ground that could be affected by the project. The implementing agencies shall contact each utility potentially affected to address relocation of the utility if necessary to ensure access and services are maintained.

3.14-16 Mitigation Measure UTIL-1 also applies to Impact 3.14-3. The change has been included in Section 3.14, *Utilities and Service Systems*, as shown below.

Construction requiring ground disturbance could encounter buried utilities including water supply infrastructure. As part of Mitigation Measure UTIL-1, ~~the project design,~~ Implementing Agencies ~~would be required to identify the potential for underground utilities and determine whether they would need to be relocated to accommodate the BMP. As standard construction practices require, Implementing Agencies would~~ conduct an underground utility search prior to excavation and would coordinate with utility providers in advance to ensure no disruption in services to the utility customers. With implementation of UTIL-1, i~~I~~mpacts to water supply infrastructure would be less than significant.

3.14-16 The sentence containing “Malibu watershed where surface water diversions…” should be updated to include “Malibu Creek watershed.” The change has been included in Section 3.14, *Utilities and Service Systems*, as shown below.

In areas with natural unimproved streams, such as in the Santa Clara River watershed and Malibu Creek watershed where surface water diversions may be more common, stormwater flows are conveyed downstream quickly.

3.14-16 The introduction of the new Mitigation Measure UTIL-1 impacts the numbering of the existing Mitigation Measure UTIL-1. The change has been included in Section 3.14, *Utilities and Service Systems*, as shown below.

These flows would not be affected by infiltration BMPs. However, implementation of **Mitigation Measure UTIL-~~1~~2** would ensure that downstream water rights would not be affected by upstream diversions.

3.14-17 Mitigation Measure UTIL-1 also applies to Impact 3.14-3. The change has been included in Section 3.14, *Utilities and Service Systems*, as shown below.

Mitigation Measure: Implement Mitigation Measure UTIL-1.

UTIL-~~1~~2: Prior to approval of BMPs, implementing agencies shall evaluate the potential for impacts to downstream beneficial uses, including surface water rights. Implementing agencies shall not approve BMPs that result in preventing access to previously appropriated surface water downstream.

3.14-18 The introduction of the new Mitigation Measure UTIL-1 impacts the numbering of the existing Mitigation Measure UTIL-2. The change has been included in Section 3.14, *Utilities and Service Systems*, as shown below.

Development of a waste management or recycling plan (**Mitigation Measure UTIL-~~2~~3**) would reduce this impact.

3.14-18 The statement that includes, “it is feasible to recycle or reuse at least 50 percent or construction” should be changed to “it is feasible to recycle or reuse at least 50 percent of construction.” The change has been included in Section 3.14, *Utilities and Service Systems*, as shown below.

According the County of Los Angeles, except under unusual circumstances, it is feasible to recycle or reuse at least 50 percent o~~r~~f construction and demolition debris (RWQCB, 2008).

3.14-18 The introduction of the new Mitigation Measure UTIL-1 impacts the numbering of the existing Mitigation Measure UTIL-2. The change has been included in Section 3.14, *Utilities and Service Systems*, as shown below.

Mitigation Measure:

UTIL-~~2~~3: Implementing agencies shall encourage construction contractors to recycle construction materials and divert inert solids (asphalt, brick, concrete, dirt, fines, rock, sand, soil, and stone) from disposal in a landfill, where feasible.

Implementing agencies shall incentivize construction contractors with waste minimization goals in bid specifications where feasible.

3.14-19 New Mitigation Measure UTIL-1 applies to Impact 3.14-5. The change has been included in Section 3.14, *Utilities and Service Systems*, as shown below.

Construction requiring ground disturbance could encounter buried or overhead utilities including electric or gas conveyance infrastructure. As part of Mitigation Measure UTIL-1, ~~the project design,~~ Implementing Agencies ~~would be required to identify the potential for underground utilities and determine whether they would need to be relocated to accommodate the BMP. As standard construction practices require, Implementing Agencies~~ would conduct an underground utility search prior to excavation and would coordinate with utility providers in advance to ensure no disruption in services to the utility customers. Impacts to electric or gas infrastructure would be less than significant.

3.14-20 New Mitigation Measure UTIL-1 applies to Impact 3.14-5. The change has been included in Section 3.14, *Utilities and Service Systems*, as shown below.

Mitigation Measures: ~~None required~~ Implement Mitigation Measure UTIL-1.

3.14-21 New Mitigation Measure UTIL-1 applies to cumulative impacts. The change has been included in Section 3.14, *Utilities and Service Systems*, as shown below.

The proposed program consists of improvements to existing storm drainage facilities as well as new storm drain facilities within the EWMP program areas. This PEIR contains an analysis on the potential environmental effects that might result from the installation of storm drainage facilities identified in the proposed EWMPs. **Mitigation Measure UTIL-1** would require the implementing agency to search for local utilities that could be affected by the project, thereby avoiding impacts to existing utilities. Cumulative impacts to storm drain facilities would be less than significant.

Impacts to the existing water supplies are anticipated to be beneficial as a result of the stormwater and non-stormwater runoff infiltration and conservation BMPs implemented across the EWMP areas. **Mitigation Measure UTIL-~~1~~2** would require that implementing agencies evaluate impacts to downstream beneficial uses, including surface water rights prior to BMP approval. No adverse cumulative impacts related to new or expanded water supply resources or entitlements would occur.

Construction and operation of the structural BMPs would generate solid waste; however, landfills serving the program area are expected to have sufficient capacity to accommodate the amount of waste generated. Development of a waste management or recycling plan (**Mitigation Measure UTIL-~~2~~3**) would reduce this impact. Disposal of the solid waste generated during construction and operation would comply with all pertinent regulations and statutes. All other projects implemented in the area would also be required to comply with federal, state, and local solid waste regulations and statutes. Cumulative impacts would be less than significant.

3.14-21 New Mitigation Measure UTIL-1 applies to cumulative impacts. The change has been included in Section 3.14, *Utilities and Service Systems*, as shown below.

Mitigation Measures: Implement **Mitigation Measure UTIL-1**, ~~and~~ **Mitigation Measure UTIL-2**, and **Mitigation Measure UTIL-3.**

Section **Chapter 4, Cumulative Impacts**

Page **Clarification/Revision**

4-4 In Table 4.1, the timeline for Wildlife Road should be changed from "August 2014" to "early 2015." The change has been included in Chapter 4, *Cumulative Impacts*, as shown below.

5	Wildlife Road Storm Drain Improvements	Distributed	North Santa Monica Bay Coastal Watersheds	Construction was scheduled to begin March 2014 and continue through ~~August 2014~~early 2015

4-4 In Table 4.1, the timeline for Broad Beach Biofiltration Project should be changed to "early 2015." The change has been included in Chapter 4, *Cumulative Impacts*, as shown below.

14	Broad Beach Biofiltration Project	Centralized	North Santa Monica Bay Coastal Watersheds	~~June 2014 (Completion of Construction)~~Early 2015

Section **Chapter 6, Alternatives**

Page **Clarification/Revision**

6-5 "Reduce pollutants from dry- and wet-weather urban runoff" be changed to "reduce pollutants from dry- and wet-weather runoff." The change has been included in Chapter 6, *Alternatives*, as shown below.

The No Program Alternative would not meet the EWMP objective to collaborate among agencies across the watershed to promote more cost-effective and multi-beneficial water quality improvement projects, but it would meet the other objectives to remove or reduce pollutants from dry- and wet-weather ~~urban~~ runoff and reduce the impact of stormwater and non-stormwater on receiving water quality through implementation of structural and non-structural BMPs.

6-13 "Pollutants from dry- and wet-weather urban runoff in a cost-effective manner" should be changed to "pollutants from dry- and wet-weather runoff in a cost-effective manner." The change has been included in Chapter 6, *Alternatives*, as shown below.

	Proposed Program	No Project	Non-Structural BMPs Only	Distributed Structural/ Non-Structural BMPs Only
Project Objectives				
To collaborate among agencies (Permittee jurisdictions) across the watershed to promote more cost-effective and multi-beneficial water quality improvement projects to comply with the MS4 Permit.	Yes	No	No	No
To develop watershed-wide EWMPs that will, once implemented, remove or reduce pollutants from dry- and wet-weather ~~urban~~ runoff in a cost-effective manner.	Yes	No	No	No

Section **Chapter 9, References**

Page **Clarification/Revision**

9-16 The Basin Plan for the Santa Ana Regional Water Quality Control Board is mistakenly included as a reference on page 9-16. The correct reference has been updated in Chapter 9, *References*, as shown below.

California Regional Water Quality Control Board, ~~Santa Ana~~ Los Angeles Region - 1994~~5~~ Water Quality Control Plan ~~for the Santa Ana River~~ Los Angeles Region ~~Basin~~ (Basin Plan) ~~updated in February 2008~~ June 1994.

Section **Appendix B, Scoping Report and Comment Letters (Attachment 9: Public Comment Letters Received)**

Page **Clarification/Revision**

N/A The following eight NOP comment letters have been added to the end of the group of letters included.

21	10/21/2014	L. Gayle San Miguel	Citizen
22	9/16/2014	Richard Schulhof	Los Angeles County Arboretum and Botanic Garden

23	10/28/2014	George Ball	Citizen
24	12/1/2014	William Lincoln	Citizen
25	11/11/2014	Margaret Page	Citizen
26	12/2/2014	Pat Wilmot	Citizen
27	12/17/2014	Margaux Viera	Citizen
28	10/19/2014	Sandy Snider	Citizen

Appendix A
Additional NOP Public Comment Letters Received

2195 Sherwood Road
San Marino, CA 91108
October 28, 2014

Ms. Genevieve Osmena
County of Los Angeles Department of Public Works
Project Management Division II
900 South Fremont, 5th Floor
Alhambra, CA 91803

Dear Ms. Osmena,

The purpose of this letter is to register my support for the restoration of Baldwin Lake as part of the Enhanced Watershed Management Plan (EWMP) for the Rio Hondo Watershed. The lake has experienced significant deterioration in recent decades as a consequence of surface run-off and its very future is very much at risk. Establishing the restoration of Baldwin Lake as a priority project as part of the EWMP will ensure its status as an important ecological and historic asset for generations to come.

Many thanks for attention to this matter.

Very truly yours,

George L. Ball

George Bell
2195 Sherwood Rd.
San Marino, CA 91108

SANTA CLARITA CA 913
28 OCT 2014 PM 3 L

Ms. Genevive Osmena
County of Los Angeles Department of Public Works
~~Project Management Division~~ II Watershed Management
900 South Fremont, 5th Floor
Alhambra, CA 91803

91803133100

Genevieve Osmena

From: Genevieve Osmena
Sent: Monday, December 22, 2014 9:30 AM
To: 'Lincoln, Bill'
Subject: RE: Baldwin Lake

Mr. Lincoln,

Thank you for your email regarding Baldwin Lake at the LA Arboretum. I apologize for responding so late. I have added your contact information to the stakeholder list for the Rio Hondo/San Gabriel River Water Quality Group to receive notifications of future stakeholder meetings regarding the group's Enhanced Watershed Management Program (EWMP). We anticipate the next stakeholder meeting to occur in early to mid-Spring of next year to discuss the progress of the EWMP process with interested stakeholders. I have also forwarded your email to the group members for their consideration as they continue to discuss and develop their EWMP plan.

Thanks again for your comments.

Genevieve Osmeña, P.E.
County of Los Angeles Department of Public Works
East Unincorporated County MS4 Permit Compliance
Watershed Management Division
(626) 458-3978
gosmena@dpw.lacounty.gov

From: Lincoln, Bill [mailto:blincoln@atkaudiotek.com]
Sent: Monday, December 01, 2014 4:40 PM
To: Genevieve Osmena
Subject: Baldwin Lake

Dear Ms. Osmena,

I am writing you as an advocate for the Enhanced Watershed Management Plan for the Rio Hondo Watershed to include Baldwin Lake. In addition to its function for water conservation/management, Baldwin Lake is integral to the history of the region and a centerpiece of the Los Angeles Arboretum which is a major County attraction.

Thank you.

William Lincoln
Chief Financial Officer
ATK AudioTek
Office; 661-705-3700
Fax: 661-705-3707

I am writing in support of the restoration of Baldwin Lake at the Los Angeles Arboretum. I have loved The Arboretum as a child, as a parent, and now as a volunteer docent. Thousands of visitors consider the lake an important reason to visit the garden, and it is a critical part of the environment of many of the birds and other animals that call The Arboretum home. On history tours, children learn how important Baldwin Lake has been since its earliest history, when Tongva Indians called their home *Aleupkigna* or *Place of Many Waters.* Our visitors have expressed dismay and concern as the water levels have declined and the quality of the water deteriorated. Please know how important Baldwin Lake is to many in our community and beyond, and take advantage of the opportunity now available to restore the health and beauty of Baldwin Lake.

Sincerely,
Margaret Page

Genevieve Osmena

From: Osmena, Genevieve
Sent: Tuesday, October 28, 2014 11:22 AM
To: 'gaylesanmig@aol.com'
Subject: RE: Baldwin Lake at the Arboretum

Ms. San Miguel,

Thank you for your email regarding Baldwin Lake at the LA Arboretum. I have added your contact information to the stakeholder list for the Rio Hondo/San Gabriel River Water Quality Group to receive notifications of future stakeholder meetings regarding the group's Enhanced Watershed Management Program (EWMP). We anticipate the next stakeholder meeting to occur in early to mid-Spring of next year to discuss the progress of the EWMP process with interested stakeholders. I have also forwarded your email to the group members for their consideration as they continue to discuss and develop their EWMP plan.

Thanks again for your comments.

Genevieve Osmeña, P.E.
County of Los Angeles Department of Public Works
East Unincorporated County MS4 Permit Compliance
Watershed Management Division
(626) 458-3978
gosmena@dpw.lacounty.gov

From: gaylesanmig@aol.com [mailto:gaylesanmig@aol.com]
Sent: Tuesday, October 21, 2014 8:57 AM
To: Osmena, Genevieve
Subject: Baldwin Lake at the Arboretum

I am writing this note to ask you to do what you can to help restore
Baldwin Lake in the LA County Arboretum. The historical center of the property
is in need of dredging and repair work to the sides. The lake has a water supply that is covered with
debris and water level has dropped from the original 18 feet to 18 inches.
We are losing too many historical places in the country today. Please support any projects that
will help restore the lake. The Baldwin Queen Anne Cottage and the lake are important draws for visitors from all over the world.

Thank you for your time,
L.Gayle San Miguel
2132 Highland Oaks Dr.
Arcadia, Ca.

The Arboretum
LOS ANGELES COUNTY ARBORETUM & BOTANIC GARDEN

September 16, 2014

Ms. Genevieve Osmena
County of Los Angeles Department of Public Works
Project Management Division II
900 South Fremont, 5th Floor
Alhambra, CA 91803

Dear Ms. Osmena:

On behalf the Arboretum community, I propose that the re-engineering of Arcadia's Baldwin Lake be included as an important priority in the Rio Hondo/San Gabriel River Enhanced Watershed Management Plan. Located within the Los Angeles County Arboretum, Baldwin Lake is a magnificent 19th century landmark that began as a naturally occurring wetland along the Raymond Fault. The lake was created by Elias Jackson Baldwin in the 1880s to serve as the centerpiece of the Baldwin Ranch, one of the largest agricultural enterprises in the region.

In the early 1950s, Baldwin Lake was repurposed to serve as the collection basin for Arcadia's urban watershed to the north, today receiving runoff from nearly 200 acres of mostly paved surfaces. During the last storm event in our area, this past March, over three million gallons of water moved into the lake with little or no bio-filtration. Within 24 hours of the start of the storm, a slick of oil across the water's surface became an almost dominant feature.

In sum, Baldwin Lake and its connecting systems were never designed to serve a very significant collection function for a large urban watershed. Consequently, annual delivery of petrochemicals and other contaminants has created a dysfunctional drainage as well as a degraded aquatic ecosystem in a highly public location of scenic, educational and historic value. A 2012 study of water and sediments found significant deposits of oil and tar, toxic pesticide residues, and bacteria counts that exceeded the limits for recreational water.

Mitigating these issues promises the ideal multi-benefit regional project. Please note the following points:

1. Baldwin Lake, with a current capacity of just under 4 million gallons, if returned to its original depth, would provide over twelve million gallons in storage capacity. With modification, it could also serve as a significant infiltration basin for aquifer recharge.

2. Tule Pond to the north, a canal roughly 600ft. in length, is the point of entry for the urban watershed, feeding directly into Baldwin Lake. Its size, shape and location offer great potential for water quality enhancement through modification as a bioswale.

3. The Lake is a key educational, scenic, wildlife, and historic resource serving over 330,000 visitors per year, including over 16,000 elementary school students on field trips. The project would provide an unrivaled opportunity to educate a broad public about regional water management, home and community water conservation, and the role of the Raymond Basin and the other key water resources that sustain us.

4. The Arboretum Foundation, the County's non-profit partner in operating the Arboretum, stands ready to help leverage public dollars to realize the site's unique educational potential.

Also, please note that in the stated ranking criteria for proposed multi-benefit regional projects, Baldwin Lake scores highly in 5 of the 6 categories. It is publicly owned, offers a water body four acres in size, is within a potential surrounding catchment area of over 100 acres, cleanses runoff that likely exceeds allowances, and perhaps most importantly, offers very substantial multi-use opportunities and connectivity. I urge your consideration of Baldwin Lake as a key project within the Rio Hondo/Upper San Gabriel Enhanced Watershed Management Plan.

I thank you for your time and consideration.

Sincerely,

Richard Schulhof, CEO
Los Angeles County Arboretum and Botanic Garden
301 North Baldwin
Arcadia, CA 91007
richard.schulhof@arboretum.org
626.821.3231
www.arboretum.org

cc. Mr. Gregg BeGell

Genevieve Osmena

From: Osmena, Genevieve
Sent: Tuesday, October 28, 2014 11:12 AM
To: 'Sandy Snider'
Subject: RE: Arboretum's Baldwin Lake as part of Rio Hondo Watershed Management plans

Ms. Snider,

Thank you for your email regarding Baldwin Lake at the LA Arboretum and I apologize for not providing a response earlier. You convey a wealth of experience and a sense of history with the Arboretum which I'm sure is valuable in your leadership role with the volunteer group. I have added your contact information to the stakeholder list for the Rio Hondo/San Gabriel River Water Quality Group to receive notifications of future stakeholder meetings regarding the group's Enhanced Watershed Management Program (EWMP). We anticipate the next stakeholder meeting to occur in early to mid-Spring of next year to discuss the progress of the EWMP process with interested stakeholders. I have also forwarded your email to the group members for their consideration as they continue to discuss and develop their EWMP plan.

Thanks again for your comments.

Genevieve Osmeña, P.E.
County of Los Angeles Department of Public Works
East Unincorporated County MS4 Permit Compliance
Watershed Management Division
(626) 458-3978
gosmena@dpw.lacounty.gov

From: Sandy Snider [mailto:ssnider626@charter.net]
Sent: Sunday, October 19, 2014 5:07 PM
To: Osmena, Genevieve
Subject: Arboretum's Baldwin Lake as part of Rio Hondo Watershed Management plans

Dear Ms. Osmena,

I write in support of the inclusion of the Arboretum's Baldwin Lake in Public Work's ongoing efforts to create an Enhanced Watershed Management Plan for the Rio Hondo watershed in which the Arboretum resides. I understand that many projects must be considered, but Baldwin Lake can be a jewel in this effort, perhaps even part of the Emerald Necklace one day.

I enjoyed a 35 year career as a County employee, all of those years spent at the Arboretum as the History Curator. My Master's thesis centered on land use by entrepreneur Elias Jackson "Lucky" Baldwin, founder of the City of Arcadia and premier owner of the land now known as the Arboretum. Lucky Baldwin found a sag pond on his property upon purchase in 1875, but it was already a geologic feature that worked well for Baldwin as a holding reservoir for his vast irrigation system. Baldwin acquired water rights to half of each Big and Little Santa Anita Canyon waters to supplement the natural artesian sources that came with Rancho Santa Anita, and his irrigation designs were noted and reportedly photographed by the US Geologic Service in the early 1890's. At approximately this same time, Baldwin dredged and deepened the natural basin now called Baldwin Lake, taking it to some 15-18 feet in depth. Runoff from multiple natural streams were channeled into Baldwin Lake, and outflow went south and east into orchards and vineyards. From there, waters travelled their current route through the Rio Hondo watershed, eventually reaching Whittier Narrows (where

Baldwin owned numerous parcels of adjacent land). Lucky Baldwin created an estate garden of note during his ownership years (1875-1909), and Baldwin Lake with its granite boulder-topped retaining walls was a popular feature. Period postcards document this era, as do oral histories and other primary sources of note. It is rare to find such pristine land largely undeveloped in Southern California, but Baldwin's daughters ensured that the land remain intact, and in 1947 the County of Los Angeles purchased the remaining acreage of Baldwin Ranch for public purposes.

I wrote the National Register of Historic Places nomination for Baldwin's Queen Anne Cottage and matching Coach Barn in 1980, and it was with significant urging from the State Office of Historic Preservation that the four-acre Baldwin Lake and surrounding landscape were included in this application. The entire 9-acre parcel with two structures and the entire Baldwin Lake became part of the National Register, and almost 35 years later we remain the primary caretakers of this precious resource. The addition of the strong voice and professional resources of Public Works would be greatly appreciated.

I retired in 2006, but immediately became a volunteer at the Arboretum and have continued my efforts to preserve the historic integrity of this amazing facility. I am now in my fourth year as President of the Arboretum's 300-person strong Los Voluntarios, and I am sure you will hear from others in our ranks who share the Lake every day with thousands of visiting adults and school children. We see the magic every day as children without such magnificent resources nearby enjoy both the beauty of the land and the wildlife that Baldwin Lake supports. The gradual degradation of the lake over the years has been hard to watch. I have seen the Lake go dry in past droughts, but the build-up of sediment over the past ten years has drastically exacerbated matters. What was once 12 feet or so of relatively healthy water during my working years is now perhaps 18 inches at best. I believe that Baldwin Lake is the last remaining sag pond along the Raymond Hill Fault still functioning as a body of water; to lose this incredible resource after 125 years of effort by so many would be tragic.

Not every concerned Arboretum volunteer will write despite their frequently voiced concerns, but please be assured that I confidently speak for at least our 30 member Los Voluntarios Board. We have previously written to Supervisor Antonovich with our concerns about the future well-being of Baldwin Lake, and we would be happy to share that letter with you if it is of any help in current efforts to prioritize projects within the Enhanced Watershed Management Plan.

I thank you for your consideration,

Sandy Snider
841 Junipero Dr.
Duarte, CA 91010
626/358-4601

Paige Anderson

From: Crumpacker, Andrea <Andrea.Crumpacker@WestonSolutions.com>
Sent: Thursday, February 19, 2015 7:53 AM
To: Laura Rocha; David Pohl; Tom Barnes
Subject: Fwd: Arboretum's Baldwin Lake as part of Rio Hondo Watershed Management plans

Sent from my iPhone

Begin forwarded message:

> **From:** Gregg Begell <gbegell@dpw.lacounty.gov>
> **Date:** February 19, 2015 at 7:48:04 PST
> **To:** "Crumpacker, Andrea" <Andrea.Crumpacker@WestonSolutions.com>
> **Subject: FW: Arboretum's Baldwin Lake as part of Rio Hondo Watershed Management plans**
>
> Andrea
>
> Let's list these people with Sandy Sniders letter of support. We can't find their e-mails.
>
> - Pat Wilmot, First VP Los Voluntarios
> - Margaret Page, Los Voluntarios History Preservation chair
> - Andy Edmonds, Los Voluntarios Herb Garden chair
> - Gayle San Miguel, Los Voluntarios community liaison
> - Laura gene Swenson, Los Voluntarios communications chair (though she sent to Sup. Antonovich directly and may not have cc'd either of you)
> - Pam Warner, Arboretum Trustee
>
> I haven't seen Heflin or Moore's e-mail yet. I'll forward when I get them.
>
> *Gregg BeGell P E*
> Project Manager
> Project Management Division II
>
> ---
>
> **From:** Sandy Snider [mailto:ssnider626@charter.net]
> **Sent:** Wednesday, February 18, 2015 10:24 PM
> **To:** Gregg Begell; Genevieve Osmena
> **Subject:** RE: Arboretum's Baldwin Lake as part of Rio Hondo Watershed Management plans
>
> Gregg: I would appreciate 4 or 5 discs for distribution …. thank you for the offer. Unfortunately, most of the volunteers I have spoken with say they did not save their 'sent' email items, so not sure I can retrieve them for inclusion in the PEIR. I am hearing from most of those I listed below that they are receiving notifications of the March 9 public meeting, so I am hoping that at least their email addresses can be included in the final PEIR as having sent comments.
>
> Since my last communication, I have heard from a couple of other constituents that they are sending a second letter/email ….. hopefully, those will be received and recorded (Heflin, Moore).
>
> You and Gennie have been so helpful with your prompt answers to our inquiries …. we do appreciate it.

By the way, in the course of studying past reports on the Arboretum's Baldwin Lake, I find reference to LA County Flood Control being onsite in April, 1975 with recommendations about storm water management re both Tule Pond and Baldwin Lake. The report does not list a specific citation with report number/author; is there someone with whom I could speak or some way I can access this archived report? The report (Baldwin Lake Study) is from 2007, written by Morton Price as part of a Masters project for his degree from Cal State University Los Angeles (my own alma mater).

Sandy Snider
841 Junipero Dr.
Duarte, CA. 91010
626/358-4601

From: Gregg Begell [mailto:gbegell@dpw.lacounty.gov]
Sent: Wednesday, February 18, 2015 2:47 PM
To: Sandy Snider; Genevieve Osmena
Subject: RE: Arboretum's Baldwin Lake as part of Rio Hondo Watershed Management plans

Sandy

I have several disc's with PEIR.
How many would you like, I'll mail them to you.

Also, please resend the letters from your members (below) and we will include them in the final PEIR.

Gregg BeGell P E
Project Manager
Project Management Division II

From: Sandy Snider [mailto:ssnider626@charter.net]
Sent: Wednesday, February 11, 2015 7:34 PM
To: Gregg Begell; Genevieve Osmena
Subject: RE: Arboretum's Baldwin Lake as part of Rio Hondo Watershed Management plans

Thank you, Gregg. We are tracking down the names of all our Foundation Trustees who sent comments, but trying to piece together all the volunteers (from our core of 300) isn't easy. Please do add Harriet Furin to the list of volunteers who sent correspondence.

Sandy

From: Gregg Begell [mailto:gbegell@dpw.lacounty.gov]
Sent: Wednesday, February 11, 2015 2:40 PM
To: Sandy Snider; Genevieve Osmena
Subject: RE: Arboretum's Baldwin Lake as part of Rio Hondo Watershed Management plans

Sandy

I'm sorry to hear that your letter didn't get listed in the PEIR; I am tracking down the reason. The team writing the PEIR did receive it and reviewed it in their preparation of the PEIR.
We will be including any missing letters in the final PEIR.
I apologize for this error, your comments are appreciated.

I'll contact the other people listed.

Gregg BeGell P E
Project Manager
Project Management Division II

From: Sandy Snider [mailto:ssnider626@charter.net]
Sent: Wednesday, February 11, 2015 1:12 PM
To: Genevieve Osmena
Cc: Gregg Begell
Subject: RE: Arboretum's Baldwin Lake as part of Rio Hondo Watershed Management plans

Hello Gennie (and Gregg),

Thank you for your reply. Not that my single letter is of great importance, but I have since learned of other Arboretum volunteers and Trustees whose comment letters are also not in the Draft PEIR. All confirm that they sent letters/email and received acknowledgment of receipt from either you or Gregg.

Beside myself, names omitted include:

- Pat Wilmot, First VP Los Voluntarios
- Margaret Page, Los Voluntarios History Preservation chair
- Andy Edmonds, Los Voluntarios Herb Garden chair
- Gayle San Miguel, Los Voluntarios community liaison
- Lauragene Swenson, Los Voluntarios communications chair (though she sent to Sup. Antonovich directly and may not have cc'd either of you)
- Pam Warner, Arboretum Trustee

We haven't checked in with everyone, of course, but just a quick email to those I work with closely caused some alarm about how comment letters were accounted for. I am fairly sure that Trustees Leelee Doughty (Secretary) and Bill Lincoln (Treasurer) were intending to write; perhaps also Trustee Dan Foliart (First VP). Those bulleted above are the ones I am sure sent letters/email.

Many thanks for looking into this.

Sandy

From: Genevieve Osmena [mailto:gosmena@dpw.lacounty.gov]
Sent: Wednesday, February 11, 2015 12:20 PM
To: Sandy Snider
Cc: Gregg Begell
Subject: RE: Arboretum's Baldwin Lake as part of Rio Hondo Watershed Management plans

Hi Sandy,

I apologize that your comment letter was not included in the Draft PEIR document. We are looking into why it was omitted and how to incorporate it now. Gregg Begell is the project manager for the preparation of the document and I believe he is planning to contact you with a response as well.

Gennie

Genevieve Osmeña, P.E.
County of Los Angeles Department of Public Works

East Unincorporated County MS4 Permit Compliance
Watershed Management Division
(626) 458-3978
gosmena@dpw.lacounty.gov

From: Sandy Snider [mailto:ssnider626@charter.net]
Sent: Monday, February 09, 2015 4:43 PM
To: Genevieve Osmena
Subject: FW: Arboretum's Baldwin Lake as part of Rio Hondo Watershed Management plans

Hello Gennie – At our Arboretum Los Voluntarios general meeting this morning, Richard Schulhof and I were handed a DVD by one of our volunteers (Jane Florentinus) that she said came from the Dept. of Public Works. Richard was unable to open it at work, so I took it home with me. Very interesting reading, but I was left wondering why I didn't receive a direct copy as a 'stakeholder' who sent my comments in on Oct. 20, 2014 (see below). I looked at the relatively brief list of those who sent comments, but my name was not included …. I am sure this was not done on purpose, but I hope others who may have commented were not also inadvertently omitted. I do see some of our Arboretum Trustees plus others in our volunteer ranks. Should I re-submit my comments and ask others who I know sent in letters/email to do the same?

Many thanks,

Sandy Snider

From: Begell, Gregg - Consultant [mailto:gbegell@dpw.lacounty.gov]
Sent: Monday, October 20, 2014 7:20 AM
To: Sandy Snider
Subject: RE: Arboretum's Baldwin Lake as part of Rio Hondo Watershed Management plans

Sandy

Thank you for your comment.
We'll review it as part of the PEIR.

Gregg BeGell P E
Project Manager
Project Management Division II

From: Sandy Snider [mailto:ssnider626@charter.net]
Sent: Sunday, October 19, 2014 5:09 PM
To: Begell, Gregg - Consultant
Subject: Arboretum's Baldwin Lake as part of Rio Hondo Watershed Management plans

Dear Mr. BeGell,

I write in support of the inclusion of the Arboretum's Baldwin Lake in Public Work's ongoing efforts to create an Enhanced Watershed Management Plan for the Rio Hondo watershed in which the Arboretum resides. I understand that many projects must be considered, but Baldwin Lake can be a jewel in this effort, perhaps even part of the Emerald Necklace one day.

I enjoyed a 35 year career as a County employee, all of those years spent at the Arboretum as the History Curator. My Master's thesis centered on land use by entrepreneur Elias Jackson "Lucky" Baldwin, founder of the City of Arcadia and premier owner of the land now known as the Arboretum. Lucky Baldwin found a sag pond on his property upon purchase in 1875, but it was already a geologic feature that worked well for Baldwin as a holding reservoir for his vast irrigation system. Baldwin acquired water rights to half of each Big and Little Santa Anita Canyon waters to supplement the natural artesian sources that came with Rancho Santa Anita, and his irrigation designs were noted and reportedly photographed by the US Geologic Service in the early 1890's. At approximately this same time, Baldwin dredged and deepened the natural basin now called Baldwin Lake, taking it to some 15-18 feet in depth. Runoff from multiple natural streams were channeled into Baldwin Lake, and outflow went south and east into orchards and vineyards. From there, waters travelled their current route through the Rio Hondo watershed, eventually reaching Whittier Narrows (where Baldwin owned numerous parcels of adjacent land). Lucky Baldwin created an estate garden of note during his ownership years (1875-1909), and Baldwin Lake with its granite boulder-topped retaining walls was a popular feature. Period postcards document this era, as do oral histories and other primary sources of note. It is rare to find such pristine land largely undeveloped in Southern California, but Baldwin's daughters ensured that the land remain intact, and in 1947 the County of Los Angeles purchased the remaining acreage of Baldwin Ranch for public purposes.

I wrote the National Register of Historic Places nomination for Baldwin's Queen Anne Cottage and matching Coach Barn in 1980, and it was with significant urging from the State Office of Historic Preservation that the four-acre Baldwin Lake and surrounding landscape were included in this application. The entire 9-acre parcel with two structures and the entire Baldwin Lake became part of the National Register, and almost 35 years later we remain the primary caretakers of this precious resource. The addition of the strong voice and professional resources of Public Works would be greatly appreciated.

I retired in 2006, but immediately became a volunteer at the Arboretum and have continued my efforts to preserve the historic integrity of this amazing facility. I am now in my fourth year as President of the Arboretum's 300-person strong Los Voluntarios, and I am sure you will hear from others in our ranks who share the Lake every day with thousands of visiting adults and school children. We see the magic every day as children without such magnificent resources nearby enjoy both the beauty of the land and the wildlife that Baldwin Lake supports. The gradual degradation of the lake over the years has been hard to watch. I have seen the Lake go dry in past droughts, but the build-up of sediment over the past ten years has drastically exacerbated matters. What was once 12 feet or so of relatively healthy water during my working years is now perhaps 18 inches at best. I believe that Baldwin Lake is the last remaining sag pond along the Raymond Hill Fault still functioning as a body of water; to lose this incredible resource after 125 years of effort by so many would be tragic.

Not every concerned Arboretum volunteer will write despite their frequently voiced concerns, but please be assured that I confidently speak for at least our 30 member Los Voluntarios Board. We have previously written to Supervisor Antonovich with our concerns about the future well-being of Baldwin Lake, and we would be happy to share that letter with you if it is of any help in current efforts to prioritize projects within the Enhanced Watershed Management Plan.

I thank you for your consideration,

Sandy Snider
841 Junipero Dr.
Duarte, CA 91010
626/358-4601

Genevieve Osmena

From: Genevieve Osmena
Sent: Monday, December 22, 2014 9:25 AM
To: 'Margaux Viera'
Subject: RE: Baldwin Lake restoration project

Ms. Viera,

Thank you for your email regarding Baldwin Lake at the LA Arboretum. I have added your contact information to the stakeholder list for the Rio Hondo/San Gabriel River Water Quality Group to receive notifications of future stakeholder meetings regarding the group's Enhanced Watershed Management Program (EWMP). We anticipate the next stakeholder meeting to occur in early to mid-Spring of next year to discuss the progress of the EWMP process with interested stakeholders. I have also forwarded your email to the group members for their consideration as they continue to discuss and develop their EWMP plan.

Thanks again for your comments.

Genevieve Osmeña, P.E.
County of Los Angeles Department of Public Works
East Unincorporated County MS4 Permit Compliance
Watershed Management Division
(626) 458-3978
gosmena@dpw.lacounty.gov

From: Margaux Viera [mailto:gauxviera@gmail.com]
Sent: Wednesday, December 17, 2014 10:20 AM
To: Genevieve Osmena; Gregg Begell
Cc: Linda Lee Miller
Subject: Baldwin Lake restoration project

Mr. Gregg BeGell, P.E.
County of Los Angeles Department of Public Works
Project Management Division II
900 South Fremont, 5th Floor
Alhambra, CA 91803

Ms. Genevieve Osmena
County of Los Angeles Department of Public Works
Project Management Division II
900 South Fremont, 5th Floor
Alhambra, CA 91803

Dear Gregg BeGell & Genevieve Osmena,

Since the Los Angeles Regional Water Quality Control Board has released all of the submitted EWMP Workplans and CIMPs for public comment, I have decided to write you.

My name is Margaux L. Viera. I am the great great great granddaughter of Elias Jackson “Lucky” Baldwin, who was a previous land owner of Rancho Santa Anita now know as, The Los Angeles County Arboretum & Botanical Gardens. On the land site there is a natural lake, named Baldwin Lake. I have recently joined the board of trustees at The Los Angeles Arboretum, their cultural heritage committee and lastly the group fore running the campaign to, “SAVE BALDWIN LAKE”.

Baldwin Lake has been the anchor of this site since it’s founding. The lake has been a natural source of artesian water, going back to the Baldwin era as well as being featured in thousands of film and television features. Most named is the original Tarzan feature film and the Fantasy Island television series. Hundreds of thousands of people travel each year to The Los Angeles Arboretum to experience the natural serenity, discover plant & animal species, learn about it’s founders and rich history. Many of which are grade school students coming here for the first time to experience a natural setting hidden in the middle of Los Angeles County. That is one of the things that makes, The Los Angeles Arboretum so unique and special.

The EWMP Work Plan approaches to prioritize stormwater pollutants, **identify sites that are suitable for water quality and conservation projects**, and conduct reasonable assurance analyses with a peer-reviewed model. Baldwin Lake should be placed on the top of the list and be a county priority. The CIMP details the watershed groups’ collaborative plan to conduct long-term monitoring in the watersheds in an effort to continuously assess the water quality of urban discharges and their impact on our waterways. Baldwin Lake is in dire need of your aid and attention. The current conditions of the lake fall under all your plans and could be a great model and learning tool. The preservation of this natural resource is critical for the future of our county's natural resources and the future of our children's environment.

Thank you for your time and I look forward to seeing Los Angeles county take the necessary actions needed to preserve our counties assets.

Happy holidays,

Margaux L. Viera

820 North Verano Drive

Glendora, CA 91741

(626) 399-9621

gauxviera@gmail.com

Paige Anderson

To: Laura Rocha
Subject: RE: Los Angeles Arboretum - Baldwin Lake (Letter Resend)

-----Original Message-----
From: Pat Wilmot [mailto:britbird05@aol.com]
Sent: Saturday, March 07, 2015 6:22 PM
To: Gregg Begell
Subject: Los Angeles Arboretum - Baldwin Lake (Letter Resend)

Dear Mr BeGell,

Attached is a resend of a letter originally sent as an email on December 2, 2014. My understanding is that since the original was an email and not a separate attachment, my letter would not have been included in the compilation of letters sent to your office.

Thank you for your time and attention.

Patricia Wilmot
1428 S Stoneman Ave
Alhambra, CA 91801

From: Pat Wilmot <britbird05@aol.com>
Subject: Los Angeles Arboretum - Baldwin Lake
Date: December 2, 2014 at 11:37:41 AM PST
To: "Mr. BeGell" <gbegell@dpw.lacounty.gov>

Dear Mr. BeGell,

I am writing in support of the efforts to restore Baldwin Lake at the Los Angeles Arboretum. I have lived in the Alhambra area since 1985 and over the years have been a regular visitor to the Arboretum. The decline of the lake is very obvious. It used to be a flourishing home for all kinds of birds and wildlife, but now, sadly, it just looks dirty and neglected. It is really a shame since the beautiful Queen Anne cottage forms a backdrop to the lake. Since retiring I have become a volunteer at the Arboretum and lead groups of school kids on history tours - mostly 3rd and 4th graders. The beauty of the Arboretum fascinates them, especially the inner-city kids, but all express concerns about how dirty the water in the lake looks and want to know “Why?” Please do whatever you can to support the restoration of the lake. It is part of a beautiful and historic area and deserves to be shown to it’s full potential.

If you have never visiited the Arboretum, (or if it has been a long time since your last visit), please come and see for yourself what a beautiful, fascinating and restful place it is. We have volunteer docents that would be more than happy to lead you on a tour!

Sincerely,
Patricia Wilmot

<u>Exhibit A</u>

**FINDINGS OF FACT IN SUPPORT OF FINDINGS
RELATED TO SIGNIFICANT ENVIRONMENTAL IMPACTS**

State CEQA Guidelines Section 15091

for

Enhanced Watershed Management Programs

**Final Program Environmental Impact Report
SCH# 2014081106**

Lead Agency: Los Angeles County Flood Control District

1.0 Introduction

The following findings of fact are based in part on the information contained in the Draft and Final Program Environmental Impact Report (Program EIR) for the Enhanced Watershed Management Program, as well as additional facts found in the complete record of proceedings. The Final Program EIR is hereby incorporated by reference and is available for review at the Department of Public Works, 900 south Fremont Avenue, 11th Floor, Alhambra, CA 91803, during normal business hours, and is also available on the District's website www.LACoH2Osheds.com.

In December 2012, the Los Angeles Regional Water Quality Control Board (LARWQCB) issued a Municipal Separate Storm Sewer System (MS4) Permit (Order No. R4-2012-0175; National Pollutant Discharge Elimination System [NPDES] Permit No. CAS004001) covering discharges within coastal watersheds from the collective storm sewer systems in Los Angeles County (except from the City of Long Beach). The Permit regulates the discharge of stormwater runoff to waters of the United States from facilities owned and maintained by the Los Angeles County Flood Control District (LACFCD or District), the County of Los Angeles, and 84 incorporated cities within Los Angeles County (collectively referred to as Permittees). The purpose of the MS4 Permit is to achieve and maintain water quality objectives to protect beneficial uses of the receiving waters in the Los Angeles region. Each of the Permittees identified in the MS4 permit is responsible for meeting the conditions of the permit for MS4 discharges occurring within their jurisdiction.

The MS4 Permit gives Permittees the option of implementing an innovative approach to permit compliance through development of an Enhanced Watershed Management Program (EWMP). The EWMPs will identify potential and priority structural and non-structural Best Management

Practices (BMPs) within the region's stormwater collection system to improve runoff water quality. The LACFCD, along with participating Permittees, has opted to exercise this option and has submitted to the LARWQCB 12 separate Notices of Intent (NOIs) for the development of EWMPs within 12 distinct watershed groups. Implementation of the EMWPs would be the responsibility of each Permittee and would occur following approval of the EWMPs by the LARWQCB.

The LACFCD, as a regional agency, is a member of each of the 12 EWMP working groups, and as such provides a commonality within each EWMP group. However, LACFCD does not have a special status or authority designated by the MS4 Permit over any of the other Permittees. The LACFCD will be working with the applicable Permittees in all 12 EWMP watersheds as an equal partner to identify the types and locations of BMPs needed to achieve permit compliance within each watershed.

The timeline identified in the MS4 Permit requires that Permittees submit the EWMP to the LARWQCB by June 28, 2015, in order to be in compliance with the permit conditions. The LACFCD recognizes that implementation of the EWMPs may potentially result in changes to environmental conditions. As a result, the LACFCD has prepared this Program Environmental Impact Report (PEIR) in compliance with the California Environmental Quality Act (CEQA) to provide the public and the responsible and trustee agencies with information about the potential effects on the local and regional environment associated with implementation of the EWMPs. The LACFCD will submit the PEIR to its governing body, the Los Angeles County Board of Supervisors, for approval prior to submittal of the EWMPs. The EWMPs will be submitted by each EWMP group to the LARWQCB.

The LACFCD issued a notice of preparation of a Draft Program EIR on July 27, 2012. The notice of preparation stated that the Draft Program EIR would contain a comprehensive analysis of environmental issues identified in Appendix G of the *California Environmental Quality Act (CEQA) Guidelines*. With respect to all impacts identified as "less than significant" or as having "no impact" in the Final Program EIR, the District finds that those impacts have been described accurately and are less than significant or have no impact. In addition, some impacts in the Final Program EIR were found to be potentially "significant" but are able to be mitigated to less-than-significant levels, and others were found to be "significant and unavoidable." The District finds that those impacts have been described accurately and are less than significant with the implementation of mitigation or are significant and unavoidable.

The District further finds that the application of mitigation measures identified in the Final Program EIR would be the responsibility of each agency implementing projects identified in the program (implementing agencies). The District finds that the mitigation measures identified in the Final EIR are reasonable and readily implementable under foreseeable circumstances, such that it is reasonably assumed that implementing agencies can and should adopt and implement them for their projects. The conclusions of significance for each impact in the Final Program EIR therefore assume that mitigation measures identified in the Final Program EIR would be applied as described therein.

The District has adopted the mitigation measures identified in the Final Program EIR, and will implement those measures for projects it implements under the Program. However, as explained more fully in Section 5.0, because the District will not be the implementing agency for all projects being implemented as part of the proposed program, the District cannot state with certainty that all impacts capable of being mitigated to less-than-significant levels will in fact be mitigated to a less-than-significant level. Accordingly, the District finds that as to projects where the District will not be an implementing agency, the impacts described in the Program EIR as being potentially "significant" but capable of being mitigated to less-than-significant levels must be found to be "significant and unavoidable."

2.0 Project Description

The 12 EWMPs will vary for each watershed group, but will generally provide the opportunity for Permittees to customize their stormwater programs to achieve compliance with applicable receiving water limitations (RWLs) and water-quality-based effluent limits (WQBELs) in accordance with the MS4 Permit through implementation of stormwater best management practices (BMPs) or watershed control measures. BMPs vary in function and type, with each BMP providing unique design characteristics and benefits from implementation. The overarching goal of BMPs in the EWMP is to reduce the impact of stormwater and non-stormwater on receiving water quality and address the water quality priorities as defined by the MS4 Permit. The development of each EWMP will involve the evaluation and selection of multiple BMP types, including nonstructural (institutional) and distributed, centralized, and regional structural watershed control measures, that will be implemented to meet compliance goals and strategies under the 2012 MS4 Permit. The LACFCD has limited jurisdictional authority for ordinance and code enactment or enforcement and therefore is limited in nonstructural BMPs to education and outreach measures. The structural watershed control measures that will be implemented by the LACFCD will be multi-benefit stormwater projects that emphasize flood risk mitigation and water conservation and supply.

The LACFCD has a vested interest in increasing opportunities for stormwater capture and groundwater recharge as a means of assisting local water supply augmentation. The LACFCD will be working with the applicable Permittees and other stakeholders in all 12 EWMP watersheds to develop such projects. The EWMPs will be implemented by the Permittees that have jurisdiction within each EWMP area. The implementing agencies will be responsible for the contents of the EWMPs affecting their jurisdictions and for implementing the projects developed by the EWMPs.

Structural control measures are constructed BMPs that reduce the impact of stormwater and non-stormwater on receiving water quality. They are broken into three categories:

- ***Distributed Structural BMPs***, which treat runoff close to the source and are typically implemented at a single- or few-parcel level (e.g., facilities typically serving a contributing area less than one acre).

- ***Centralized Structural BMPs***, which treat runoff from a contributing area of multiple parcels (e.g., facilities typically serving a contributing area on the order of tens or hundreds of acres or larger).
- ***Regional Structural BMPs***, which are meant to retain the 85th percentile storm over 24 hours from a contributing area. Generally, the 85^{th} percentile storm is approximately 0.75 inches over 24 hours

Whether distributed, centralized, or regional, the major structural BMP functions are infiltration, treatment, and storage, which may be used individually or combination:

- ***Infiltration*,** where runoff is directed to percolate into the underlying soils. Infiltration generally reduces the volume of runoff and increases groundwater recharge.
- ***Treatment***, where pollutants are removed through various unit processes, including filtration, settling, sedimentation, sorption, straining, and biological or chemical transformations.
- ***Storage***, where runoff is captured, stored (detained), and slowly released into downstream waters. Storage can reduce the peak flow rate from a site, but does not directly reduce runoff volume.

The types of structural BMPs to be implemented will vary between EWMPs, but most EMWPs will include a variety of distributed, centralized, and regional BMPs.

Non-structural BMPs are policies, actions, and activities which are intended to minimize or eliminate pollutant sources. Most institutional BMPs are implemented to meet Minimum Control Measure (MCM) requirements in the MS4 permit; MCMs are considered a subset of institutional BMPs. These BMPs are not constructed, but may have costs associated with the procurement and installation of items such as signage or spill response kits.

3.0 CEQA Review and Public Participation

A Notice of Preparation (NOP)/Initial Study (SCH No. 2014081106) was circulated for a 30-day public review period beginning on August 29, 2014. Twenty (20) individual written comment letters were received and used in the preparation of the Draft PEIR. The Draft PEIR for the proposed project was initially circulated for a 45-day public review period beginning on January 21, 2015 and ending on March 9, 2015. Per an announcement via e-mail blast on March 6, the comment period was extended through March 16, 2015 at 5PM. A total of 46 individual written comment letters were received on the Draft PEIR.

Section 15088 of the *CEQA Guidelines* requires that the lead agency evaluate comments on environmental issues received from persons and agencies that reviewed the Draft PEIR and prepare a written response addressing each of the comments received. The response to comments is contained in this document—Volume 3, Chapter 12 of the Final PEIR. Volumes 1 through 3 together constitute the Final PEIR. A list of agencies and interested parties who have commented on the Draft PEIR is provided below. A copy of each numbered comment letter and a lettered response to each comment are provided in Chapter 12, *Response to Comments*, of this Final PEIR.

LACFCD held 6 community meetings on January 29 and February 3, 5, 10, 11 and 17, 2015 to discuss the Draft PEIR analysis and alternatives. The six public meetings that took place at 6PM each night listed are as follows:

- Public Meeting 1 (Florence-Firestone Service Center – January 29, 2015)
- Public Meeting 2 (LA County Fire Camp – February 3, 2015)
- Public Meeting 3 (San Pedro Service Center – February 5, 2015)
- Public Meeting 4 (Topanga Library – February 10, 2015)
- Public Meeting 5 (Hacienda Heights Community Center – February 11, 2015)
- Public Meeting 6 (East Los Angeles Library – February 17, 2015)

4.0 No Environmental Impacts

4.1 Structural BMPs

4.1.1 Aesthetics

The proposed program would not create a new source of substantial light or glare that would adversely affect day or nighttime views in the area (Impact 3.1-4).

Finding

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in no impact relating to the creation of new sources of substantial light or glare that would adversely affect day or nighttime views in the area.

4.1.2 Air Quality

The proposed program would not conflict with or obstruct implementation of the applicable air quality plan (Impact 3.2-1).

Finding

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in no impact relating to conflicting with or obstructing implementation of the AQMP prepared by SCAQMD and SCAG.

4.1.3 Biological Resources

The proposed program would not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. (Impact 3.3-4)

The proposed program would not conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan. (Impact 3.3-6)

Finding

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the Proposed Program would result in no impact relating to the interference with the movement of any native resident or migratory fish or wildlife or with established native resident or migratory wildlife corridors, or the impediment of the use of native wildlife nursery sites.

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in no impact relating to conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.

4.1.4 Cultural Resources

The proposed program would not have any environmental effects related to cultural resources that would result in no impacts or less than significant impacts unmitigated.

4.1.5 Geologic and Mineral Resources

The proposed program would not locate new facilities in areas susceptible to seismic impacts such as (1) rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area based on other substantial evidence of a known fault, (2) strong seismic groundshaking, or (3) seismically induced liquefaction or landslides, which could expose people, structures, or habitat to potential risk of loss, damage, injury, or death (Impact 3.5-1).

The proposed program would not result in substantial soil erosion or the loss of topsoil (Impact 3.5-2).

The proposed program would not be located on expansive soil as defined in 24 CCR 1803.5.3 of the California Building Code (2013), creating substantial risks to life or structures. (Impact 3.5-4).

The proposed program would not have soils incapable of adequately supporting the use of a septic tank or alternative wastewater treatment systems where sewers are not available for the disposal of wastewater (Impact 3.5-5).

The proposed program would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state or a locally important mineral resource recovery site delineated on a local General Plan, Specific Plan, or other land use plan (Impact 3.5-6).

Finding

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in no impact relating to location of new facilities in areas susceptible to seismic impacts of various kinds.

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in no impact relating to substantial soil erosion or loss of topsoil.

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in no impact relating to location on expansive soil.

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in no impact relating to having soils incapable of adequately supporting the use of septic tank or alternative wastewater treatment systems.

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in no impact relating to the loss of availability of a known mineral resource that would be of value to the region and the residents of the state, or a locally important mineral resource recovery site delineated on a local General Plan, Specific Plan, or other land use plan.

4.1.6 Greenhouse Gas Emissions

The proposed program would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment (Impact 3.6-1).

The proposed program would not conflict with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHGs (Impact 3.6-2).

The proposed program would not result in significant cumulative impact to GHGs.

Finding

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the Proposed Program would result in no impact relating to generation of GHG emissions.

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in no impact relating to confliction with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program does not have the potential to result in significant cumulative impacts to GHGs.

4.1.7 Hazards and Hazardous Materials

The proposed program would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or the accidental release during construction and maintenance activities (Impact 3-7.1).

The proposed program would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing school (Impact 3.7-3).

The proposed program would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan (Impact 3.7-6).

The proposed program would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands (Impact 3.7-7).

Finding

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in no impact relating to the creation of a significant hazard to the public or environment through routine transport, use, or disposal of hazardous materials or accidental release during construction and maintenance activities.

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the Proposed Program would result in no impact relating to hazardous emissions or handling of hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing school.

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in no impact relating to the implementation of an adopted emergency response or emergency evacuation plan.

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in no impact relating to exposure of people or structures to significant risk of loss, injury or death involving wildland fires.

4.1.8 Hydrology and Water Quality

The proposed program would not violate water quality standards or waste discharge requirements or further degrade water quality (Impact 3.8-1).

The proposed program would not substantially alter the existing drainage pattern of a site or area through the alteration of the course of a stream or river, or by other means, in a manner that would result in substantial erosion or siltation on- or off-site (Impact 3.8-3).

The proposed program would not substantially alter the existing drainage pattern of a site or area through the alteration of the course of a stream or river or, by other means, substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site (Impact 3.8-4).

The proposed program would not create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff (Impact 3.8-5).

The proposed program would not place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other authoritative flood hazard delineation map (Impact 3.8-6).

The proposed program would not place within a 100-year flood hazard area structures that would impede or redirect flood flows (Impact 3.8-7).

The proposed program would not expose structures to a significant risk of loss, including flooding as a result of the failure of a levee or dam (Impact 3.8-8).

The proposed program would not place structures in areas subject to inundation by seiche, tsunami, or mudflow (Impact 3.8-9).

The proposed program would not result in significant cumulative impact to hydrology and water quality.

Finding

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in no impact relating to the violation of water quality standards or waste discharge requirements.

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in no impact relating to the alteration of the existing drainage pattern of a site in a manner that would result in substantial erosion or siltation on- or off-site. In response to comment received on the Draft EIR, Mitigation Measure HYDRO-4 has been added to ensure that Impact 3.8-3 and Impact 3.8-4 remain less than significant. The modification does not identify any new significant impact or trigger the need to recirculate the Draft PEIR under Section 15088.5 of the CEQA Guidelines.

> **HYDRO-4:** Prior to approving a structural BMP, the implementing agencies shall conduct an evaluation of the potential hydromodification impacts of the project. The evaluation shall recommend design measures necessary to prevent or minimize any identified impacts, including flooding, erosion and/or scour. Design measures could include velocity dissipaters and bank re-enforcement components. Implementing agencies shall include these measures in project designs.

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in no impact relating to the alteration of the existing drainage pattern of a site which would increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site.

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in no impact relating to the creation or contribution to runoff water.

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in no impact relating to placement of housing within a 100-year flood hazard area.

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in no impact relating to placement of structures within a 100-year flood hazard area that would impede or redirect flood flows.

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in no impact relating to exposure of structures to a significant risk of loss, including flooding as a result of the failure of a levee or dam.

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in no impact relating to placement of structures in areas subject to inundation by seiche, tsunami, or mudflow.

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program does not have the potential to result in significant cumulative impacts to hydrology and water quality.

4.1.9 Land Use and Agriculture

The proposed program would not physically divide an established community (Impact 3.9-1).

The proposed program would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the program (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect (Impact 3.9-2).

The proposed program would not conflict with any applicable habitat conservation plan or natural community conservation plan (Impact 3.9-3).

The proposed program would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use. The proposed program would not involve other changes in the existing environment which, due to their location or nature, could result in conversion of agricultural land to non-agricultural use or conversion of forest land to non-forest use. (Impact 3.9-4)

The proposed program would not conflict with existing zoning for agricultural use, or a Williamson Act contract (Impact 3.9-5).

The proposed program would not conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g)). The proposed program would not result in the loss of forest land or conversion of forest land to non-forest use (Impact 3.9-6).

The proposed program would not result in significant cumulative impact to land use and agriculture.

Finding

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in no impact relating to the physical division of an established community.

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in no impact relating to confliction with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the program adopted for the purpose of avoiding or mitigating an environmental impact.

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in no impact relating to confliction with any applicable habitat conservation plan or natural community conservation plan.

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in no impact relating to conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, or conversion of agricultural land to non-agricultural use or conversion of forest land to non-forest use.

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in no impact relating to confliction with existing zoning for agricultural use, or a Williamson Act contract.

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in no impact relating to confliction with existing zoning for forest land or timberland, or the loss of forest land or conversion of forest land to non-forest use.

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program does not have the potential to result in significant cumulative impacts to land use and agriculture.

4.1.10 Noise

The proposed program would not result in exposure of persons to, or generation of, excessive groundborne vibration (Impact 3.10-2).

For a project located within an airport land use plan, or, where such a plan has not been adopted, in an area within 2 miles of a public airport or public use airport, implementation of the proposed program would not expose people residing or working in the area to excessive noise levels (Impact 3.10-5)

For a project located in the vicinity of a private airstrip, the proposed program would not expose people residing or working in the project area to excessive noise levels (Impact 3.10-6).

Finding

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in no impact relating to exposure of persons to, or generation of, excessive groundborne vibration.

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in no impact relating to projects located within an airport land use plan or within 2 miles of a public airport or public use airport.

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in no impact relating to projects located in the vicinity of a private airstrip.

4.1.11 Population and Housing and Environmental Justice

Implementation of the proposed program would not induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure) (Impact 3.11-1).

Implementation of the proposed program would not displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere (Impact 3.11-2).

Implementation of the proposed program would not displace substantial numbers of people, necessitation the construction of replacement housing elsewhere (Impact 3.11-3).

Implementation of the proposed program would not affect the health or environment of minority or low income populations disproportionately (Impact 3.11-4).

The proposed program would not result in significant cumulative impact to population and housing and environmental justice.

Finding

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in no impact relating to introduction of substantial population growth in an area, either directly or indirectly.

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in no impact relating to displacement of substantial numbers of existing housing.

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in no impact relating to displacement of substantial numbers of people.

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the Proposed Program would result in no impact relating to impacting the health or environment of minority or low income populations disproportionately.

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program does not have the potential to result in significant cumulative impacts to population and housing and environmental justice.

4.1.12 Public Services and Recreation

The proposed program would not result in substantial adverse physical impacts associated with the provision of, or the need for, new or physically altered governmental police protection facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for police protection services (Impact 3.12-2).

The proposed program would not result in substantial adverse physical impacts associated with the provision of, or the need for, new or physically altered schools, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for schools (Impact 3.12-3).

The proposed program would not increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated (Impact 3.12-4).

The proposed program would not include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment (Impact 3.12-5).

The proposed program would not result in significant cumulative impact to public services and recreation.

Finding

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in no impact relating to the provision of, or need for, new or physically altered governmental police protection facilities.

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in no impact relating to the provision of, or need for, new or physically altered schools.

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in no impact relating to increased use of existing neighborhood and regional parks or other recreational facilities.

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in no impact relating to the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would not result significant cumulative impact to public services and recreation. However, Mitigation Measure PS-1 has been included to ensure that cumulative impacts remain less than significant.

PS-1: The Permittee implementing the EWMP project shall provide reasonable advance notification to service providers such as fire, police, and emergency medical services as well as to local businesses, homeowners, and other residents adjacent to and within areas potentially affected by the proposed EWMP project about the nature, extent, and duration of construction activities. Interim updates should be provided to inform them of the status of the construction activities.

4.1.13 Transportation and Circulation

Construction of the proposed program would not potentially cause traffic safety hazards for vehicles, bicyclists, and pedestrians on public roadways, and would not increase traffic hazards due to possible road wear (Impact 3.13-2).

The proposed program would not result in inadequate emergency access during construction (Impact 3.13-3).

Finding

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in no impact relating to traffic safety hazards for vehicles, bicyclists, and pedestrians on public roadways.

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in no impact relating to inadequate emergency access during construction.

4.1.14 Utilities and Service Systems

Implementation of the proposed program would not exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board or result in the construction of new treatment facilities or expansion of existing facilities if the wastewater treatment provider has inadequate capacity to serve the proposed program (Impact 3.14-1).

The proposed program would not require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which would cause significant environmental effects (Impact 3.14-2).

Construction and operation of the proposed program would not require additional energy use that could result in wasteful consumption, affect local and regional energy supplies, or conflict with applicable energy efficiency policies or standards (Impact 3.14-5).

Finding

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in no impact relating to exceedance of wastewater treatment requirements of the applicable Regional Water Quality Control Board or result in the construction of new treatment facilities or expansion of existing facilities.

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in no impact relating to construction of new storm water drainage facilities or expansion of existing facilities.

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in no impact relating to additional energy use.

4.2 Non-Structural (Institutional) BMPs

Non-structural control measures are policies, actions, and activities which are intended to minimize or eliminate pollutant sources. Most institutional BMPs are implemented to meet Minimum Control Measure (MCM) requirements in the MS4 permit; MCMs are considered a subset of institutional BMPs. These BMPs are not constructed, but may have costs associated with the procurement and installation of items such as signage or spill response kits. The MS4 Permit categorizes institutional BMPs into six program categories:

- Development Construction Programs, which establish standards for stormwater management from construction sites of all sizes (e.g., with or without a stormwater pollution prevention plan [SWPPP]).
- Industrial/Commercial Facilities Programs, which establish standards for pollutant reduction and control measures at industrial and commercial facilities.
- Illicit Connection and Illicit Discharges (IC/ID) Detection and Elimination Programs, which describe procedures for identifying, eliminating, and reporting illicit connections and discharges to the stormwater system.
- Public Agency Activities Programs, which describe a broad range of municipal practices such as street cleaning, landscape management, storm drain operation, and more.
- Planning and Land Development Programs, which encourage the application of smart growth and low-impact development (LID) practices to development and redevelopment projects.
- Public Information and Participation Programs, which educate and engage the public on a broad range of pollution- and stormwater-related issues.

Permittees can evaluate the MCMs, identify potential modifications that will address water quality priorities, and provide justification for modification or elimination of any MCM that is determined to be ineffective (with the exception of the Planning and Land Development Program, which may not be eliminated or modified). MCM customization may include replacement, reduced implementation, augmented implementation, focused implementation, or elimination. Because the LACFCD has limited jurisdictional authority for ordinance and code enactment or enforcement, it is limited in application of MCMs to activities such as public information and participation programs.

Non-structural/institutional BMPs do not include construction of new facilities. Consequently, the Final Program EIR finds no significant environmental impacts associated with this type of BMP, and no mitigation is required for any of the environmental resource areas.

Finding

The Board of Supervisors finds, based on the Final Program EIR, and the whole of the record, that the proposed program would result in either less than significant impacts or no impacts to all environmental topic areas analyzed in the Final Program EIR relating to implementation of non-structural/institutional BMPs within the program area.

5.0 Less than Significant Environmental Impacts

The significant impacts identified in this section are capable of being mitigated to levels of less than significant through the mitigation identified in the Final Program EIR. This mitigation has been adopted by the District. Thus, for projects implemented under the program where the District has jurisdiction over the project, the significant impacts will be mitigated to a level of less than significant. However, the EWMPs cover numerous jurisdictions and include potential projects that will be entirely within the jurisdiction of a different implementing agency. Because the District cannot ensure that these Implementing Agencies will adopt and implement the proposed mitigation measures, the District finds that the impacts identified in this section may also be significant and unavoidable with respect to projects where the District will not be an implementing agency. The conclusions of "less than significant" below will apply to the extent the Implementing Agencies adopt the proposed mitigation.

5.1 Aesthetics

Significant Effect

The proposed program could create a substantial adverse effect on a scenic vista (Impact 3.1-1).

Description of Specific Impact

During construction, equipment and materials required for temporary ground disturbances would be visible from public vantage points, but would not affect any scenic vistas past the temporary construction periods. Given the predominantly urban character of potential pump station sites and temporary nature of construction activities, impacts would be considered less than significant. A majority of structural BMPs would be located underground and would not introduce impacts to scenic vistas. Aboveground structures such as pump stations would be located in urbanized areas and would generally be single-story buildings. Such aboveground structures have the potential to impact scenic vistas, but will be required to be designed so as not to contrast existing neighborhood aesthetic features.

Finding

Permanent aboveground structures associated with certain BMPs have the potential to create substantial adverse effects on scenic vistas in the project area. The implementation of Mitigation Measure AES-1 would reduce impacts to a less-than-significant level.

Brief Explanation of the Rationale for the Finding

CEQA requires that all feasible and reasonable mitigation be applied to the project to reduce the impacts caused by the project relating to the creation of a substantial adverse effect on a scenic vista. Implementation of Mitigation Measure AES-1 would reduce the impact to a less-than-significant level by designing aboveground structures in a way that would avoid obstructing scenic vistas or views from public vantage points, and would ensure design consistency with neighboring structures.

> **AES-1:** Aboveground structures shall be designed to be consistent with local zoning codes and applicable design guidelines and to minimize features that contrast with neighboring development.

Significant Effect

The proposed program could substantially damage scenic resources, including but not limited to, trees, rocks, outcroppings, and historic buildings within a state scenic highway (Impact 3.1-2).

Description of Specific Impact

Parts of the proposed program may be visible from designated scenic highways or other locally designated scenic roadways in the project area. Rock outcroppings and historic buildings would likely not be disturbed by the project as most of the BMPs will be underground and not visible after construction is complete. Construction of the proposed program would involve removal of vegetation from individual project sites. Smaller aboveground structures would not substantially damage scenic resources, and impacts from larger structures would be reduced to a less-than-significant level with implementation of Mitigation Measure AES-1.

Finding

Permanent aboveground structures associated with certain BMPs have the potential to substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway. The implementation of Mitigation Measure AES-1 would reduce impacts to a less-than-significant level.

Brief Explanation of the Rationale for the Finding

CEQA requires that all feasible and reasonable mitigation be applied to the project to reduce impacts. Implementation of Mitigation Measure AES-1 would serve to ensure design consistency with neighboring structures in individual project areas, thereby reducing damage to scenic resources within a state scenic highway.

> **AES-1:** Aboveground structures shall be designed to be consistent with local zoning codes and applicable design guidelines and to minimize features that contrast with neighboring development.

Significant Effect

The proposed program could substantially degrade the existing visual character or quality of the site and its surroundings (Impact 3.1-3).

Description of Specific Impact

Construction activities would visually degrade the project site and its surroundings as a result of the appearance of demolition materials, excavated areas, stockpiles, and other materials. Due to the temporary nature of construction, these adverse effects are considered less than significant. Once constructed, the BMPs would be located predominantly in urban areas and largely underground, which will not have a permanent effect on the visual character or quality of an area. Aboveground structures may degrade existing visual character of project areas as they will add to the visual landscape. Without proper maintenance of BMPs, especially wet ponds or constructed wetlands, there is a potential for substantial degradation of existing visual quality of project sites due to algal growth or public littering.

Finding

Operation of the proposed program has the potential to result in impacts related to substantial degradation of existing visual character or quality of the site and its surroundings. The implementation of Mitigation Measures AES-1 and AES-2 would reduce impacts to a less-than-significant level.

Brief Explanation of the Rationale for the Finding

CEQA requires that all feasible and reasonable mitigation be applied to the project to reduce the impacts caused by the project relating to the substantial degradation of existing visual character or quality of the site and its surroundings. Implementation of Mitigation Measures AES-1 and AES-2 would reduce the impact to a less-than-significant level.

> **AES-1:** Aboveground structures shall be designed to be consistent with local zoning codes and applicable design guidelines and to minimize features that contrast with neighboring development.
>
> **AES-2:** Implementing agencies shall develop BMP maintenance plans that are approved concurrently with each structural BMP approval. The maintenance plans must include measures to ensure functionality of the structural BMPs for the life of the BMP. These plans may include general maintenance guidelines that apply to a number of smaller distributed BMPs.

Significant Effect

The proposed program would result in a less than significant cumulative aesthetic impact with mitigation.

Description of Significant Impact

Cumulative projects in the program region have the potential to result in cumulative impacts to aesthetic resources if they would result in the removal or substantial adverse change of visual character or image of a neighborhood, community, state scenic highway, or localized area. Given that the BMPs will be located in primarily urbanized areas, introduction of structural BMPs would result in only minor changes to the visual landscape. The cumulative impacts of aboveground structures could have a significant impact to the aesthetic environment due to their potential size and location.

Finding

The proposed program's cumulative aesthetic impact is considered cumulatively significant, but would be reduced to less-than-significant with mitigation. Overall, implementation of BMPs is anticipated to have a positive impact on the aesthetic environment through the creation of open space areas and less impervious surfaces in urbanized or residential areas. After implementation of Mitigation Measures AES-1 and AES-2, cumulative impacts associated with aesthetics would be considered less-than-significant.

Brief Explanation of the Rationale for the Finding

CEQA requires that all feasible and reasonable mitigation be applied to the project to reduce the impacts caused by the project that results in a cumulative aesthetic impact. With the implementation of Mitigation Measures AES-1 and AES-2, implementation of the proposed projects would result in less-than-significant cumulative aesthetics impacts.

5.2 Air Quality

Significant Effect

The proposed program could expose sensitive receptors to substantial pollutant concentrations (Impact 3.2-4).

Description of Significant Impact

While construction-related traffic on local roadways would occur during construction, the net increase of construction vehicle trips to the existing traffic volumes on local roadways would be relatively small and would not result in carbon monoxide (CO) hotspots. These construction-related trips would only occur in the short-term, and because trip-generating land uses are not associated with the proposed program, impacts associated with CO hotspots would be less than significant. Off-road heavy-duty diesel equipment would be used only temporarily at each individual structural BMP site, therefore the construction activities associated with each structural BMP project in the EWMP areas would not expose sensitive receptors to substantial emissions of TACs. During construction of the individual structural BMPs in the project area, sensitive receptors such as residences, schools, hospitals, and daycare centers would be exposed to significant adverse localized air quality impacts. Operation of structural BMPs would not involve the emission of toxic air contaminants (TAC), and would operate passively without use of mechanical equipment. Project operation would not introduce health risks associated with TAC emissions. Construction activities could expose sensitive receptors to criteria air pollutants from vehicle exhaust and dust. Depending on the size and scope of the individual structural BMPs, a localized significance threshold (LST) analysis may be required to ensure construction emissions would not exceed SCAQMD's LSTs or result in pollutant emissions that would cause or contribute to the exceedance of the most stringent applicable federal or state ambient air quality standards.

Finding

The proposed program has the potential to expose sensitive receptors to substantial criteria air pollutant concentrations. However, implementation of Mitigation Measure AIR-3 would reduce this impact to a less-than-significant level.

Brief Explanation of the Rationale for Finding

CEQA requires that all feasible and reasonable mitigation be applied to the project to reduce impacts to the exposure of sensitive receptors to substantial pollutant concentrations. Implementation of Mitigation Measure AIR-3 would reduce this impact to a less-than-significant level.

> **AIR-3:** For large construction efforts associated with regional or centralized BMPs, implementing agencies shall conduct a project-specific LST analysis where necessary to determine local health impacts to neighboring land uses. Where it is determined that construction emissions would exceed the applicable LSTs or the most stringent applicable federal or state ambient air quality standards, the structural BMP project shall reduce its daily construction intensity (e.g., reducing the amount of equipment used daily, reducing the amount of soil graded/excavated daily) to a level where the structural BMP project's construction emissions would no longer exceed SCAQMD's LSTs or result in pollutant emissions that would cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standards.

Significant Effect

The proposed program could create objectionable odors affecting a substantial number of people (Impact 3.2-5).

Description of Significant Impact

The proposed program does not include any uses typically associated with odor complaints including agricultural uses, wastewater treatment plants, food processing plans, and landfills, among others. During the construction phase, exhaust odors from equipment may produce discernible odors typical of most construction sites and would be a temporary source of nuisance to adjacent uses. These odors would be temporary and intermittent in nature, so would not be considered a significant environmental impact. Certain BMPs such as restored creeks and estuaries may result in odors from saturated mud or algal blooms when left permanently wet. This may result in a severe nuisance for sensitive receptors near such BMPs, and regular maintenance may be sufficient to reduce odors in some situations.

Finding

The proposed program has the potential to create objectionable odors affecting a substantial number of people. However, implementation of Mitigation Measures AES-2 and AIR-4 would reduce impacts to a less-than-significant levels.

Brief Explanation of the Rationale for Finding

CEQA requires that all feasible and reasonable mitigation be applied to the project to reduce the potential creation of objectionable odors affecting substantial numbers of people. Implementation of Mitigation Measures AES-2 and AIR-4 would reduce this impact to a less-than-significant level.

> **AES-2:** Implementing agencies shall develop BMP maintenance plans that are approved concurrently with each structural BMP approval. The maintenance plans must include measures to ensure functionality of the structural BMPs for the life of the BMP. These plans may include general maintenance guidelines that apply to a number of smaller distributed BMPs.
>
> **AIR-4:** During planning of structural BMPs, implementing agencies shall assess the potential for nuisance odors to affect a substantial number of people. BMPs that minimize odors shall be considered the priority when in close proximity to sensitive receptors.

5.3 Biological Resources

Significant Effect

The proposed program would have a substantial adverse impact, either directly or through habitat modifications, on species identified as special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service (Impact 3.3-1).

Description of Significant Impact

Construction of structural BMPs may affect large open space or riparian habitats that would have a higher potential to support special-status wildlife species, such as streams, wetlands, and upland scrub or oak woodlands. Mitigation Measures BIO-1 through BIO-8 require suitability studies for potential BMP sites for their potential to impact valued habitats, and require impact characterization, minimization and compensation for impacts to highly valued habitats in consultation with the USFWS and CDFW. The proposed program will implement BMPs that are designed to retain dry-weather flows, which could reduce wetted area or completely eliminate flows in certain drainages that support sensitive species. Implementation of Mitigation Measures BIO-1 through BIO-8 would help ensure that impacts to downstream biological resources are less than significant for regional and centralized BMPs. The smaller distributed BMPs would not result in significant impacts and would not be required to implement the mitigation measures.

Finding

The proposed program would have a substantial adverse impact, either directly or through habitat modifications, on species identified as special-status species in local or regional plans, policies, or regulations, or by California Department of Fish and Wildlife or the U.S. Fish and Wildlife

Service. These impacts would be reduced to a less-than-significant level with the implementation of the mitigation measures described below.

Brief Explanation of the Rationale for the Finding

CEQA requires that all feasible and reasonable mitigation be applied to the project to reduce impacts that would have a substantial adverse impact, either directly or through habitat modifications, on any sensitive species identified as special-status in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service. In consideration of the potential use of the project site by special-status wildlife species, impacts on special-status wildlife species would be significant. Implementation of Mitigation Measures BIO-1 through BIO-8 would reduce impacts to a less-than-significant level.

> **BIO-1:** Prior to approving a regional or centralized BMP, the Permittee shall conduct an evaluation of the suitability of the BMP location. Appropriate BMP sites should avoid impacting large areas of native habitats including upland woodlands and riparian forests that support sensitive species to the extent feasible. The evaluation shall include an assessment of potential downstream impacts resulting from flow diversions.
>
> **BIO-2**: Prior to ground-disturbing activities in areas that could support sensitive biological resources, a habitat assessment shall be conducted by a qualified biologist to determine the potential for special-status wildlife species to occur within affected areas, including areas directly or indirectly impacted by construction or operation of the BMPs.
>
> **BIO-3:** If a special-status wildlife species is determined to be present or potentially present within the limits of construction activities, a qualified biologist shall conduct preconstruction surveys of proposed work zones and within an appropriately sized buffer around each area as determined by a qualified biologist within 14 days prior to ground disturbing activities. Any potential habitat capable of supporting a special-status wildlife species shall be flagged for avoidance if feasible.
>
> **BIO-4:** If avoidance of special-status species or sensitive habitats that could support special-status species (including, but not limited to, critical habitat, riparian habitat, and jurisdictional wetlands/waters) is not feasible, the Permittee shall consult with the appropriate regulating agency (USACE/USFWS or CDFW) to determine a strategy for compliance with the Endangered Species Act, California Fish and Game Code, and other regulations protecting special-status species and sensitive habitats. The Permittee shall identify appropriate impact minimization measures and compensation for permanent impacts to sensitive habitats and species in consultation with regulatory agencies. Construction of the project will not begin until the appropriate permits from the regulatory agencies are approved.
>
> **BIO-5:** If construction and vegetation removal is proposed between February 1 and August 31, a qualified biologist shall conduct a pre-construction survey for breeding and nesting birds and raptors within 500-feet of the construction limits to determine and map

the location and extent of breeding birds that could be affected by the project. Active nest sites located during the pre-construction surveys shall be avoided until the adults and young are no longer reliant on the nest site for survival as determined by a qualified biologist.

BIO-6: All construction areas, staging areas, and right-of-ways shall be staked, flagged, fenced, or otherwise clearly delineated to restrict the limits of construction to the minimum necessary near areas that may support special-status wildlife species as determined by a qualified biologist.

BIO-7: Prior to construction in areas that could support special-status plants, a qualified botanist shall conduct a pre-construction floristic inventory and focused rare plant survey of project areas to determine and map the location and extent of special-status plant species populations within disturbance areas. This survey shall occur during the typical blooming periods of special-status plants with the potential to occur. The plant survey shall follow the CDFW Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (November 24, 2009).

BIO-8: If temporary construction-related impacts to special-status plant populations are identified within a disturbance area, the implementing agencies shall prepare and implement a special-status species salvage and replanting plan. The salvage and replanting plan shall include measures to salvage, replant, and monitor the disturbance area until native vegetation is re-established under the direction of CDFW and USFWS.

Significant Effect

The proposed program would have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS. (Impact 3.3-2)

Description of Significant Impact

Significant Ecological Areas (SEA), as identified by the Los Angeles County General Plan, riparian, and other sensitive communities are not expected to occur within the disturbance areas of the BMP projects since the majority of the structural BMPs would occur in developed or disturbed areas. While some regional and centralized structural BMPs could occur within or adjacent to SEAs, riparian habitat or other sensitive natural communities, these types of BMPs would provide multi-beneficial water quality and habitat restoration improvements to the applicable EWMP watershed. Additionally, each development proposed within a designated SEA must undergo a performance review process for compliance with the SEA design compatibility criteria and other standards for approval by the LA County Department of Regional Planning.

Finding

Future project-level environmental review processes would consider all proposed projects on a case-by-case basis to determine whether an individual project would impact riparian or other sensitive natural communities. Site-specific mitigation measures would be required to minimize and reduce potentially significant impacts to riparian and other sensitive natural communities. These impacts would be reduced to a less-than-significant level with the implementation of Mitigation Measures BIO-1 through BIO-8.

Brief Explanation of the Rationale for the Finding

CEQA requires that all feasible and reasonable mitigation be applied to the project to reduce impacts that would have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS. Implementation of Mitigation Measure **BIO-1** through **BIO-8** would reduce impacts to a less-than-significant level.

Significant Effect

The proposed program would have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. (Impact 3.3-3)

Description of Significant Impact

Wetlands occur throughout the EWMP areas, and once project facility locations are determined, exact locations and acreages of jurisdictional areas located within or adjacent to impact areas shall be determined through a formal jurisdictional delineation. For projects impacting native vegetation within jurisdictional drainages, the implementing agency would be required to obtain California Fish and Game Code Section 1602 compliance and Section 404 compliance from the USACE and Section 401 Certification from the RWQCB. In addition, implementation of Mitigation Measures BIO-1 through BIO-9 would ensure compliance with state and federal regulations relating to potentially jurisdictional features, including wash habitat vegetation that may fall under CDFW jurisdiction.

Finding

Any projects impacting native vegetation within jurisdictional drainages would be required to comply with California Fish and Game Code Section 1602 compliance and Section 404 compliance from the USACE and Section 401 Certification from the RWQCB. These impacts would be further reduced to a less-than-significant level with the implementation of the mitigation measures described below.

Brief Explanation of the Rationale for the Finding

CEQA requires that all feasible and reasonable mitigation be applied to the project to reduce impacts that would have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act through direct removal, filling, hydrological interruption, or other means. Implementation of Mitigation Measures **BIO-1** through **BIO-9** would reduce impacts to a less-than-significant level.

> **BIO-9:** Prior to construction, a qualified wetland delineator shall be retained to conduct formal wetland delineation in areas where potential jurisdictional resources (i.e., wetlands or drainages) subject to the jurisdiction of USACE, RWQCB, and CDFW may be

affected by the project. If jurisdictional resources are identified in the EWMP area and would be directly or indirectly impacted by individual projects, the qualified wetland delineator shall prepare a jurisdictional delineation report suitable for submittal to USACE, RWQCB, and CDFW for purposes of obtaining the appropriate permits. Habitat mitigation and compensation requirements shall be implemented prior to construction in accordance with Mitigation Measure BIO-4.

Significant Effect

The proposed program would conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. (Impact 3.3-5)

Description of Significant Impact

The proposed program would mainly be constructed within highly urbanized and disturbed areas within existing infrastructure. Any impacts to oak trees within Los Angeles County would be required to comply with the Oak Tree Preservation Ordinance (or other tree ordinances established by the local city). A tree permit may be required if impacts to oak trees or other protected trees are determined to be necessary.

Finding

No impacts to oak trees or other protected tree species is anticipated. However, the exact locations of the BMP projects have not been established. Implementation of Mitigation Measure BIO-10 would reduce any potential impacts to protected tree species to a less-than-significant level.

Brief Explanation of the Rationale for the Finding

CEQA requires that all feasible and reasonable mitigation be applied to the project to reduce impacts that would conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. Implementation of Mitigation Measure BIO-10 would reduce impacts to a less-than-significant level.

> **BIO-10:** Oak trees and other protected trees shall be avoided to the extent feasible. If trees may be impacted by project construction, a certified arborist shall conduct a tree inventory of the construction impact area. If any oak trees or other protected trees will be impacted by BMP construction, the implementing agency shall obtain any required County or City permits.

Significant Effect

The proposed program would result in cumulative biological resource impacts.

Description of Significant Impact

Cumulatively, throughout the region, the retention of stormwater and treatment of pollutants within each watershed, and the reduction of pollutant loading in waterways would substantially benefit the water quality of the region's aquatic and coastal habitats, as well as the plants and wildlife dependent on them. Implementation of the BMPs would also return the local hydrology to a more natural condition. Although some drainage segments may exhibit reduced riparian habitat or wetlands over time due to the reduced dry-weather flow, the cumulative effect would be offset by increased groundwater recharge and seepage supporting expanded wetland and riparian vegetation supporting local flora and fauna populations. Therefore, the program's potential contribution to cumulative effects on biological resources is considered less than significant.

Finding

Most of the distributed BMPs would be small in scale and would not result in cumulatively significant impacts, as they would occur within existing developed or disturbed areas at existing stormwater infrastructure/facilities. For regional and centralized BMPs at the larger scale, Mitigation Measures BIO-1 through BIO-10 would reduce potentially significant impacts to biological resources, and any additional or more site-specific mitigation measures developed during the future project-level environmental review processes may further reduce potential impacts.

Brief Explanation of the Rationale for the Finding

CEQA requires that all feasible and reasonable mitigation be applied to the project to reduce impacts to biological resources. Any potentially significant cumulative impacts to biological resources in the project region would be reduced by the implementation of Mitigation Measures BIO-1 through BIO-10.

5.4 Cultural Resources

Significant Effect

The proposed program could cause a substantial adverse change in the significance of unique archaeological resources as defined in §15064.5 (Impact 3.4-2).

Description of Significant Impact

The program area, which spans most of Los Angeles County, should be considered sensitive for archaeological resources, with degree of sensitivity varying across the program area based on specific environmental factors. Any structural BMP which involves grading, trenching, excavation, vegetation removal, or other forms of ground disturbance could impact archaeological resources.

Finding

The proposed program's potential to cause a substantial adverse change in the significance of unique archaeological resources is considered significant; however, potential adverse effects caused by the proposed program could be mitigated to a less-than-significant level.

Brief Explanation of the Rationale for the Finding

CEQA requires that all feasible and reasonable mitigation be applied to the project to reduce impacts that would cause a substantial adverse change in the significance of unique archaeological resources. The project impacts are considered significant but would be reduced to a level that is less than significant with implementation of Mitigation Measures CUL-2 through CUL-2.

> **CUL-2**: Implementing agencies shall ensure that individual EWMP projects that require ground disturbance shall be subject to a Phase I cultural resources inventory on a project-specific basis prior to the implementing agency's approval of project plans. The study shall be conducted or supervised by a qualified archaeologist, defined as an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for Archaeology, and shall be conducted in consultation with the local Native American representatives expressing interest. The cultural resources inventory shall include a cultural resources records search to be conducted at the South Central Coastal Information Center; scoping with the NAHC and with interested Native Americans identified by the NAHC; a pedestrian archaeological survey where deemed appropriate by the qualified archaeologist; and formal recordation of all identified archaeological resources on California Department of Parks and Recreation 523 forms and significance evaluation of such resources presented in a technical report following the guidelines in *Archaeological Resource Management Reports (ARMR): Recommended Contents and Format*, Department of Parks and Recreation, Office of Historic Preservation, State of California, 1990.
>
> If potentially significant archaeological resources are encountered during the survey, the implementing agency shall require that the resources are evaluated by the qualified archaeologist for their eligibility for listing in the CRHR and for significance as a historical resource or unique archaeological resource per CEQA Guidelines Section 15064.5. Recommendations shall be made for treatment of these resources if found to be significant, in consultation with the implementing agency and the appropriate Native American groups for prehistoric resources. Per CEQA Guidelines Section 15126.4(b)(3), preservation in place shall be the preferred manner of mitigation to avoid impacts to archaeological resources qualifying as historical resources. Methods of avoidance may include, but shall not be limited to, project reroute or redesign, project cancellation, or identification of protection measures such as capping or fencing. Consistent with CEQA Guidelines Section 15126.4(b)(3)(C), if it is demonstrated that resources cannot be avoided, the qualified archaeologist shall develop additional treatment measures, which may include data recovery or other appropriate measures, in consultation with the implementing agency, and any local Native American representatives expressing interest in prehistoric or tribal resources. If an archaeological site does not qualify as an historical resource but meets the criteria for a unique archaeological resource as defined in Section 21083.2, then the site shall be treated in accordance with the provisions of Section 21083.2.
>
> **CUL-3**: The implementing agency shall retain archaeological monitors during ground-disturbing activities that have the potential to impact archaeological resources qualifying as historical resources or unique archaeological resources, as determined by a qualified archaeologist in consultation with the implementing agency, and any local Native

American representatives expressing interest in the project. Native American monitors shall be retained for projects that have a high potential to impact sensitive Native American resources, as determined by the implementing agency in coordination with the qualified archaeologist.

CUL-4: During project-level construction, should subsurface archaeological resources be discovered, all activity in the vicinity of the find shall stop and a qualified archaeologist shall be contacted to assess the significance of the find according to CEQA Guidelines Section 15064.5. If any find is determined to be significant, the archaeologist shall determine, in consultation with the implementing agency and any local Native American groups expressing interest, appropriate avoidance measures or other appropriate mitigation. Per CEQA Guidelines Section 15126.4(b)(3), preservation in place shall be the preferred means to avoid impacts to archaeological resources qualifying as historical resources. Methods of avoidance may include, but shall not be limited to, project reroute or redesign, project cancellation, or identification of protection measures such as capping or fencing. Consistent with CEQA Guidelines Section 15126.4(b)(3)(C), if it is demonstrated that resources cannot be avoided, the qualified archaeologist shall develop additional treatment measures, such as data recovery or other appropriate measures, in consultation with the implementing agency and any local Native American representatives expressing interest in prehistoric or tribal resources. If an archaeological site does not qualify as an historical resource but meets the criteria for a unique archaeological resource as defined in Section 21083.2, then the site shall be treated in accordance with the provisions of Section 21083.2.

Significant Effect

The proposed program could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature (Impact 3.4-3).

Description of Significant Impact

The program area is underlain by a number of high or undetermined paleontological sensitivity units, which may contain significant paleontological resources. Significant paleontological resources can be uncovered even in areas of low sensitivity, though, and it is possible that ground-disturbing construction activities associated with structural BMPs could result in the inadvertent discovery of paleontological resources, which could be a significant impact.

Finding

The proposed program's potential to directly or indirectly damage or destroy unique paleontological resources or sites or unique geologic features is considered significant; however, potential adverse effects caused by the proposed program could be mitigated to a less-than-significant level.

Brief Explanation of the Rationale for the Finding

CEQA requires that all feasible and reasonable mitigation be applied to the project to reduce impacts that would damage or destroy paleontological resources or sites or unique geologic features. The project impacts are considered significant but would be reduced to a level that is less than significant with implementation Mitigation Measures CUL-5 and CUL-6.

> **CUL-5:** For individual structural BMP projects that require ground disturbance, the implementing agency shall evaluate the sensitivity of the project site for paleontological resources. If deemed necessary, the implementing agency shall retain a qualified paleontologist to evaluate the project and provide recommendations regarding additional work, potentially including testing or construction monitoring.

> **CUL-6:** In the event that paleontological resources are discovered during construction, the implementing agency shall notify a qualified paleontologist. The paleontologist will evaluate the potential resource, assess the significance of the find, and recommend further actions to protect the resource.

Significant Effect

The proposed program could disturb human remains, including those interred outside of formal cemeteries (Impact 3.4-4).

Description of Significant Impact

There is no indication, either from the archival research results or the archaeological survey, that any particular location in the project area has been used for human burial purposes in the recent or distant past. However, in the event that human remains are inadvertently discovered during project construction activities, the human remains could be inadvertently damaged, which could be a significant impact.

Finding

The proposed program's potential to uncover buried archaeological deposits including human remains is considered significant; however, potential adverse effects caused by the project could be mitigated to a less-than-significant level.

Brief Explanation of the Rationale for the Finding

CEQA requires that all feasible and reasonable mitigation be applied to the project to reduce impacts related to the disturbing of any human remains, including those interred outside of a formal cemetery. The project impacts are considered significant but would be reduced to a level that is less than significant with implementation of Mitigation Measure CUL-7.

> **CUL-7:** The implementing agency shall require that, if human remains are uncovered during project construction, work in the vicinity of the find shall cease and the County Coroner shall be contacted to evaluate the remains, following the procedures and protocols set forth in Section 15064.5 (e)(1) of the CEQA Guidelines. If the County Coroner determines that the remains are Native American, the Coroner will contact the Native American Heritage Commission, in accordance with Health and Safety Code Section 7050.5, subdivision (c), and Public Resources Code 5097.98 (as amended by AB 2641). The NAHC will then designate a Most Likely Descendant of the deceased

Native American, who will engage in consultation to determine the disposition of the remains.

5.5 Geologic and Mineral Resources

Significant Effect

The proposed program could be located on a geological unit or soil that is unstable, or that would become unstable as a result of the program, and potentially result in on-site or off-site non-seismically induced geologic hazards such as landslides, lateral spreading, subsidence, collapse or sinkholes, settlement, or slope failure (Impact 3.5-3).

Description of Significant Impact

Infiltration of water into subsurface soils can increase soil instability and result in saturated soils, soil piping through preferential pathways, breakouts due to infiltrated water finding utility trenches and other preferential pathways, and raising the local groundwater levels such that infrastructure foundations and underground structures could be affected by unstable soils. Structural BMPs could potentially be undermined by unstable soils or impact adjacent infrastructure and buildings; Mitigation Measure GEO-1 would reduce the impact to a less-than-significant level.

Finding

The proposed program's potential to be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the program, and potentially result in on-site or off-site non-seismically induced geologic hazards such as landslides, lateral spreading, subsidence, collapse or sinkholes, settlement, or slope failure is considered significant; however, potential adverse effects caused by the proposed program would be mitigated to a less-than-significant level.

Brief Explanation of the Rationale for the Finding

CEQA requires that all feasible and reasonable mitigation be applied to the project to reduce impacts related to the project being located on a geologic unit or soil that is unstable, or that would become unstable as a result of the program, and potentially result in on-site or off-site non-seismically induced geologic hazards such as landslides, lateral spreading, subsidence, collapse or sinkholes, settlement, or slope failure. The project impacts are considered significant but would be reduced to a level that is less than significant with implementation of Mitigation Measure GEO-1.

> **GEO-1:** Prior to approval of infiltration BMPs, implementing agencies shall conduct a geotechnical investigation of each infiltration BMP site to evaluate infiltration suitability. If infiltration rates are sufficient to accommodate an infiltration BMP, the geotechnical investigation shall recommend design measures necessary to prevent excessive lateral spreading that could destabilize neighboring structures. Implementing agencies shall implement these measures in project designs.

Significant Effect

Cumulative impacts on geology and soils would have a less than significant impact on the environment with implementation of mitigation.

Description of Significant Impact

The cumulative effect of multiple infiltration projects could increase the severity of perched or migrating water, which has the potential to inundate underground utilities or structures. Mitigation Measure GEO-1 would minimize the cumulative impact to regional infrastructure from perched or migrating water. The management of groundwater pumping among regional managers prevents impacts to structural foundations resulting from groundwater mounding from existing recharge efforts. Mitigation Measure GEO-2 would reduce the cumulative effects to soil stability from elevated groundwater levels to a less-than-significant level.

Finding

The proposed program's cumulative impact to geology and soils is considered significant; however, potential adverse effects caused by the proposed program would be mitigated to a less-than-significant level.

Brief Explanation of the Rationale for the Finding

CEQA requires that all feasible and reasonable mitigation be applied to the project to reduce cumulative impacts related to geology and soils. The cumulative project impacts are considered significant but would be reduced to a level that is less than significant with implementation of Mitigation Measures GEO-1 and GEO-2.

> **GEO-1:** Prior to approval of infiltration BMPs, implementing agencies shall conduct a geotechnical investigation of each infiltration BMP site to evaluate infiltration suitability. If infiltration rates are sufficient to accommodate an infiltration BMP, the geotechnical investigation shall recommend design measures necessary to prevent excessive lateral spreading that could destabilize neighboring structures. Implementing agencies shall implement these measures in project designs.
>
> **GEO-2:** Prior to installing BMPs designed to recharge the local groundwater supplies, the implementing agency shall notify local groundwater managers, including the Upper Los Angeles River Area Water Master, the Water Replenishment District of Southern California, or the San Gabriel Water Master as well as local water producers such as local municipalities and water companies. The implementing agency shall coordinate BMP siting efforts with groundwater managers and producers to mitigate high groundwater levels while increasing local water supplies.

5.6 Greenhouse Gas Emissions

The proposed program would not have any environmental effects related to greenhouse gas emissions that are potentially significant but can be mitigated to less-than-significant levels.

5.7 Hazards and Hazardous Materials

Significant Effect

The proposed program would create a significant hazard to the public or the environment through the accumulation of potentially hazardous materials into BMPs (Impact 3.7-2).

Description of Significant Impact

Because of their function as water conveyance systems, the entire storm sewer system, as augmented by structural BMPs, would collect and retain sediment and chemicals from urban runoff, along with any accidental or illicit spills of hazardous materials. The introduction of hazardous materials into the storm sewer system could occur in large events as in a catastrophic spill, or could occur in small concentrations as in petroleum hydrocarbons and heavy metals picked up and carried by stormwater in urban runoff from the streets. Contaminants in the runoff water or as discrete concentrated spills could accumulate in the soils and vegetation of structural BMPs. To address the accumulation of contaminants in soil at BMPs, operations and maintenance plans for BMPs that might accumulate constituents in surface soils and media will be developed to include periodic removal and replacement of these potentially impacted surface materials to reduce the potential for long-term loading leading to hazardous concentrations in soils and groundwater.

Finding

The proposed program has the potential to create a significant hazard to the public or the environment through the accumulation of potentially hazardous materials into BMPs. The implementation of Mitigation Measure HAZ-1 would reduce impacts to a less-than-significant level.

Brief Explanation of the Rationale for the Finding

CEQA requires that all feasible and reasonable mitigation be applied to the project to reduce impacts related to the creation of a significant hazard to the public or the environment through the accumulation of potentially hazardous materials into BMPs to less-than-significant. With the implementation of Mitigation Measure HAZ-1, these impacts would be considered less than significant.

> **HAZ-1:** Implementing agencies shall prepare and implement maintenance practices that include periodic removal and replacement of surface soils and media that may accumulate constituents that could result in further migration of constituents to sub-soils and groundwater. A BMP Maintenance Plan shall be prepared by Implementing Agencies upon approval of the BMP projects that identifies the frequency and procedures for removal and/or replacement of accumulated debris, surface soils and/or media (to depth where constituent concentrations do not represent a hazardous conditions and/or have the potential to migrate further and impact groundwater) to avoid accumulation of hazardous concentrations and the potential to migrate further to sub-soils and groundwater. The Maintenance Plan shall include vector control requirements. The BMP Maintenance Plan

> may consist of a general maintenance guideline that applies to several types of smaller distributed BMPs. For smaller distributed BMPs on private property, these plans may consist of a maintenance covenant that includes requirements to avoid the accumulation of hazardous concentrations in these BMPs that may impact underlying sub-soils and groundwater. Structural BMPs shall be designed to prevent migration of constituents that may impact groundwater.

Significant Effect

The proposed program would be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, could create a significant hazard to the public or the environment (Impact 3.7-4).

Description of Significant Impact

It is possible that a proposed BMP may be located on a hazardous materials site listed on the Cortese List, which would expose construction workers, the public, and the environment to hazardous materials during earth-moving activities, introducing a significant impact.

Finding

The proposed program has the potential to result in significant impacts related to the project location on a site which is included on a list of hazardous materials sites, and, as a result, could create a significant hazard to the public or the environment. The implementation of Mitigation Measure HAZ-2 would reduce impacts to a less-than-significant level.

Brief Explanation of the Rationale for the Finding

CEQA requires that all feasible and reasonable mitigation be applied to the project to reduce impacts related to hazardous materials to less-than-significant. With the implementation of Mitigation Measures HAZ-2, these impacts would be considered less than significant.

> **HAZ-2:** Prior to the initiation of any construction requiring ground-disturbing activities in areas where hazardous material use or management may have occurred, the implementing agencies shall complete a Phase I Environmental Site Assessment (ESA) in accordance with American Society for Testing and Materials Standard E1527-13 for each construction site. Any recommended follow up sampling (Phase II activities) set forth in the Phase I ESA shall be implemented prior to construction. The results of Phase II studies, if necessary, shall be submitted to the local overseeing agency and any required remediation or further delineation of identified contamination shall be completed prior to commencement of construction.

Significant Effect

For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, for a project within the vicinity of a private airstrip, the proposed program could result in a safety hazard for people residing or working in the project area (Impact 3.7-5).

Description of Significant Impact

Some structural BMPs, such as detention basins that store water for a period of time or constructed wetlands that would increase or improve wildlife habitat, could be constructed on or near airports and could result in attracting wildlife. Deer and birds are known wildlife hazards to airports. If the proposed project is at or near an airport, this could increase hazards to aircraft from wildlife.

Finding

The proposed program, if located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, for a project within the vicinity of a private airstrip, has the potential to result in safety hazard for people residing or working in the project area. The implementation of Mitigation Measures HAZ-3 would reduce impacts to a less-than-significant level.

Brief Explanation of the Rationale for the Finding

CEQA requires that all feasible and reasonable mitigation be applied to the project to reduce impacts related to hazardous materials to less-than-significant. With the implementation of Mitigation Measures HAZ-3, these impacts would be considered less than significant.

> **HAZ-3:** Implementing Agencies shall require that those BMPs that are within an airport land use plan area are compatible with criteria specified in FAA Advisory Circular No: 150/5200-33B (FAA, 2007). If the proposed BMP is within the minimum separation criteria, the implementing agency shall consult with the airport and collaboratively evaluate whether the potential increase in wildlife hazards can be mitigated.

Significant Effect

The proposed program would result in cumulatively significant impacts to hazardous materials.

Description of Significant Impact

Most of the distributed BMPs would be small in scale and would not result in cumulatively significant impacts due to increased hazards from construction or operation. However, the combination of BMPs throughout the region would change the flow paths of stormwater and urban runoff that currently occurs in the region, resulting in the retention of pollutants generally within the soil of the BMPs that use soil for filtration and retention. Cumulatively, throughout the region, the retention and treatment of pollutants within each watershed and the reduction of pollutant loading in waterways will substantially benefit water and sediment quality of the region's habitats, rivers, and beaches. Therefore, the project's potential contribution to cumulative effects on hazards and hazardous materials is considered beneficial.

Finding

The proposed program has the potential to result in cumulatively considerable impacts related to hazardous resources. Hazardous material could be released during project construction or operation. The implementation of appropriate safety measures during construction of the proposed project, as well as any other cumulative project, would reduce the impact to a level that would not contribute to cumulative effects. Implementation of Mitigation Measures HAZ-1, HAZ-2, and HAZ-3 would reduce impacts to less-than-significant levels.

Brief Explanation of the Rationale for the Finding

CEQA requires that all feasible and reasonable mitigation be applied to the project to reduce cumulative impacts caused by the project. With the implementation of Mitigation Measures HAZ-1, HAZ-2, and HAZ-3, impacts would be less than significant.

5.8 Hydrology and Water Quality

Significant Effect

The proposed program would result in higher groundwater levels and could potentially affect groundwater quality (Impact 3.8-2).

Description of Significant Impact

Regional BMPs would recharge stormwater into the groundwater basin and could raise local groundwater levels following major storm events. Distributed infiltration BMPs would typically be too small to have a measureable effect on local groundwater levels. The increased water supplies captured by the infiltration basins through the EWMP areas would be a beneficial impact of the projects. Infiltration BMPs would not be suitable in areas of low permeability, though, and potential locations would need to be evaluated for suitability. Concentrations of contaminants found in stormwater runoff could increase, resulting in contaminated shallow soils and groundwater.

Finding

The proposed program has the potential to result significant impacts related to higher groundwater levels and degradation of groundwater quality. The implementation of Mitigation Measures HYDRO-1 through HYDRO-3 would reduce impacts to a less-than-significant level.

Brief Explanation of the Rationale for the Finding

CEQA requires that all feasible and reasonable mitigation be applied to the project to reduce impacts related to higher groundwater levels and potential degradation of groundwater quality to less-than-significant. With the implementation of Mitigation Measures HYDRO-1 through HYDRO-3, these impacts would be considered less than significant.

> **HYDRO-1:** Prior to approving an infiltration BMP, the Permittee shall conduct an evaluation of the suitability of the BMP location. Appropriate infiltration BMP sites should avoid areas with low permeability where recharge could adversely affect neighboring subsurface infrastructure.
>
> **HYDRO-2:** Prior to approving an infiltration BMP, the Permittee shall identify pretreatment technologies, type, and depth of filtration media; depth to groundwater; and other design considerations necessary to prevent contaminants from impacting groundwater quality. The design shall consider stormwater quality data within the BMP's

collection area to assess the need and type of treatment and filtration controls. Local design manuals and ordinances requiring minimum separation distance to groundwater shall also be met as part of the design.

HYDRO-3: Prior to the installation of an infiltration BMP, the Permittee shall conduct a regulatory database review for contaminated groundwater sites within a quarter mile of the proposed infiltration facility. The review shall include locations of on-site wastewater treatment systems. The Permittee shall identify whether any contaminated groundwater plumes or leach fields are present and whether coordination with the local and state environmental protection overseeing agency and responsible party is warranted prior to final design of infiltration facility.

5.9 Land Use and Agriculture

The proposed program would not have any environmental effects on land use that are potentially significant and that cannot be mitigated to less-than-significant levels.

5.10 Noise

Significant Effect

The proposed program would result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project (Impact 3.10-3).

Description of Significant Impact

No operational noise levels would be generated by the structural BMPs given their passive manner of operation. However, it is anticipated that some of the centralized and regional structural BMPs would require the use of irrigation pump stations and associated components to divert the collected stormwater. At these structural BMP sites, noise levels generated from the long-term operation of the pumps and associated components could result in increased noise levels in the surrounding noise environment.

Finding

The proposed program has the potential to result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project. The implementation of Mitigation Measures NOISE-1 and NOISE-2 would reduce impacts to a less-than-significant level.

Brief Explanation of the Rationale for the Finding

CEQA requires that all feasible and reasonable mitigation be applied to the project to reduce impacts related to a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project. With the implementation of Mitigation Measures NOISE-1 and NOISE-2 included below, these impacts would be considered less than significant.

NOISE-1: The implementing agencies shall implement the following measures during construction as needed:

- Include design measures necessary to reduce the construction noise levels to where feasible. These measures may include noise barriers, curtains, or shields.
- Place noise-generating construction activities (e.g., operation of compressors and generators, cement mixing, general truck idling) as far as possible from the nearest noise-sensitive land uses.
- Locate stationary construction noise sources as far from adjacent noise-sensitive receptors as possible.
- If construction is to occur near a school, the construction contractor shall coordinate the with school administration in order to limit disturbance to the campus. Efforts to limit construction activities to non-school days shall be encouraged.
- For the centralized and regional BMP projects located adjacent to noise-sensitive land uses, identify a liaison for these off-site sensitive receptors, such as residents and property owners, to contact with concerns regarding construction noise and vibration. The liaison's telephone number(s) shall be prominently displayed at construction locations.
- For the centralized and regional BMP projects located adjacent to noise-sensitive land uses, notify in writing all landowners and occupants of properties adjacent to the construction area of the anticipated construction schedule at least 2 weeks prior to groundbreaking.

NOISE-2: All structural BMPs that employ mechanized stationary equipment that generate noise levels shall comply with the applicable noise standards established by the implementing agency with jurisdiction over the structural BMP site. The equipment shall be designed with noise-attenuating features (e.g., enclosures) and/or located at areas (e.g., belowground) where nearby noise-sensitive land uses would not be exposed to a perceptible noise increase in their noise environment.

5.11 Population and Housing and Environmental Justice

The proposed program would not have any environmental effects related to population, housing and environmental justice that would be potentially significant, but could be mitigated to less than significant levels.

5.12 Public Services and Recreation

Significant Effect

The proposed program would not result in substantial adverse physical impacts associated with the provision of, or need for, new or physically altered governmental fire protection facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for fire protective services (Impact 3.12-1).

Description of Significant Impact

The structural BMPs are not habitable structures, would not be constructed with flammable materials, and would not require fire protection services. Because of the relative scale of these infrastructure improvements, the construction of the various structural BMPs are not expected to result in the need for new or physically altered fire protection facilities. However, construction of new structural BMPs in streets, sidewalks, parkland, or other facilities (these may include public service facilities such as police stations, fire stations, and municipal maintenance yards) within existing high-density urban, commercial, industrial, and transportation areas, as well as associated staging areas, could temporarily disrupt the provision of fire services, resulting in potentially significant impacts.

Finding

The proposed program has the potential to result in substantial adverse physical impacts associated with the provision of, or the need for, new or physically altered governmental fire protection facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for fire protection services. Implementation of Mitigation Measure PS-1 would reduce impacts to a less-than-significant level.

Brief Explanation of the Rationale for the Finding

CEQA requires that all feasible and reasonable mitigation be applied to the project related to significant cumulative impacts associated with public services. With the implementation of Mitigation Measure PS-1, these impacts would be considered less than significant.

> **PS-1:** The Permittee implementing the EWMP project shall provide reasonable advance notification to service providers such as fire, police, and emergency medical services as well as to local businesses, homeowners, and other residents adjacent to and within areas potentially affected by the proposed EWMP project about the nature, extent, and duration of construction activities. Interim updates should be provided to inform them of the status of the construction activities.

5.13 Transportation and Circulation

Significant Effect

The proposed program would intermittently and temporarily increase traffic levels and traffic delays due to vehicle trips generated by construction workers and construction vehicles on area roadways (Impact 3.13-1).

Description of Significant Impact

Vehicle trips would be generated primarily by construction workers commuting to and from the BMP work sites, and by trucks hauling materials and equipment to and from the sites. The construction traffic impacts associated with each individual structural BMP project would be short-term in nature and limited to the period of time when construction activity is taking place for that particular project. Although project-related traffic would be temporary, supplemental project-level analysis of potential site-specific impacts could determine that addition of project-generated traffic would be considered substantial in relation to traffic flow conditions on local roadways. For this program-level assessment, this impact is considered potentially significant.

Finding

The proposed program will potentially intermittently and temporarily increase traffic levels and traffic delays due to vehicle trips generated by construction workers and construction vehicles on area roadways; however, implementation of Mitigation Measure TRAF-1 would reduce impacts to a less-than- significant level.

Brief Explanation of the Rationale for the Finding

CEQA requires that all feasible and reasonable mitigation be applied to the project to reduce impacts related to temporary and intermittent increase in traffic levels and traffic delays due to vehicle trips generated by construction workers and construction vehicles on area roadways to less-than-significant. With the implementation of Mitigation Measure TRAF-1, below, this impact would be considered less than significant.

TRAF-1: For projects that may affect traffic, implementing agencies shall require that contractors prepare a construction traffic control plan. Elements of the plan should include, but are not necessarily limited to, the following:

- Develop circulation and detour plans to minimize impacts to local street circulation. Use haul routes minimizing truck traffic on local roadways to the extent possible.
- To the extent feasible, and as needed to avoid adverse impacts on traffic flow, schedule truck trips outside of peak morning and evening commute hours.
- Install traffic control devices as specified in Caltrans' Manual of Traffic Controls for Construction and Maintenance Work Zones where needed to maintain safe driving conditions. Use flaggers and/or signage to safely direct traffic through construction work zones.

- Coordinate with facility owners or administrators of sensitive land uses such as police and fire stations, hospitals, and schools. Provide advance notification to the facility owner or operator of the timing, location, and duration of construction activities.

Significant Effect

The proposed program would contribute to cumulative impacts to traffic and transportation (Impact 3.13-4).

Description of Significant Impact

During construction of the structural BMPs, intermittent and temporary traffic-related impacts in the cumulative context would occur. The proposed program has the potential to contribute to potentially significant cumulative construction-related impacts as a result of (1) cumulative projects (such as land development projects) that generate increased traffic at the same time on the same roads as would the proposed program, causing increased congestion and delays; and (2) infrastructure projects in roads that would be used by project construction workers and trucks, which could delay project-generated vehicles past the work zones of those other projects.

Finding

The proposed program is expected to cumulatively impact traffic and transportation; however, implementation of Mitigation Measure TRAF-1 is expected to reduce impacts to a less-than-significant level.

Brief Explanation of the Rationale for the Finding

CEQA requires that all feasible and reasonable mitigation be applied to the project to reduce impacts related to cumulative impacts to traffic and transportation to less than significant. With the implementation of Mitigation Measure TRAF-1, these impacts would be considered less than significant.

5.14 Utilities and Service Systems

Significant Effect

The proposed program would require new or expanded water supply resources or entitlements or require or result in the construction of new water facilities or expansion of existing facilities, the construction of which could cause significant environmental effects (Impact 3.14-3).

Description of Significant Impact

Implementation of the EWMPS would not increase water demand due to the relatively short construction period for structural BMPs. Impacts to the existing water supplies are anticipated to be beneficial as a result of the stormwater and non-stormwater runoff infiltration and conservation BMPs implemented across the EWMP areas. Construction requiring ground disturbance could encounter buried utilities including water supply infrastructure. Construction of BMPs to detain stormwater and dry-weather flows may reduce flows downstream, thereby reducing access to beneficial uses downstream. As part of the project design, Implementing Agencies would be required to identify the potential for underground utilities and determine whether they would need to be relocated to accommodate the BMP. Dry-weather flows in coastal streams and foothills are largely fed by groundwater seepage or wastewater discharges. Any detention of storm flows upstream would not substantially reduce storm flows downstream or significantly impede access to storm flow.

Finding

The proposed program is not expected to require expansion of existing water entitlements or result in the construction of new facilities that could result in environmental effects; the proposed program would further reduce its impact by implementing Mitigation Measure UTIL-1.

Brief Explanation of the Rationale for the Finding

CEQA requires that all feasible and reasonable mitigation be applied to the project to reduce impacts related to landfill capacity to less than significant. With the implementation of Mitigation Measure UTIL-1, these impacts would be considered less than significant.

> **UTIL-1:** Prior to implementation of BMPs, the implementing agency shall conduct a search for local utilities above and below ground that could be affected by the project. The implementing agencies shall contact each utility potentially affected and relocate the utility if necessary to ensure access and services are maintained.
>
> **UTIL-2:** Prior to approval of BMPs, implementing agencies shall evaluate the potential for impacts to downstream beneficial uses including surface water rights. Implementing agencies shall not approve BMPs that result in preventing access to previously appropriated surface water downstream.

Significant Effect

The proposed program would be served by a landfill with insufficient permitted capacity to accommodate the proposed program's solid waste disposal needs or the proposed program could not comply with federal, state, and local statuses and regulations related to solid waste (Impact 3.14-4).

Description of Significant Impact

Construction activities associated with the structural BMPs would include excavation and demolition of some existing infrastructure, which would produce solid waste requiring disposal in the nearest landfill. Some of the EWMPs are required to implement trash Total Maximum Daily Limits (TMDLs) and associated trash removal structural BMPs, which would require the disposal of the trash collected by the BMPs, thereby increase the amount of trash being sent to landfills. The non-structural BMPs would include street cleaning, landscape management, and storm drain operation, which produce debris and trash requiring disposal, which could exceed landfill limits.

The new trash collected that is associated with proposed trash removal structural BMPs and non-structural BMPs such as street cleaning and landscape management would be accommodated with existing and planned trash disposal facilities. Based on landfill capacity in the Los Angeles region, there appears to be ample availability to receive the expected trash generated by the program. The program would comply with all federal, state, and local statutes and regulations related to solid waste, including the Los Angeles County Construction and Demolition Debris Recycling and Reuse Program.

Finding

The program is not expected to be served by a landfill with insufficient capacity to accommodate its waste disposal needs and would comply with all solid waste regulations; however, implementation of Mitigation Measure UTIL-2 would further reduce impacts to a less-than-significant level

Brief Explanation of the Rationale for the Finding

CEQA requires that all feasible and reasonable mitigation be applied to the project to reduce impacts related to landfill capacity to less than significant. With the implementation of Mitigation Measure UTIL-2, these impacts would be considered less than significant.

> **UTIL-3:** Implementing agencies shall encourage construction contractors to recycle construction materials and divert inert solids (asphalt, brick, concrete, dirt, fines, rock, sand, soil, and stone) from disposal in a landfill where feasible. Implementing agencies shall incentivize construction contractors with waste minimization goals in bid specifications where feasible.

Significant Effect

The proposed program would result in less than significant cumulative impacts to utilities and service systems.

Description of Significant Impact

Structural BMPS constructed to treat, infiltrate, and/or store stormwater and non-stormwater throughout the watershed would not generate wastewater or require wastewater treatment or result in adverse cumulative impacts from operation or construction. Installation of storm drainage facilities identified in the proposed EWMPs would not substantially affect existing storm drain facilities. Impacts to the existing water supplies are anticipated to be beneficial as a result of the stormwater and non-stormwater runoff infiltration and conservation BMPs implemented across the EWMP areas. Construction and operation of the structural BMPs would generate solid waste; however, landfills serving the program area are expected to have sufficient capacity to accommodate the amount of waste generated. Disposal of the solid waste generated during construction and operation would comply with all pertinent regulations and statutes. All other projects implemented in the area would also be required to comply with federal, state, and local solid waste regulations and statutes. The use of energy anticipated for the proposed program is minor when compared to the County-wide use of electricity. The proposed program would use energy-efficient equipment and would not result in wasteful consumption. The non-structural BMPs would include street cleaning, landscape management, and storm drain operation, which would produce debris and trash for disposal.

Finding

The proposed program would not likely result in cumulative impacts to utilities and service systems. The proposed program would further reduce its cumulative impact on utilities and service systems to a less-than-significant-level by implementing Mitigation Measures UTIL-1 and UTIL-2.

Brief Explanation of the Rationale for the Finding

CEQA requires that all feasible and reasonable mitigation be applied to the project to reduce cumulative impacts related to utilities and service systems. With the implementation of Mitigation Measure UTIL-1 and UTIL-2, these impacts would be considered less than significant.

6.0 Significant and Unavoidable Environmental Impacts

As described above in Section 5.0, the impacts identified above as being less than significant with the implementation of mitigation measures could be significant and unavoidable if the proposed mitigation measures are not adopted and implemented by the Implementing Agencies for projects within their jurisdiction. Because the District cannot ensure that these Implementing Agencies will adopt and implement the proposed mitigation measures, the District finds that the impacts identified in section 5.0 may also be significant and unavoidable with respect to projects where the District will not be an implementing agency. The impacts discussed below were identified in the Final Program EIR as being "significant and unavoidable" for the program because they cannot be mitigated to a less-than-significant level.

6.1 Aesthetics

The proposed program would not have any environmental effects on aesthetics that cannot be mitigated to a less-than-significant level.

6.2 Air Quality

Significant Effect

The proposed program could violate air quality standards or contribute substantially to an existing or projected air quality violation (Impact 3.2-2).

Description of Significant Impact

Construction activities at the individual project sites would temporarily create emissions of dust, fumes, equipment exhaust, and other air contaminants. Through representative “worst-case” construction scenarios of each structural BMP type, ranging from small-, medium-, and large-scale projects, the magnitude of the daily emissions that can be generated by each structural BMP type is presented. The maximum daily construction emissions for the three structural BMP project types were estimated using the California Emissions Estimator Model (CalEEMod). The construction-related emissions of criteria air pollutants for the three structural BMP types were modeled based on general information provided in the project description and CalEEMod default settings along with reasonable assumptions based on other similar types of projects. The model found that for smaller BMPs including distributed BMPs, air emissions would not be significant and would not require mitigation measures. For some of the larger regional and centralized BMPs, the model shows that the maximum daily level of construction-generated emissions of NOx would exceed the applicable SCAQMD-recommended thresholds under the worst-case construction scenarios. Implementation of Mitigation Measures AIR-1 and AIR-2 would reduce emissions, but they may not reduce these emissions to levels below the SCAQMD thresholds for every structural BMP project, as the amount of emissions generated, the land area that would need disturbing, and the length of the construction schedule for each structural BMP project would vary. Implementation of large regional or centralized BMPs could result in temporary significant and unavoidable air emissions during peak periods of construction.

Long term operation of the proposed program would not result in substantial emissions of criteria air pollutants. There would be no new land use projects which would generate daily vehicle emissions. Inspection and maintenance activities would occur to the project site, but would be periodic throughout the year and would result in minimal emissions. Equipment for pump stations and ancillary components would be electrically powered, so would not generate emissions at the project site.

Finding

The proposed program would implement projects that could exceed identified emissions thresholds, and therefore have the potential to violate any air quality standard or substantially contribute to an existing or projected air quality violation. Implementation of Mitigation Measures AIR-1 and AIR-2 would help reduce this impact, but construction emissions would remain significant and unavoidable for some larger projects. Impacts from operational emissions would be considered less-than-significant.

Brief Explanation of the Rationale for Finding

CEQA requires that all feasible and reasonable mitigation be applied to the project to reduce impacts related to the violation of any air quality standard or substantial contribution to an existing or projected air quality violation. Implementation of Mitigation Measures AIR-1 and AIR-2 would help reduce the impact, but impacts from construction emissions would remain significant and unavoidable for some of the larger projects. Impacts from operational emissions would be less than significant.

> **AIR-1:** Implementing agencies shall require for large regional or centralized BMPs the use of low-emission equipment meeting Tier II emissions standards at a minimum and Tier III and IV emissions standards where available as CARB-required emissions technologies become readily available to contractors in the region.
>
> **AIR-2:** For large construction efforts that may result in significant air emissions, implementing agencies shall encourage contractors to use lower-emission equipment through the bidding process where appropriate.

Significant Effect

The proposed program could result in a cumulatively considerable net increase of any criteria pollutant for which the program region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors) (Impact 3.2-3). The proposed program could result in a significant cumulative impact to air quality.

Description of Significant Impact

As the Basin is currently in nonattainment for ozone, PM_{10}, and $PM_{2.5}$, cumulative development consisting of the proposed program along with other reasonably foreseeable future projects in the Basin as a whole could violate an air quality standard or contribute to an existing or projected air quality violation. Under conditions where multiple structural BMPs would be constructed concurrently in the EWMP areas, it is anticipated that the total aggregate construction emissions generated from these multiple structural BMP projects on a daily basis would exceed the SCAQMD's significance thresholds for criteria pollutants. Even with implementation of Mitigation Measures AIR-1 and AIR-2, the resulting aggregate daily emissions may not be reduced to levels below the SCAQMD thresholds should multiple structural BMP projects be constructed concurrently. Thus, construction-related air quality impacts associated with the proposed program would be considered significant and unavoidable. With respect to operational emissions, program implementation would not result in substantial long-term regional emissions of criteria air pollutants and would not exceed the SCAQMD thresholds of significance for criteria pollutants. As such, the proposed program's operational emissions would not be cumulatively considerable and cumulative air quality impacts would be less than significant.

Finding

As air pollutants for which the Basin is in nonattainment (i.e., ozone, PM_{10}, and $PM_{2.5}$) would be emitted as a result of the proposed program in excess of SCAQMD's thresholds for construction activities, these pollutant emissions would, in conjunction with other past, current, and probable future projects, be cumulatively considerable, and cumulative impacts would be significant and unavoidable. Implementation of Mitigation Measures AIR-1 and AIR-2 would reduce cumulative air quality impacts, but not to a level that is less than significant. With respect to operational emissions, program implementation would not result in substantial long-term regional emissions of criteria air pollutants and would not exceed the SCAQMD thresholds of significance for criteria pollutants. As such, the proposed program's operational emissions would not be cumulatively considerable and cumulative air quality impacts would be less than significant.

Brief Explanation of the Rationale for the Finding

CEQA requires that all feasible and reasonable mitigation be applied to the project to reduce impacts. Even after the implementation of Mitigation Measures AIR-1 and AIR-2, impacts related to cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard remain significant and unavoidable for construction. Program implementation would not result in substantial long-term regional emissions of criteria pollutants with respect to operational emissions, therefore operational emissions would be less than significant.

> **AIR-1:** Implementing agencies shall require for large regional or centralized BMPs the use of low-emission equipment meeting Tier II emissions standards at a minimum and Tier III and IV emissions standards where available as CARB-required emissions technologies become readily available to contractors in the region.
> **AIR-2:** For large construction efforts that may result in significant air emissions, implementing agencies shall encourage contractors to use lower-emission equipment through the bidding process where appropriate.

6.3 Biological Resources

The proposed program would not have any environmental effects on biological resources that cannot be mitigated to a less-than-significant level.

6.4 Cultural Resources

Significant Effect

The proposed program would cause a substantial adverse change in the significance of an historical resource as defined in §15064.5. (Impact 3.4-1)

Description of Significant Impact

Implementation of structural BMPs could impact significant historic built environment resources that exist within the program area, which may include not only buildings and structures, but also built infrastructure such as concrete channels, dams, sidewalks, and roads. Impacts to the could include not only physical demolition or alteration of built environment resources, but also changes to the historic setting of a resource, and impacts that may adversely affect that ability of a resource to convey its significance. Similarly, potentially significant buried archaeological resources could still exist within the program area, beneath and between structures and roads. If previously undiscovered artifacts or buried archaeological resources are uncovered during excavation or construction, significant impacts could occur. Not all EWMP projects may result in a significant and unavoidable impact with regard to historical resources, as impacts associated with each project would be dependent on location; presence, nature, and significance of any historical resources within the construction area; and specific impacts to historical resources. In some circumstances, no mitigation is sufficient to maintain the historic integrity of the affected archaeological and other cultural resource or its surroundings, therefore implementation of the proposed program may ultimately result in a substantial adverse change.

Finding

The proposed program's potential to cause a substantial adverse change in the significance of an historical resource is considered significant. Potential adverse effects caused by the proposed program could be minimized by mitigation measures; however the impact would remain significant and unavoidable.

Brief Explanation of the Rationale for the Finding

CEQA requires that all feasible and reasonable mitigation be applied to the project to reduce impacts that would cause a substantial adverse change in the significance of an historical resource. The project impacts are considered significant and unavoidable; implementation of Mitigation Measures CUL-1 through CUL-4 would help minimize impacts.

> **CUL-1:** For individual EWMP projects that could impact buildings or structures (including infrastructure) 45 years old or older, implementing agencies shall ensure that a historic built environment survey is conducted or supervised by a qualified historian or architectural historian meeting the Secretary of the Interior's Professional Qualification Standards for Architectural History. Historic built environment resources shall be evaluated for their eligibility for listing in the CRHR or local register prior to the implementing agency's approval of project plans. If eligible resources that would be considered historical resources under CEQA are identified, demolition or substantial alteration of such resources shall be avoided. If avoidance is determined to be infeasible, the implementing agency shall require the preparation of a treatment plan to include, but not be limited to, photo-documentation and public interpretation of the resource. The plan will be submitted to the implementing agency for review and approval prior to implementation.
>
> **CUL-2:** Implementing agencies shall ensure that individual EWMP projects that require ground disturbance shall be subject to a Phase I cultural resources inventory on a project-specific basis prior to the implementing agency's approval of project plans. The study shall be conducted or supervised by a qualified archaeologist, defined as an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for Archaeology, and shall be conducted in consultation with the local Native American representatives expressing interest. The cultural resources inventory shall include a cultural resources records search to be conducted at the South Central Coastal Information Center; scoping with the NAHC and with interested Native Americans identified by the NAHC; a pedestrian archaeological survey where deemed appropriate by the qualified archaeologist; and formal recordation of all identified archaeological resources on California Department of Parks and Recreation 523 forms and significance evaluation of such resources presented in a technical report following the guidelines in *Archaeological Resource Management Reports (ARMR): Recommended Contents and Format*, Department of Parks and Recreation, Office of Historic Preservation, State of California, 1990.
>
> If potentially significant archaeological resources are encountered during the survey, the implementing agency shall require that the resources are evaluated by the qualified archaeologist for their eligibility for listing in the CRHR and for significance as a historical resource or unique archaeological resource per CEQA Guidelines Section 15064.5. Recommendations shall be made for treatment of these resources if found to be

significant, in consultation with the implementing agency and the appropriate Native American groups for prehistoric resources. Per CEQA Guidelines Section 15126.4(b)(3), preservation in place shall be the preferred manner of mitigation to avoid impacts to archaeological resources qualifying as historical resources. Methods of avoidance may include, but shall not be limited to, project reroute or redesign, project cancellation, or identification of protection measures such as capping or fencing. Consistent with CEQA Guidelines Section 15126.4(b)(3)(C), if it is demonstrated that resources cannot be avoided, the qualified archaeologist shall develop additional treatment measures, which may include data recovery or other appropriate measures, in consultation with the implementing agency, and any local Native American representatives expressing interest in prehistoric or tribal resources. If an archaeological site does not qualify as an historical resource but meets the criteria for a unique archaeological resource as defined in Section 21083.2, then the site shall be treated in accordance with the provisions of Section 21083.2.

CUL-3: The implementing agency shall retain archaeological monitors during ground-disturbing activities that have the potential to impact archaeological resources qualifying as historical resources or unique archaeological resources, as determined by a qualified archaeologist in consultation with the implementing agency, and any local Native American representatives expressing interest in the project. Native American monitors shall be retained for projects that have a high potential to impact sensitive Native American resources, as determined by the implementing agency in coordination with the qualified archaeologist.

CUL-4: During project-level construction, should subsurface archaeological resources be discovered, all activity in the vicinity of the find shall stop and a qualified archaeologist shall be contacted to assess the significance of the find according to CEQA Guidelines Section 15064.5. If any find is determined to be significant, the archaeologist shall determine, in consultation with the implementing agency and any local Native American groups expressing interest, appropriate avoidance measures or other appropriate mitigation. Per CEQA Guidelines Section 15126.4(b)(3), preservation in place shall be the preferred means to avoid impacts to archaeological resources qualifying as historical resources. Methods of avoidance may include, but shall not be limited to, project reroute or redesign, project cancellation, or identification of protection measures such as capping or fencing. Consistent with CEQA Guidelines Section 15126.4(b)(3)(C), if it is demonstrated that resources cannot be avoided, the qualified archaeologist shall develop additional treatment measures, such as data recovery or other appropriate measures, in consultation with the implementing agency and any local Native American representatives expressing interest in prehistoric or tribal resources. If an archaeological site does not qualify as an historical resource but meets the criteria for a unique archaeological resource as defined in Section 21083.2, then the site shall be treated in accordance with the provisions of Section 21083.2.

Significant Effect

The proposed program would result in cumulatively significant impacts to cultural resources.

Description of Significant Impact

Cumulative impacts to cultural resources in the cultural resources geographic scope of analysis could occur if other existing or proposed projects, in conjunction with the proposed program, had or would have impacts on cultural resources that, when considered together, would be significant. With implementation of Mitigation Measures CUL-2, CUL-3 and CUL-4, cumulatively significant environmental impacts to unique archaeological resources would be reduced to a less than significant level. With implementation of Mitigation Measures CUL-5 and CUL-6, cumulative impacts to paleontological resources would be less than significant. Further, implementation of CUL-7 would reduce potentially significant impacts to human remains should they be encountered during ground-disturbing activities to a less-than-significant level. Implementation of the proposed program may ultimately result in a substantial adverse change to historical resources through various development activities for which no possible mitigation may be available to maintain the historic integrity of the affected resource or its surroundings, and impacts to historical resources would remain significant and unavoidable at a program level. Therefore, the implementation of structural BMPs may contribute to a cumulatively significant environmental impact to historical resources.

Finding

The proposed program has the potential to result in cumulatively considerable impacts related to cultural resources, specifically in regard to substantial adverse changes in the significance of historical resources resulting from excavation activities associated with projects in the cumulative impacts scenario. The implementation of Mitigation Measures CUL-1 through CUL-7 would reduce impacts relating to unique archaeological resources, paleontological resources, and human remains to a less-than-significant level, however, these mitigation measures would not reduce impacts to historical resources below a significant level.

Brief Explanation of the Rationale for the Finding

CEQA requires that all feasible and reasonable mitigation be applied to the project to reduce cumulative impacts caused by the project. With the implementation of Mitigation Measures CUL-1 through CUL-7, these cumulative cultural resource impacts would be reduced, but still considered significant and unavoidable.

6.5 Geologic and Mineral Resources

The proposed program would not have any environmental effects related to geology and soils that cannot be mitigated to a less-than-significant level.

6.6 Greenhouse Gas Emissions

The proposed program would not have any environmental effects related to greenhouse gas emissions that cannot be mitigated to a less-than-significant level.

6.7 Hazards and Hazardous Materials

The proposed program would not have any environmental effects related to hazards and hazardous materials that cannot be mitigated to a less-than-significant level.

6.8 Hydrology and Water Quality

The proposed program would not have any environmental effects on hydrology and water quality that cannot be mitigated to a less-than-significant level.

6.9 Land Use and Agriculture

The proposed program would not have any environmental effects on land use and planning that cannot be mitigated to a less-than-significant level.

6.10 Noise

Significant Effect

The proposed program would result in exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies (Impact 3.10-1).

Description of Significant Impact

The proposed program would result in a temporary increase in noise levels during construction at the project sites. Noise generated during temporary construction is anticipated, and because of the possibility that certain structural BMP projects may exceed noise levels established by their respective local jurisdictions, this impact would be significant and unavoidable.

Finding

The proposed program has the potential to result in exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. Implementation of Mitigation Measures NOISE-1 and NOISE-2 would reduce the proposed program's construction-related noise levels by requiring the project contractor to locate equipment such that noise is directed away from sensitive receptors and to maintain noise controls on standard construction equipment. In addition, the mitigation measures would require a construction noise coordinator to resolve complaints about noise. However, even with the project's adherence to all applicable noise requirements and guidelines in addition to implementation of Mitigation Measures NOISE-1 and NOISE-2, it is anticipated that there would be times during the project's construction activities where the nearest sensitive receptors would be exposed to a perceptible increase in noise levels. Therefore, the project would result in perceptible increases in noise levels during construction and this impact would be considered significant and unavoidable.

Brief Explanation of the Rationale for the Finding

CEQA requires that all feasible and reasonable mitigation be applied to the project to reduce impacts related to exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. Even with the implementation of Mitigation Measures NOISE-1 and NOISE-2, these impacts would still be considered significant and unavoidable.

Significant Effect

The proposed program would result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project (Impact 3.10-4).

Description of Significant Impact

During construction of the distributed, centralized, and regional structural BMPs, temporary or periodic increases in noise levels in and around each structural BMP site would result from the operation of construction equipment. Where a structural BMP site is located within 25 feet of an existing noise-sensitive land use, the resulting construction noise levels at that existing land use could reach as high as 95 dBA L_{eq} during excavation activities, which would result in a substantial noise increase over existing ambient noise levels at that existing land use. Therefore this impact would be significant and unavoidable. The identification of a significant and unavoidable program-level impact in this Program EIR for the proposed program, however, does not preclude the finding of future less-than-significant impacts for individual structural BMP projects.

Finding

The proposed program has the potential to result in a substantial temporary or periodic increase in ambient noise levels above levels existing without the project in the vicinity of individual projects. Implementation of Mitigation Measure NOISE-1 would reduce the project's construction-related noise levels by requiring the project contractor to locate equipment such that noise is directed away from sensitive receptors and to maintain noise controls on standard construction equipment. In addition, the mitigation measures would require a construction noise coordinator to resolve complaints about noise. However, even with the project's adherence to all applicable noise requirements and guidelines in addition to implementation of the mitigation measure, it is anticipated that there would be times during the project's construction activities where the nearest sensitive receptors would be exposed to a perceptible change in noise levels. Therefore, the proposed program would result in perceptible increases in noise levels during construction and this impact would be considered significant and unavoidable.

Brief Explanation of the Rationale for the Finding

CEQA requires that all feasible and reasonable mitigation be applied to the project to reduce impacts related to a substantial temporary or periodic increase in ambient noise levels. With the implementation of Mitigation Measure NOISE-1 included, impacts would still be significant and unavoidable during construction.

Significant Effect

The proposed program would result in significant cumulative construction noise impacts.

Description of Significant Impact

Noise and vibration are both defined as localized phenomena that significantly reduce in magnitude as distance from the source increases. The structural BMPs associated with the proposed program would be constructed in multiple jurisdictions of Los Angeles County, which aside from the County also includes 46 cities and LACFCD. As such, these structural BMP projects would be generally spread over a large geographic area within the County. These structural BMPs in combination with other current and planned projects in the County would result in an increase in construction-related noise levels, which would temporarily increase the ambient noise levels of the existing noise environment in areas where a construction project would occur. This would result in significant and unavoidable impacts for construction.

Finding

The proposed program has the potential to result in the exposure of persons to noise levels in excess of applicable standards. Even with implementation of Mitigation Measures NOISE-1 and NOISE-2, impacts would still be significant and unavoidable during construction.

Brief Explanation of the Rationale for the Finding

CEQA requires that all feasible and reasonable mitigation be applied to the project to reduce impacts related to inappropriate noise levels. Even with implementation of Mitigation Measures NOISE-1 and NOISE-2, impacts would still be significant and unavoidable during construction.

6.11 Population and Housing and Environmental Justice

The proposed program would not have any environmental effects on population, housing and environmental justice that cannot be mitigated to a less-than-significant level.

6.12 Public Services and Recreation

The proposed program would not have any environmental effects on public services and recreation that cannot be mitigated to a less-than-significant level.

6.13 Transportation and Circulation

The proposed program would not have any environmental effects on transportation and traffic that cannot be mitigated to a less-than-significant level.

6.14 Utilities and Service Systems

The proposed program would not have any environmental effects on utilities that cannot be mitigated to a less-than-significant level.

7.0 Findings Regarding Project Alternatives

The following findings and brief explanation of the rationale for the findings regarding program alternatives identified in the EIR are set forth to comply with the requirements of Section 15091(s)(3) of the *CEQA Guidelines*.

The consideration of alternatives is an integral component of the CEQA process. The selection and evaluation of a reasonable range of alternatives provides the public and decision-makers with information on ways to avoid or lessen environmental impacts created by a proposed program. When selecting alternatives for evaluation, CEQA requires alternatives that meet most of the basic objectives of the project, while avoiding or substantially lessening the program's significant effects. Thus, objectives for the proposed program were considered by this board in evaluating the alternatives. These objectives are:

- To collaborate among agencies (Permittee jurisdictions) across the watershed to promote more cost-effective and multi-beneficial water quality improvement projects to comply with the MS4 Permit;
- To develop watershed-wide EWMPs that will, once implemented, remove or reduce pollutants from dry- and wet-weather urban runoff in a cost-effective manner; and
- To reduce the impact of stormwater and non-stormwater on receiving water quality.

7.1 No Program Alternative

Under this alternative, the existing land uses on the project site would continue to operate as they do under existing conditions. The existing land uses would continue for an indefinite period and no physical changes within the proposed program area would occur. In addition, existing ancillary structures, such as buildings, roadways and parkways within the project area, would remain in their current capacity. The No Project Alternative would maintain the current zoning and land use designations.

Finding

This alternative would not meet the first and second objectives to collaborate among agencies across the watershed to prepare EWMPs that promote more cost-effective and multi-beneficial water quality improvement projects. However, compliance with the MS4 Permit is still required regardless of implementation of the EWMP. Under the No Project Alternative some water quality projects would be implemented in an effort to achieve compliance with the MS4 permit.

This alternative would result in slightly greater impacts to air quality with regards to emissions generated, because the programs would need to be installed rapidly and more BMPs would likely be required as a result of the inefficiencies of multiple boundaries. Hydrology and water quality impacts would also be greater, as an installation grace period would not be granted for BMPs outside of the EWMP, increasing the likelihood of noncompliance with the MS4 Permit. All other impacts would be similar under this alternative when compared with the proposed program. This alternative would not eliminate significant and unavoidable impacts when associated with the proposed project.

7.2 Non-Structural BMPs Only Project Alternative

This alternative would involve implementation of the proposed program and its associated non-structural BMPs only. No structural BMPs would be implemented.

Finding

This alternative would not meet any of the objectives of the proposed program to collaborate among agencies to promote more cost-effective and multi-beneficial water quality improvement projects and to prepare EWMPs to reduce pollutant loading. Non-Structural BMPs are generally implemented individually in each jurisdiction.

Since no facilities would be constructed, temporary impacts to the environment would be less than the proposed program for many topic areas. However, impacts to population and housing, land use, and recreation would be greater than the proposed program. This alternative would result in greater impacts to aesthetics, as it would not include green-streets and grassy swales that would improve local aesthetics. Impacts to hydrology and water quality would also be greater under this alternative, as achieving water quality objectives with no structural BMPs would be unlikely.

7.3 Distributed Structural and Non-Structural BMPs Only Program Alternative (No Centralized or Regional)

This alternative would involve implementation of the proposed program and only its associated distributed structural BMPs and non-structural BMPs.

Finding

This alternative would achieve the first and third project objectives to collaborate among agencies to promote more cost-effective and multi-beneficial water quality improvement projects that reduce the impact of stormwater on receiving water quality. However, it would likely require more BMPs to meet the MS4 Permit water quality objectives, as distributed structural BMPs tend to be smaller in nature and are located in a wide distribution throughout the watershed. Therefore, it would not meet the second project objective (developing EWMPS that will remove or reduce pollutants from urban runoff and removal of stormwater and non-stormwater impacts on receiving water quality).

Since much of the impacts of program implementation would occur during construction of the large-scale regional and centralized BMPs, this alternative would result in fewer construction impacts than the proposed project and fewer impacts to aesthetics. However, the alternative would result in greater impacts to land use planning/agriculture, as eliminating the use of large open space areas for BMPs would require a more dispersed land use acquisition for small scale BMPs, thereby increasing potential land use compatibility impacts. This alternative would eliminate the water quality benefit and more likely potential to comply with the MS4 Permit provided by large-scale regional BMPs, and would therefore result in greater hydrology and water quality impacts. All other impacts under this alternative would be similar to the proposed program.

7.4 Environmentally Superior Alternative

The purpose of the alternatives analysis is to consider a reasonable range of alternatives that could feasibly attain most of the basic project objectives and avoid or substantially lessen significant program impacts.

The *CEQA Guidelines* require the identification of an environmentally superior alternative of a project other than or the "no project" alternative (CEQA Guidelines Section 15126.6 (e)(2)). An environmentally superior alternative is an alternative to the project that would reduce and/or eliminate the significant environmental impacts associated with the project without creating other significant impacts and without substantially reducing and/or eliminating the environmental benefits attributable to the project.

Finding

The Environmentally Superior Alternative would be the proposed program itself. The proposed program would avoid increasing the impacts to hydrology and water quality that would occur under all three of the alternatives.

The No Program Alternative would require that individual Permittees design and construct BMPs locally to achieve MS4 Permit compliance. None of the significant and unavoidable impacts of the proposed alternative would be avoided by this alternative. Furthermore, since the ability to achieve compliance with MS4 Permit water quality objectives would be reduced if each Permittee were on their own, impacts to hydrology and water quality would be greater under this alternative.

The Distributed Structural BMPs Only Alternative would result in construction of an increased number of distributed BMPs This alternative would result in fewer impacts to air quality, cultural resources and noise, and would therefore reduce the significant and unavoidable impacts associated with the proposed program. However, since the ability to achieve compliance with MS4 Permit water quality objectives would be reduced without the larger-scale centralized and regional BMPs, impacts to hydrology and water quality would be greater under this alternative.

The Non-Structural BMPs Only Alternative would avoid all of the significant and unavoidable impacts associated with construction of the structural BMPs. In addition, nearly all of the impacts associated with the proposed alternative would be avoided, including impacts from infiltration to neighboring subsurface structures, mobilization of contaminants, and site-specific impacts to cultural and biological resources. However, since the ability to achieve compliance with MS4 Permit water quality objectives would be substantially reduced, impacts to water quality would be greater under this alternative, and compliance with the MS4 Permit would be unlikely. Even though this alternative would avoid significant and unavoidable impacts of construction and operation of structural BMPs, the failure to meet water quality objectives and achieve MS4 Permit compliance would outweigh the avoidance of the other impacts.

Since the proposed alternative would provide the best chance of achieving regional water quality objectives, it is considered the environmentally superior alternative.

<u>Exhibit B</u>

STATEMENT OF OVERRIDING CONSIDERATIONS

State CEQA Guidelines Section 15093

For

Enhanced Watershed Management Programs

Final Program Environmental Impact Report
(SCH# 2014081106)

Lead Agency: Los Angeles County Flood Control District

The California Environmental Quality Act (CEQA) requires a public agency to balance the benefits of a proposed project against its significant unavoidable adverse impacts in determining to approve the project. The Enhanced Watershed Management Programs (EWMP) would result in some environmental effects that, although mitigated to the extent feasible by the implementation of mitigation measures proposed for the program, would remain significant and unavoidable adverse impacts, as discussed in the final program environmental impact report (PEIR) and CEQA findings of fact. These impacts are summarized below and constitute those impacts for which this statement of overriding considerations is made.

Air Quality

1) <u>Impact 3.2-2 (The project would violate air quality standards or contribute substantially to an existing or projected air quality violation)</u>. Construction of large regional or centralized BMPs associated with the proposed program could result in temporary significant and unavoidable air emissions during peak periods of construction. The exceedance of applicable SCAQMD-recommended air quality thresholds would be generated primarily during the grading phase of proposed projects, when emissions associated with off-road construction equipment and on-road soil hauling activities would occur. Mitigation measures are incorporated to reduce the severity of the emissions during construction by requiring the use of low-emission equipment which meets Tier II emissions standards at a minimum. However, because there are no feasible mitigation measures that can be implemented to prevent violation of air quality standards during construction, impacts to air quality would remain significant and unavoidable despite implementation of Mitigation Measures AIR-1 and AIR-2.

2) <u>Impact 3.2-3 (The project could result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)).</u> The proposed project would result in a cumulatively considerable net increase of criteria pollutants for which the project region is nonattainment. The Los Angeles Basin is currently in nonattainment for ozone, PM_{10}, and $PM_{2.5}$, which indicates that combined

with other reasonably foreseeable future projects in the Basin, the proposed program could violate an air quality standard. Even with implementation of mitigation measures, the resulting aggregate daily emissions may not be reduced to levels below the SCAQMD thresholds should multiple structural BMP projects be constructed concurrently throughout the Basin. As pollutants for which the Basin is in nonattainment (i.e., ozone, PM_{10}, and $PM_{2.5}$) could exceed SCAQMD's respective thresholds for construction, these pollutant emissions would be cumulatively considerable, and impacts would be significant and unavoidable despite implementation of Mitigation Measures AIR-1 and AIR-2. Operational emissions for the program would not exceed air quality standards therefore would not be cumulatively considerable; cumulative air quality impacts would be less than significant after implementation of structural BMPs.

Cultural Resources

3) Impact 3.4-1 (The project would cause a substantial adverse change in the significance of an historical resource as defined in §15064.5.). The proposed project would result in significant and unavoidable impacts to historical resources in the project area. Historical resources can include not only buildings and structures, but also any object, site area, place, record, or manuscript which a lead agency determines to be historically significant, or which is listed in or determined eligible for listing in the CRHR. Known archaeological resources, as well as unknown and unrecorded archaeological resources that may be unearthed during construction activities associated with implementation of structural BMPs, could be impacted by individual projects. As program implementation actions move forward, individual projects would undergo additional CEQA review prior to construction to assess impacts to specific cultural resources not addressed in this program-level EIR. Mitigation measures will be implemented to lessen impacts to historical resources through historic built environment surveys, cultural resources inventories, archaeological monitoring, and assessment of findings if applicable during ground-disturbing operations. However, because the degree of impact and the applicability, feasibility, and success of these measures cannot be accurately predicted for each specific project at this time, the program level impact related to archaeological and cultural resources that qualify as historical resources is considered significant and unavoidable. With implementation of Mitigation Measures CUL-1 through CUL-4, impacts would remain significant and unavoidable.

4) Cumulative Impact, Cultural Resources (The project would result in cumulative impacts to cultural resources). Development of the proposed project together with simultaneous development of nearby, reasonably foreseeable planned projects in the area would result in significant cumulative cultural resources impacts. The program could cause impacts on cultural and paleontological resources during the construction period or as a result of operation and maintenance or closure and decommissioning activities. Cumulative impacts to cultural resources in the cultural resources geographic scope of analysis could occur if other existing or proposed projects, in conjunction with the proposed program, had or would have impacts on cultural resources that, when considered together, would be significant. While implementation of mitigation measures would reduce impacts to historical resources, the proposed program may ultimately result in a substantial adverse change to historical resources through development activities for which no possible mitigation may be available to maintain historic integrity of an affected resource or its surroundings. Therefore, despite implementation of Mitigation Measures CUL-1 through CUL-7, the program would have cumulatively significant and unavoidable environmental impact to historical resources.

Noise

5) Impact 3.10-1 (The proposed project would result in exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies). During construction of the proposed program, noise levels would be increased temporarily and intermittently to levels substantially greater than existing ambient noise levels in the area. Mitigation measures would help reduce construction noise impacts, requiring construction activities to be conducted in accordance with the applicable local noise regulations and standards, the implementation of noise reduction devices and techniques during construction activities, and advance notification to the surrounding noise-sensitive receptors of a structural BMP site about upcoming construction activities and their hours of operation. Certain structural BMP projects may exceed noise levels established by their respective local jurisdictions, though, which would make this impact significant and unavoidable despite implementation of Mitigation Measures NOISE-1 and NOISE-2.

6) Impact 3.10-4 (The proposed project would result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project). During construction of the distributed, centralized, and regional structural BMPs, temporary or periodic increases in noise levels in and around each structural BMP site would result from the operation of construction equipment. Under circumstances where structural BMP sites are located immediately adjacent to existing sensitive land uses, the noise impacts related to a substantial temporary or periodic increase in ambient noise levels above levels existing without the structural BMPs would remain significant, even with implementation of mitigation measures. Individual project-level assessment in the future, though, may result in a finding of less-than-significant for temporary increases in noise levels. Despite implementation of Mitigation Measure NOISE-1, the impact would remain significant and unavoidable for this program.

7) Cumulative Impact, Noise (The project would result in significant cumulative construction noise impacts). Construction of the structural BMPs, in combination with other current and planned projects in the County would result in an increase in construction-related noise levels, which would temporarily increase the ambient noise levels of the existing noise environment in areas where a construction project would occur. Despite implementation of Mitigation Measures NOISE-1 and NOISE-2, cumulative impacts for construction would remain significant and unavoidable.

In addition to the impacts identified above, the District finds that the following impacts are significant and unavoidable solely because the mitigation proposed to reduce these impacts to less-than-significant levels is within the control and jurisdiction of other public agencies who will be implementing the EWMPs. Although the District will implement these mitigation measures for projects over which it has jurisdiction, the District cannot ensure that other Implementing Agencies will adopt and implement the proposed mitigation measures for projects over which they have jurisdiction. The District therefore cannot state with certainty that these impacts will be mitigated to less-than-significant levels, meaning that they may remain significant and unavoidable. The statement of overriding considerations is therefore also made for the following impacts:

Aesthetics

8) Impact 3.1-1(The proposed program could create a substantial adverse effect on a scenic vista). During construction, equipment and materials required for temporary ground disturbances would

be visible from public vantage points, but would not affect any scenic vistas past the temporary construction periods. Given the predominantly urban character of potential pump station sites and temporary nature of construction activities, impacts would be considered less than significant. A majority of structural BMPs would be located underground and would not introduce impacts to scenic vistas. Aboveground structures such as pump stations would be located in urbanized areas and would generally be single-story buildings. Such aboveground structures have the potential to impact scenic vistas, but will be required to be designed so as not to contrast existing neighborhood aesthetic features. The Program EIR identified Mitigation Measure AES-1 that would reduce impacts to a less-than-significant level. However, without implementation of this mitigation measure, the impact would be significant and unavoidable.

9) Impact 3.1-2 (The proposed program could substantially damage scenic resources, including but not limited to, trees, rocks, outcroppings, and historic buildings within a state scenic highway).Parts of the proposed program may be visible from designated scenic highways or other locally designated scenic roadways in the project area. Rock outcroppings and historic buildings would likely not be disturbed by the project as most of the BMPs will be underground and not visible after construction is complete. Construction of the proposed program would involve removal of vegetation from individual project sites. Larger structures may result in significant impacts to scenic resources within state scenic highway. The Program EIR identified Mitigation Measure AES-1 that would reduce impacts to a less-than-significant level. However, without implementation of this mitigation measure, the impact would be significant and unavoidable.

10) Impact 3.1-3 (The proposed program could substantially degrade the existing visual character or quality of the site and its surroundings). Construction activities would visually degrade the project site and its surroundings as a result of the appearance of demolition materials, excavated areas, stockpiles, and other materials. Due to the temporary nature of construction, these adverse effects are considered less than significant. Once constructed, the BMPs would be located predominantly in urban areas and largely underground, which will not have a permanent effect on the visual character or quality of an area. Aboveground structures may degrade existing visual character of project areas as they will add to the visual landscape. Without proper maintenance of BMPs, especially wet ponds or constructed wetlands, there is a potential for substantial degradation of existing visual quality of project sites due to algal growth or public littering. The Program EIR identified Mitigation Measures AES-1 and AES-2 that would reduce impacts to a less-than-significant level. However, without implementation of these mitigation measures, the impact would be significant and unavoidable.

11) Cumulative Impact, Aesthetics (The proposed program would result in a less than significant cumulative aesthetic impact with mitigation). Cumulative projects in the program region have the potential to result in cumulative impacts to aesthetic resources if they would result in the removal or substantial adverse change of visual character or image of a neighborhood, community, state scenic highway, or localized area. Given that the BMPs will be located in primarily urbanized areas, introduction of structural BMPs would result in only minor changes to the visual landscape. The cumulative impacts of aboveground structures could have a significant impact to the aesthetic environment due to their potential size and location. Overall, implementation of BMPs is anticipated to have a positive impact on the aesthetic environment through the creation of open space areas and less impervious surfaces in urbanized or residential areas. The Program EIR identified Mitigation Measures AES-1 and AES-2 that would reduce cumulative impacts

associated with aesthetics to a less-than-significant level. However, without implementation of these mitigation measures, the impact would be significant and unavoidable.

Air Quality

12) Impact 3.2-4 (The proposed program could expose sensitive receptors to substantial pollutant concentrations). While construction-related traffic on local roadways would occur during construction, the net increase of construction vehicle trips to the existing traffic volumes on local roadways would be relatively small and would not result in carbon monoxide (CO) hotspots. These construction-related trips would only occur in the short-term, and because trip-generating land uses are not associated with the proposed program, impacts associated with CO hotspots would be less than significant. Off-road heavy-duty diesel equipment would be used only temporarily at each individual structural BMP site, therefore the construction activities associated with each structural BMP project in the EWMP areas would not expose sensitive receptors to substantial emissions of TACs. During construction of the individual structural BMPs in the project area, sensitive receptors such as residences, schools, hospitals, and daycare centers would be exposed to significant adverse localized air quality impacts. Operation of structural BMPs would not involve the emission of toxic air contaminants (TAC), and would operate passively without use of mechanical equipment. Project operation would not introduce health risks associated with TAC emissions. Construction activities could expose sensitive receptors to criteria air pollutants from vehicle exhaust and dust. Depending on the size and scope of the individual structural BMPs, a localized significance threshold (LST) analysis may be required to ensure construction emissions would not exceed SCAQMD's LSTs or result in pollutant emissions that would cause or contribute to the exceedance of the most stringent applicable federal or state ambient air quality standards. The Program EIR identified Mitigation Measure AIR-3 that would reduce this impact to a less-than-significant level. However, without implementation of this mitigation measure, the impact would be significant and unavoidable.

13) The proposed program could create objectionable odors affecting a substantial number of people (Impact 3.2-5). The proposed program does not include any uses typically associated with odor complaints including agricultural uses, wastewater treatment plants, food processing plans, and landfills, among others. During the construction phase, exhaust odors from equipment may produce discernible odors typical of most construction sites and would be a temporary source of nuisance to adjacent uses. These odors would be temporary and intermittent in nature, so would not be considered a significant environmental impact. Certain BMPs such as restored creeks and estuaries may result in odors from saturated mud or algal blooms when left permanently wet. This may result in a severe nuisance for sensitive receptors near such BMPs, and regular maintenance may be sufficient to reduce odors in some situations. The Program EIR identified Mitigation Measures AES-2 and AIR-4 that would reduce impacts to a less-than-significant levels. However, without implementation of these mitigation measures, the impact would be significant and unavoidable.

Biological Resources

14) Impact 3.3-1 (The proposed program would have a substantial adverse impact, either directly or through habitat modifications, on species identified as special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service). Construction of structural BMPs may affect large open space or

riparian habitats that would have a higher potential to support special-status wildlife species, such as streams, wetlands, and upland scrub or oak woodlands. Mitigation Measures BIO-1 through BIO-8 require suitability studies for potential BMP sites for their potential to impact valued habitats, and require impact characterization, minimization and compensation for impacts to highly valued habitats in consultation with the USFWS and CDFW. The proposed program will implement BMPs that are designed to retain dry-weather flows, which could reduce wetted area or completely eliminate flows in certain drainages that support sensitive species. The Program EIR identified Mitigation Measures BIO-1 through BIO-8 that would reduce the impact to a less-than-significant level. However, without implementation of these mitigation measures, the impact would be significant and unavoidable.

15) Impact 3.3-2 (The proposed program would have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS). Significant Ecological Areas (SEA), as identified by the Los Angeles County General Plan, riparian, and other sensitive communities are not expected to occur within the disturbance areas of the BMP projects since the majority of the structural BMPs would occur in developed or disturbed areas. While some regional and centralized structural BMPs could occur within or adjacent to SEAs, riparian habitat or other sensitive natural communities, these types of BMPs would provide multi-beneficial water quality and habitat restoration improvements to the applicable EWMP watershed. Additionally, each development proposed within a designated SEA must undergo a performance review process for compliance with the SEA design compatibility criteria and other standards for approval by the LA County Department of Regional Planning. Future project-level environmental review processes would consider all proposed projects on a case-by-case basis to determine whether an individual project would impact riparian or other sensitive natural communities. Site-specific mitigation measures would be required to minimize and reduce potentially significant impacts to riparian and other sensitive natural communities. The Program EIR identified Mitigation Measures BIO-1 through BIO-8 that would reduce this impact to less than significant levels. However, without implementation of these mitigation measures, the impact would be significant and unavoidable.

16) Impact 3.3-3 (The proposed program would have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means). Wetlands occur throughout the EWMP areas, and once project facility locations are determined, exact locations and acreages of jurisdictional areas located within or adjacent to impact areas shall be determined through a formal jurisdictional delineation. For projects impacting native vegetation within jurisdictional drainages, the implementing agency would be required to obtain California Fish and Game Code Section 1602 compliance and Section 404 compliance from the USACE and Section 401 Certification from the RWQCB. In addition, implementation of Mitigation Measures BIO-1 through BIO-9 would ensure compliance with state and federal regulations relating to potentially jurisdictional features, including wash habitat vegetation that may fall under CDFW jurisdiction. Any projects impacting native vegetation within jurisdictional drainages would be required to comply with California Fish and Game Code Section 1602 compliance and Section 404 compliance from the USACE and Section 401 Certification from the RWQCB. The Program EIR identified Mitigation Measures BIO-1 through BIO-9 that would reduce this impact to less than significant levels. However, without implementation of these mitigation measures, the impact would be significant and unavoidable.

17) Impact 3.3-5 (The proposed program would conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance). The proposed program would mainly be constructed within highly urbanized and disturbed areas within existing infrastructure. Any impacts to oak trees within Los Angeles County would be required to comply with the Oak Tree Preservation Ordinance (or other tree ordinances established by the local city). A tree permit may be required if impacts to oak trees or other protected trees are determined to be necessary. The Program EIR identified Mitigation Measure BIO-10 that would reduce this impact to less than significant levels. However, without implementation of this mitigation measure, the impact would be significant and unavoidable.

18) Cumulative Impacts, Biological Resources (The proposed program would result in cumulative biological resource impacts). Cumulatively, throughout the region, the retention of stormwater and treatment of pollutants within each watershed, and the reduction of pollutant loading in waterways would substantially benefit the water quality of the region's aquatic and coastal habitats, as well as the plants and wildlife dependent on them. Implementation of the BMPs would also return the local hydrology to a more natural condition. Although some drainage segments may exhibit reduced riparian habitat or wetlands over time due to the reduced dry-weather flow, the cumulative effect would be offset by increased groundwater recharge and seepage supporting expanded wetland and riparian vegetation supporting local flora and fauna populations. Therefore, the program's potential contribution to cumulative effects on biological resources is considered less than significant. For regional and centralized BMPs at the larger scale, the Program EIR identified Mitigation Measures BIO-1 through BIO-10 that would reduce this impact to less than significant levels. However, without implementation of these mitigation measures, the impact would be significant and unavoidable.

Cultural Resources

19) Impact 3.4-2 (The proposed program could cause a substantial adverse change in the significance of unique archaeological resources as defined in §15064.5). The program area, which spans most of Los Angeles County, should be considered sensitive for archaeological resources, with degree of sensitivity varying across the program area based on specific environmental factors. Any structural BMP which involves grading, trenching, excavation, vegetation removal, or other forms of ground disturbance could impact archaeological resources. The Program EIR identified Mitigation Measures CUL-2 through CUL-4 that would reduce this impact to less than significant levels. However, without implementation of these mitigation measures, the impact would be significant and unavoidable.

20) Impact 3.4-3 (The proposed program could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature). The program area is underlain by a number of high or undetermined paleontological sensitivity units, which may contain significant paleontological resources. Significant paleontological resources can be uncovered even in areas of low sensitivity, though, and it is possible that ground-disturbing construction activities associated with structural BMPs could result in the inadvertent discovery of paleontological resources, which could be a significant impact. The Program EIR identified Mitigation Measures CUL-5 and CUL-6 that would reduce this impact to less than significant levels. However, without implementation of these mitigation measures, the impact would be significant and unavoidable.

21) Impact 3.4-4 (The proposed program could disturb human remains, including those interred outside of formal cemeteries). There is no indication, either from the archival research results or the archaeological survey, that any particular location in the project area has been used for human burial purposes in the recent or distant past. However, in the event that human remains are inadvertently discovered during project construction activities, the human remains could be inadvertently damaged, which could be a significant impact. The proposed program's potential to uncover buried archaeological deposits including human remains is considered significant. The Program EIR identified Mitigation Measures CUL-7. However, without implementation of this mitigation measure, the impact would be significant and unavoidable.

Geologic and Mineral Resources

22) Impact 3.5-3 (The proposed program could be located on a geological unit or soil that is unstable, or that would become unstable as a result of the program, and potentially result in on-site or off-site non-seismically induced geologic hazards such as landslides, lateral spreading, subsidence, collapse or sinkholes, settlement, or slope failure). Infiltration of water into subsurface soils can increase soil instability and result in saturated soils, soil piping through preferential pathways, breakouts due to infiltrated water finding utility trenches and other preferential pathways, and raising the local groundwater levels such that infrastructure foundations and underground structures could be affected by unstable soils. Structural BMPs could potentially be undermined by unstable soils or impact adjacent infrastructure and buildings. The Program EIR identified Mitigation Measure GEO-1 that would reduce this impact to less than significant levels. However, without implementation of this mitigation measure, the impact would be significant and unavoidable.

23) Cumulative Impacts, Geologic and Mineral Resources (Cumulative impacts on geology and soils would have a less than significant impact on the environment with implementation of mitigation). The cumulative effect of multiple infiltration projects could increase the severity of perched or migrating water, which has the potential to inundate underground utilities or structures. Mitigation Measure GEO-1 would minimize the cumulative impact to regional infrastructure from perched or migrating water. The management of groundwater pumping among regional managers prevents impacts to structural foundations resulting from groundwater mounding from existing recharge efforts. Mitigation Measure GEO-2 would reduce the cumulative effects to soil stability from elevated groundwater levels to a less-than-significant level. The Program EIR identified Mitigation Measures GEO-1 and GEO-2 that would reduce this impact to less than significant levels. However, without implementation of these mitigation measures, the impact would be significant and unavoidable.

Hazards and Hazardous Materials

24) Impact 3.7-2 (The proposed program would create a significant hazard to the public or the environment through the accumulation of potentially hazardous materials into BMPs). Because of their function as water conveyance systems, the entire storm sewer system, as augmented by structural BMPs, would collect and retain sediment and chemicals from urban runoff, along with any accidental or illicit spills of hazardous materials. The introduction of hazardous materials into the storm sewer system could occur in large events as in a catastrophic spill, or could occur in small concentrations as in petroleum hydrocarbons and heavy metals picked up and carried by stormwater in urban runoff from the streets. Contaminants in the runoff water or as discrete

concentrated spills could accumulate in the soils and vegetation of structural BMPs. To address the accumulation of contaminants in soil at BMPs, operations and maintenance plans for BMPs that might accumulate constituents in surface soils and media will be developed to include periodic removal and replacement of these potentially impacted surface materials to reduce the potential for long-term loading leading to hazardous concentrations in soils and groundwater. The Program EIR identified Mitigation Measure HAZ-1 that would reduce this impact to less than significant levels. However, without implementation of this mitigation measure, the impact would be significant and unavoidable.

25) Impact 3.7-4 (The proposed program would be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, could create a significant hazard to the public or the environment). It is possible that a proposed BMP may be located on a hazardous materials site listed on the Cortese List, which would expose construction workers, the public, and the environment to hazardous materials during earth-moving activities, introducing a significant impact. The Program EIR identified Mitigation Measure HAZ-2 that would reduce this impact to less than significant levels. However, without implementation of this mitigation measure, the impact would be significant and unavoidable.

26) Impact 3.7-5 (For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, for a project within the vicinity of a private airstrip, the proposed program could result in a safety hazard for people residing or working in the project area). Some structural BMPs, such as detention basins that store water for a period of time or constructed wetlands that would increase or improve wildlife habitat, could be constructed on or near airports and could result in attracting wildlife. Deer and birds are known wildlife hazards to airports. If the proposed project is at or near an airport, this could increase hazards to aircraft from wildlife. The Program EIR identified Mitigation Measure HAZ-3 that would reduce this impact to less than significant levels. However, without implementation of this mitigation measure, the impact would be significant and unavoidable.

27) Cumulative Impacts, Hazards and Hazardous Materials (The proposed program would result in cumulatively significant impacts to hazardous materials). Most of the distributed BMPs would be small in scale and would not result in cumulatively significant impacts due to increased hazards from construction or operation. However, the combination of BMPs throughout the region would change the flow paths of stormwater and urban runoff that currently occurs in the region, resulting in the retention of pollutants generally within the soil of the BMPs that use soil for filtration and retention. Cumulatively, throughout the region, the retention and treatment of pollutants within each watershed and the reduction of pollutant loading in waterways will substantially benefit water and sediment quality of the region's habitats, rivers, and beaches. Therefore, the project's potential contribution to cumulative effects on hazards and hazardous materials is considered beneficial. The Program EIR identified Mitigation Measures HAZ-1 and HAZ-2 that would reduce this impact to less than significant levels. However, without implementation of these mitigation measures, the impact would be significant and unavoidable.

Hydrology and Water Quality

28) Impact 3.8-2 (The proposed program would result in higher groundwater levels and could potentially affect groundwater quality). Regional BMPs would recharge stormwater into the

groundwater basin and could raise local groundwater levels following major storm events. Distributed infiltration BMPs would typically be too small to have a measureable effect on local groundwater levels. The increased water supplies captured by the infiltration basins through the EWMP areas would be a beneficial impact of the projects. Infiltration BMPs would not be suitable in areas of low permeability, though, and potential locations would need to be evaluated for suitability. Concentrations of contaminants found in stormwater runoff could increase, resulting in contaminated shallow soils and groundwater. The Program EIR identified Mitigation Measures HYDRO-1 through HYDRO-4 that would reduce this impact to less than significant levels. However, without implementation of Mitigation Measures HYDRO-1 through HYDRO-3, the impact would be significant and unavoidable.

Noise

29) Impact 3.10-3 (The proposed program would result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project). No operational noise levels would be generated by the structural BMPs given their passive manner of operation. However, it is anticipated that some of the centralized and regional structural BMPs would require the use of irrigation pump stations and associated components to divert the collected stormwater. At these structural BMP sites, noise levels generated from the long-term operation of the pumps and associated components could result in increased noise levels in the surrounding noise environment. The Program EIR identified Mitigation Measures NOISE-1 and NOISE-2 that would reduce this impact to less than significant levels. However, without implementation of these mitigation measures, the impact would be significant and unavoidable.

Public Services and Recreation

30) Impact 3.12-1 (The proposed program would not result in substantial adverse physical impacts associated with the provision of, or need for, new or physically altered governmental fire protection facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for fire protective services). The structural BMPs are not habitable structures, would not be constructed with flammable materials, and would not require fire protection services. Because of the relative scale of these infrastructure improvements, the construction of the various structural BMPs are not expected to result in the need for new or physically altered fire protection facilities. However, construction of new structural BMPs in streets, sidewalks, parkland, or other facilities (these may include public service facilities such as police stations, fire stations, and municipal maintenance yards) within existing high-density urban, commercial, industrial, and transportation areas, as well as associated staging areas, could temporarily disrupt the provision of fire services, resulting in potentially significant impacts. The Program EIR identified Mitigation Measure PS-1 that would reduce this impact to less than significant levels. However, without implementation of this mitigation measure, the impact would be significant and unavoidable.

Transportation and Circulation

31) Impact 3.13-1 (The proposed program would intermittently and temporarily increase traffic levels and traffic delays due to vehicle trips generated by construction workers and construction vehicles on area roadways). Vehicle trips would be generated primarily by construction workers commuting to and from the BMP work sites, and by trucks hauling materials and equipment to

and from the sites. The construction traffic impacts associated with each individual structural BMP project would be short-term in nature and limited to the period of time when construction activity is taking place for that particular project. Although project-related traffic would be temporary, supplemental project-level analysis of potential site-specific impacts could determine that addition of project-generated traffic would be considered substantial in relation to traffic flow conditions on local roadways. For this program-level assessment, this impact is considered potentially significant. The Program EIR identified Mitigation Measure TRAF-1 that would reduce this impact to less than significant levels. However, without implementation of this mitigation measure, the impact would be significant and unavoidable.

32) Impact 3.13-4 (The proposed program would contribute to cumulative impacts to traffic and transportation). During construction of the structural BMPs, intermittent and temporary traffic-related impacts in the cumulative context would occur. The proposed program has the potential to contribute to potentially significant cumulative construction-related impacts as a result of (1) cumulative projects (such as land development projects) that generate increased traffic at the same time on the same roads as would the proposed program, causing increased congestion and delays; and (2) infrastructure projects in roads that would be used by project construction workers and trucks, which could delay project-generated vehicles past the work zones of those other projects. The Program EIR identified Mitigation Measure TRAF-1 that would reduce this impact to less than significant levels. However, without implementation of this mitigation measure, the impact would be significant and unavoidable.

Utilities and Service Systems

33) Impact 3.14-3 (The proposed program would require new or expanded water supply resources or entitlements or require or result in the construction of new water facilities or expansion of existing facilities, the construction of which could cause significant environmental effects). Construction requiring ground disturbance could encounter buried utilities including water supply infrastructure. Construction of BMPs to detain stormwater and dry-weather flows may reduce flows downstream, thereby reducing access to beneficial uses downstream. Dry-weather flows in coastal streams and foothills are largely fed by groundwater seepage or wastewater discharges. Any detention of dry weather flows or storm flows upstream could substantially reduce flows downstream or significantly impede access to flows. The Program EIR identified Mitigation Measures UTIL-1 through UTIL-3 that would reduce this impact to less than significant levels. However, without implementation of Mitigation Measures UTIL-2 and UTIL-3, the impact would be significant and unavoidable.

34) Impact 3.14-4 (The proposed program would be served by a landfill with insufficient permitted capacity to accommodate the proposed program's solid waste disposal needs or the proposed program could not comply with federal, state, and local statuses and regulations related to solid waste). Construction activities associated with the structural BMPs would include excavation and demolition of some existing infrastructure, which would produce solid waste requiring disposal in the nearest landfill. Some of the EWMPs are required to implement trash Total Maximum Daily Limits (TMDLs) and associated trash removal structural BMPs, which would require the disposal of the trash collected by the BMPs, thereby increase the amount of trash being sent to landfills. The non-structural BMPs would include street cleaning, landscape management, and storm drain operation, which produce debris and trash requiring disposal, which could exceed landfill limits. The new trash collected that is associated with proposed trash removal structural BMPs and non-

structural BMPs such as street cleaning and landscape management would be accommodated with existing and planned trash disposal facilities. Based on landfill capacity in the Los Angeles region, there appears to be ample availability to receive the expected trash generated by the program. The program would comply with all federal, state, and local statutes and regulations related to solid waste, including the Los Angeles County Construction and Demolition Debris Recycling and Reuse Program. The Program EIR identified Mitigation Measures UTIL-2 that would reduce this impact to less than significant levels. However, without implementation of this mitigation measure, the impact would be significant and unavoidable.

35) <u>Cumulative Impacts, Utilities and Service Systems (The proposed program could result in significant cumulative impacts to utilities and service systems).</u> Structural BMPS constructed to treat, infiltrate, and/or store stormwater and non-stormwater throughout the watershed would not generate wastewater or require wastewater treatment or result in adverse cumulative impacts from operation or construction. Installation of storm drainage facilities identified in the proposed EWMPs would not substantially affect existing storm drain facilities. Impacts to the existing water supplies are anticipated to be beneficial as a result of the stormwater and non-stormwater runoff infiltration and conservation BMPs implemented across the EWMP areas. Construction and operation of the structural BMPs would generate solid waste; however, landfills serving the program area are expected to have sufficient capacity to accommodate the amount of waste generated. Disposal of the solid waste generated during construction and operation would comply with all pertinent regulations and statutes. All other projects implemented in the area would also be required to comply with federal, state, and local solid waste regulations and statutes. The use of energy anticipated for the proposed program is minor when compared to the County-wide use of electricity. The proposed program would use energy-efficient equipment and would not result in wasteful consumption. The non-structural BMPs would include street cleaning, landscape management, and storm drain operation, which would produce debris and trash for disposal. The Program EIR identified Mitigation Measures UTIL-1 through UTIL-3 that would reduce this impact to less than significant levels. However, without implementation of Mitigation Measures UTIL-2 and UTIL-3, the impact would be significant and unavoidable.

Findings

The Los Angeles County Flood Control District finds and determines that it has considered the identified means of lessening or avoiding the project's significant effects and that to the extent any significant direct or indirect environmental effects, including cumulative project impacts, remain unavoidable or not reduced to below a level of significance after mitigation, such impacts are at an unacceptable level in light of the social, legal, economic, environmental, technological, and other project benefits discussed below, and such benefits override, outweigh, and make "acceptable" any such remaining environmental impacts of the project (*CEQA Guidelines* Section 15092(b)).

The following benefits and considerations outweigh the identified significant and unavoidable adverse environmental impacts. All of these benefits and considerations are based on the facts set forth in the findings, the Final PEIR, and the record of proceedings for the project. Each of these benefits and considerations is a separate and independent basis that justifies approval of the project, so that if a court were to set aside the determination that any particular benefit or consideration would occur and justifies project approval, this Commission would otherwise stand by its determination that the remaining benefit(s) or considerations are sufficient to justify and substantiate project approval.

Facts

Each benefit set forth below constitutes an overriding consideration warranting approval of the project, independent of the other benefits, and the District determines that the adverse environmental impacts of the project are "acceptable" if any of these benefits would be realized. The project would provide benefits to the County of Los Angeles as follows:

1) The proposed program would help the District, in partnership with 85 other Permittees, to achieve compliance with the MS4 permit issued by the Los Angeles RWQCB in 2012.

2) The proposed program would result in improved water quality in receiving waters throughout the County including the major rivers, streams, and the ocean through the retention, detention, or treatment of stormwater and dry weather flow.

3) The proposed program would help the District, in partnership with 85 other Permittees, to achieve TMDL water quality objectives identified by the Los Angeles RWQCB.

4) The proposed program would benefit communities within the County in developing multi-benefit facilities.

5) The proposed project would benefit certain communities within the County in augmenting groundwater supplies with captured stormwater.

6) Implementation of the proposed program would help support and be consistent with the State of California Ocean Plan promoting improved ocean water quality for multiple beneficial uses.

7) Implementation of the proposed program would be consistent with the stated goals and policies of the Los Angeles Region Basin Plan prepared by the Regional Water Quality Control Board pursuant to California Water Code Section 13240.

8) Implementation of the proposed program would promote and be consistent with the County of Los Angeles 2014 Low Impact Development Standards Manual.

MITIGATION MONITORING AND REPORTING PROGRAM

Public Resources Code, Section 21081.6 (Assembly Bill 3180) requires that mitigation measures identified in environmental review documents prepared in accordance with California Environmental Quality Act (CEQA) are implemented after a project is approved. Therefore, this Mitigation Monitoring and Reporting Program (MMRP) has been prepared to ensure compliance with the adopted mitigation measures during the implementation of the Enhanced Watershed Management Programs (EWMPs) (proposed program). LACFCD is the agency responsible for implementation of the mitigation measures identified in the EIR.

This MMRP provides LACFCD with a convenient mechanism for quickly reviewing all the mitigation measures including the ability to focus on select information such as timing. The MMRP includes the following information for each mitigation measure:

- The phase of the project during which the required mitigation measure must be implemented;
- The phase of the project during which the required mitigation measure must be monitored;
- The enforcement agency; and
- The monitoring agency.

The MMRP includes a checklist to be used during the mitigation monitoring period. The checklist will verify the name of the monitor, the date of the monitoring activity, and any related remarks for each mitigation measure.

Mitigation Monitoring and Reporting Program

Mitigation Measure	Implementation Phase	Monitoring Phase	Enforcement Agency	Level of Significance After Mitigation	Verification of Compliance	
					Initial	Date
Aesthetics						
AES-1: Aboveground structures shall be designed to be consistent with local zoning codes and applicable design guidelines and to minimize features that contrast with neighboring development.	Final Plans and Specifications	Final Plans and Specifications; Operation	Los Angeles County Flood Control District or Implementing Agency	Less than significant		
AES-2: Implementing agencies shall develop BMP maintenance plans that are approved concurrently with each structural BMP approval. The maintenance plans must include measures to ensure functionality of the structural BMPs for the life of the BMP. These plans may include general maintenance guidelines that apply to a number of smaller distributed BMPs.	Final Plans and Specifications	Final Plans and Specifications; Operation	Los Angeles County Flood Control District or Implementing Agency	Less than significant		
Air Quality						
AIR-1: Implementing agencies shall require for large Regional or Centralized BMPs the use of low-emission equipment meeting Tier II emissions standards at a minimum and Tier III and IV emissions standards where available as CARB-required emissions technologies become readily available to contractors in the region.	Final Plans and Specifications	Final Plans and Specifications; Operation	Los Angeles County Flood Control District or Implementing Agency	Significant and unavoidable for construction; less than significant for operations		
AIR-2: For large construction efforts that may result in significant air emissions, implementing agencies shall encourage contractors to use lower-emission equipment through the bidding process where appropriate.	Final Plans and Specifications	Final Plans and Specifications; During Construction	Los Angeles County Flood Control District or Implementing Agency	Significant and unavoidable for construction; less than significant for operations		
AIR-3: For large construction efforts associated with Regional or Centralized BMPs, implementing agencies shall conduct a project-specific LST analysis where necessary to determine local health impacts to neighboring land uses. Where it is determined that construction emissions would exceed the applicable LSTs or the most stringent applicable federal or state ambient air quality standards, the structural BMP project shall reduce its daily construction intensity (e.g., reducing the amount of equipment used daily, reducing the amount of soil graded/excavated daily) to a level where the structural BMP project's construction emissions would no longer exceed SCAQMD's LSTs or result in pollutant emissions that would cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standards.	Final Plans and Specifications	During Construction	Los Angeles County Flood Control District or Implementing Agency	Less than significant		
AIR-4: During planning of structural BMPs, implementing agencies shall assess the potential for nuisance odors to affect a substantial number of people. BMPs that minimize odors shall be considered the priority when in close proximity to sensitive receptors.	Prior to Final Plans and Specifications	Final Plans and Specifications	Los Angeles County Flood Control District or Implementing Agency	Less than significant		

Mitigation Monitoring and Reporting Program

Mitigation Measure	Implementation Phase	Monitoring Phase	Enforcement Agency	Level of Significance After Mitigation	Verification of Compliance	
Biological Resources						
BIO-1: Prior to approving a Regional or Centralized BMP, the Permittee shall conduct an evaluation of the suitability of the BMP location. Appropriate BMP sites should avoid impacting large areas of native habitats including upland woodlands and riparian forests that support sensitive species to the extent feasible. The evaluation shall include an assessment of potential downstream impacts resulting from flow diversions.	Prior to Final Plans and Specifications	Final Plans and Specifications	Los Angeles County Flood Control District or Implementing Agency	Less than significant		
BIO-2: Prior to ground disturbing activities in areas that could support sensitive biological resources, a habitat assessment shall be conducted by a qualified biologist to determine the potential for special-status wildlife species to occur within affected areas, including areas directly or indirectly impacted by construction or operation of the BMPs.	Prior to Ground Disturbing Activities	Pre-Construction	Los Angeles County Flood Control District or Implementing Agency	Less than significant		
BIO-3: If a special-status wildlife species is determined to be present or potentially present within the limits of construction activities, a qualified biologist shall conduct pre-construction surveys of proposed work zones and within an appropriately sized buffer around each area as determined by a qualified biologist within 14 days prior to ground disturbing activities. Any potential habitat capable of supporting a special-status wildlife species shall be flagged for avoidance if feasible.	Prior to Ground Disturbing Activities	Pre-Construction	Los Angeles County Flood Control District or Implementing Agency	Less than significant		
BIO-4: If avoidance of special-status species or sensitive habitats that could support special-status species (including, but not limited to, critical habitat, riparian habitat, and jurisdictional wetlands/waters) is not feasible, the Permittee shall consult with the appropriate regulating agency (USACE/USFWS or CDFW) to determine a strategy for compliance with the Endangered Species Act, California Fish and Game Code, and other regulations protecting special-status species and sensitive habitats. The Permittee shall identify appropriate impact minimization measures and compensation for permanent impacts to sensitive habitats and species in consultation with regulatory agencies. Construction of the project will not begin until the appropriate permits from the regulatory agencies are approved.	Final Plans and Specifications	Final Plans and Specifications	Los Angeles County Flood Control District or Implementing Agency	Less than significant		
BIO-5: If construction and vegetation removal is proposed between February 1 and August 31, a qualified biologist shall conduct a pre-construction survey for breeding and nesting birds and raptors within 500-feet of the construction limits to determine and map the location and extent of breeding birds that could be affected by the project. Active nest sites located during the pre-construction surveys shall be avoided until the adults and young are no longer reliant on the nest site for survival as determined by a qualified biologist.	Pre-Construction	During Construction	Los Angeles County Flood Control District or Implementing Agency	Less than significant		
BIO-6: All construction areas, staging areas, and right-of-ways shall be staked, flagged, fenced, or otherwise clearly delineated to restrict the limits of construction to the minimum necessary near areas that may support special-status wildlife species as determined by a qualified biologist.	Pre-Construction	During Construction	Los Angeles County Flood Control District or Implementing Agency	Less than significant		

Mitigation Monitoring and Reporting Program

Mitigation Measure	Implementation Phase	Monitoring Phase	Enforcement Agency	Level of Significance After Mitigation	Verification of Compliance
BIO-7: Prior to construction in areas that could support special status plants, a qualified botanist shall conduct a pre-construction floristic inventory and focused rare plant survey of project areas to determine and map the location and extent of special-status plant species populations within disturbance areas. This survey shall occur during the typical blooming periods of special-status plants with the potential to occur. The plant survey shall follow the CDFW Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (November 24, 2009).	Pre-Construction	Pre-Construction	Los Angeles County Flood Control District or Implementing Agency	Less than significant	
BIO-8: If temporary construction-related impacts to special-status plant populations are identified within a disturbance area, the implementing agencies shall prepare and implement a special-status species salvage and replanting plan. The salvage and replanting plan shall include measures to salvage, replant, and monitor the disturbance area until native vegetation is re-established under the direction of CDFW and USFWS.	Pre-Construction	During Construction; Operation	Los Angeles County Flood Control District or Implementing Agency	Less than significant	
BIO-9: Prior to construction, a qualified wetland delineator shall be retained to conduct a formal wetland delineation in areas where potential jurisdictional resources (i.e., wetlands or drainages) subject to the jurisdiction of USACE, RWQCB, and CDFW, may be affected by the project. If jurisdictional resources are identified in the EWMP area and would be directly or indirectly impacted by individual projects, the qualified wetland delineator shall prepare a jurisdictional delineation report suitable for submittal to USACE, RWQCB, and CDFW for purposes of obtaining the appropriate permits. Habitat mitigation and compensation requirements shall be implemented prior to construction in accordance with Mitigation Measure BIO-4.	Pre-Construction	Pre-Construction	Los Angeles County Flood Control District or Implementing Agency	Less than significant	
BIO-10: Oak trees and other protected trees shall be avoided to the extent feasible. If trees may be impacted by project construction, a certified arborist shall conduct a tree inventory of the construction impact area. If any oak trees or other protected trees will be impacted by BMP construction, the implementing agency shall obtain any required County or City permits.	Pre-Construction	During Construction	Los Angeles County Flood Control District or Implementing Agency	Less than significant	
Cultural Resources					
CUL-1: For individual EWMP projects that could impact buildings or structures (including infrastructure) 45 years old or older, implementing agencies shall ensure that a historic built environment survey is conducted or supervised by a qualified historian or architectural historian meeting the Secretary of the Interior's Professional Qualification Standards for Architectural History. Historic built environment resources shall be evaluated for their eligibility for listing in the CRHR or local register prior to the implementing agency's approval of project plans. If eligible resources that would be considered historical resources under CEQA are identified, demolition or substantial alteration of such resources shall be avoided. If avoidance is determined to be infeasible, the implementing agency shall require the preparation of a treatment plan to include, but not be	Final Plans and Specifications	During Construction	Los Angeles County Flood Control District or Implementing Agency	Less than significant	

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Mitigation Monitoring and Reporting Program

Mitigation Measure	Implementation Phase	Monitoring Phase	Enforcement Agency	Level of Significance After Mitigation	Verification of Compliance
limited to, photo-documentation and public interpretation of the resource. The plan will be submitted to the implementing agency for review and approval prior to implementation.					
CUL-2: Implementing agencies shall ensure that individual EWMP projects that require ground disturbance shall be subject to a Phase I cultural resources inventory on a project-specific basis prior to the implementing agency's approval of project plans. The study shall be conducted or supervised by a qualified archaeologist, defined as an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for Archaeology, and shall be conducted in consultation with the local Native American representatives expressing interest. The cultural resources inventory shall include a cultural resources records search to be conducted at the South Central Coastal Information Center; scoping with the NAHC and with interested Native Americans identified by the NAHC; a pedestrian archaeological survey where deemed appropriate by the qualified archaeologist; and formal recordation of all identified archaeological resources on California Department of Parks and Recreation 523 forms and significance evaluation of such resources presented in a technical report following the guidelines in *Archaeological Resource Management Reports (ARMR): Recommended Contents and Format*, Department of Parks and Recreation, Office of Historic Preservation, State of California, 1990. If potentially significant archaeological resources are encountered during the survey, the implementing agency shall require that the resources are evaluated by the qualified archaeologist for their eligibility for listing in the CRHR and for significance as a historical resource or unique archaeological resource per *CEQA Guidelines* Section 15064.5. Recommendations shall be made for treatment of these resources if found to be significant, in consultation with the implementing agency and the appropriate Native American groups for prehistoric resources. Per *CEQA Guidelines* Section 15126.4(b)(3), preservation in place shall be the preferred manner of mitigation to avoid impacts to archaeological resources qualifying as historical resources. Methods of avoidance may include, but shall not be limited to, project re-route or re-design, project cancellation, or identification of protection measures such as capping or fencing. Consistent with *CEQA Guidelines* Section 15126.4(b)(3)(C), if it is demonstrated that resources cannot be avoided, the qualified archaeologist shall develop additional treatment measures, which may include data recovery or other appropriate measures, in consultation with the implementing agency, and any local Native American representatives expressing interest in prehistoric or tribal resources. If an archaeological site does not qualify as an historical resource but meets the criteria for a unique archaeological resource as defined in Section 21083.2, then the site shall be treated in accordance with the provisions of Section 21083.2.	Final Plans and Specifications	During Construction	Los Angeles County Flood Control District or Implementing Agency	Less than significant	
CUL-3: The implementing agency shall retain archaeological monitors during ground-disturbing activities that have the potential to impact archaeological resources qualifying as historical resources or unique archaeological resources, as determined by a qualified archaeologist in consultation with the implementing	During Ground-Disturbing Activities	During Ground-Disturbing Activities	Los Angeles County Flood Control District or Implementing Agency	Less than significant	

Mitigation Monitoring and Reporting Program

Mitigation Measure	Implementation Phase	Monitoring Phase	Enforcement Agency	Level of Significance After Mitigation	Verification of Compliance	
agency, and any local Native American representatives expressing interest in the project. Native American monitors shall be retained for projects that have a high potential to impact sensitive Native American resources, as determined by the implementing agency in coordination with the qualified archaeologist.						
CUL-4: During project-level construction, should subsurface archaeological resources be discovered, all activity in the vicinity of the find shall stop and a qualified archaeologist shall be contacted to assess the significance of the find according to *CEQA Guidelines* Section 15064.5. If any find is determined to be significant, the archaeologist shall determine, in consultation with the implementing agency and any local Native American groups expressing interest, appropriate avoidance measures or other appropriate mitigation. Per *CEQA Guidelines* Section 15126.4(b)(3), preservation in place shall be the preferred means to avoid impacts to archaeological resources qualifying as historical resources. Methods of avoidance may include, but shall not be limited to, project re-route or re-design, project cancellation, or identification of protection measures such as capping or fencing. Consistent with *CEQA Guidelines* Section 15126.4(b)(3)(C), if it is demonstrated that resources cannot be avoided, the qualified archaeologist shall develop additional treatment measures, such as data recovery or other appropriate measures, in consultation with the implementing agency and any local Native American representatives expressing interest in prehistoric or tribal resources. If an archaeological site does not qualify as an historical resource but meets the criteria for a unique archaeological resource as defined in Section 21083.2, then the site shall be treated in accordance with the provisions of Section 21083.2	During Construction	During Construction	Los Angeles County Flood Control District or Implementing Agency	Less than significant		
CUL-5: For individual structural BMP projects that require ground disturbance, the implementing agency shall evaluate the sensitivity of the project site for paleontological resources. If deemed necessary, the implementing agency shall retain a qualified paleontologist to evaluate the project and provide recommendations regarding additional work, potentially including testing or construction monitoring.	Final Plans and Specifications	Final Plans and Specifications; During Construction	Los Angeles County Flood Control District or Implementing Agency	Less than significant		
CUL-6: In the event that paleontological resources are discovered during construction, the implementing agency shall notify a qualified paleontologist. The paleontologist will evaluate the potential resource, assess the significance of the find, and recommend further actions to protect the resource.	During Construction	During Construction	Los Angeles County Flood Control District or Implementing Agency	Less than significant		
CUL-7: The implementing agency shall require that, if human remains are uncovered during project construction, work in the vicinity of the find shall cease and the County Coroner shall be contacted to evaluate the remains, following the procedures and protocols set forth in Section 15064.5 (e)(1) of the CEQA Guidelines. If the County Coroner determines that the remains are Native American, the Coroner will contact the Native American Heritage Commission, in accordance with Health and Safety Code Section 7050.5, subdivision (c), and Public Resources Code 5097.98 (as amended by AB 2641). The NAHC will then	During Construction	During Construction	Los Angeles County Flood Control District or Implementing Agency	Less than significant		

Mitigation Monitoring and Reporting Program

Mitigation Measure	Implementation Phase	Monitoring Phase	Enforcement Agency	Level of Significance After Mitigation	Verification of Compliance
designate a Most Likely Descendant of the deceased Native American, who will engage in consultation to determine the disposition of the remains.					
Geological and Mineral Resources					
GEO-1: Prior to approval of infiltration BMPs, implementing agencies shall conduct a geotechnical investigation of each infiltration BMP site to evaluate infiltration suitability. If infiltration rates are sufficient to accommodate an infiltration BMP, the geotechnical investigation shall recommend design measures necessary to prevent excessive lateral spreading that could destabilize neighboring structures. Implementing agencies shall implement these measures in project designs	Final Plans and Specifications	Final Plans and Specifications	Los Angeles County Flood Control District or Implementing Agency	Less than significant	
GEO-2: Prior to installing BMPs designed to recharge local groundwater supplies, the Implementing Agency shall notify local groundwater managers including the Upper Los Angeles River Area Water Master, the Water Replenishment District of Southern California, or the San Gabriel Water Master as well as local water producers such as local municipalities and water companies. The Implementing Agency shall coordinate BMP siting efforts with groundwater managers and producers to mitigate high groundwater levels while increasing local water supplies.	Final Plans and Specifications; prior to BMP Installation	Final Plans and Specification; prior to BMP Installation	Los Angeles County Flood Control District or Implementing Agency	Less than significant	
Hazards and Hazardous Materials					
HAZ-1: Implementing agencies shall prepare and implement maintenance practices that include periodic removal and replacement of surface soils and media that may accumulate constituents that could result in further migration of constituents to sub-soils and groundwater. A BMP Maintenance Plan shall be prepared by Implementing Agencies upon approval of the individual BMP projects that identifies the frequency and procedures for removal and/or replacement of accumulated debris, surface soils and/or media (to depth where constituent concentrations do not represent a hazardous conditions and/or have the potential to migrate further and impact groundwater) to avoid accumulation of hazardous concentrations and the potential to migrate further to sub-soils and groundwater. The Maintenance Plan shall include vector control requirements. The BMP Maintenance Plan may consist of a general maintenance guideline that applies to several types of smaller distributed BMPs. For smaller distributed BMPs on private property, these plans may consist of a maintenance covenant that includes requirements to avoid the accumulation of hazardous concentrations in these BMPs that may impact underlying sub-soils and groundwater. Structural BMPs shall be designed to prevent migration of constituents that may impact groundwater.	Final Plans and Specifications	Final Plans and Specifications; Operation	Los Angeles County Flood Control District or Implementing Agency	Less than significant	
HAZ-2: Prior to the initiation of any construction requiring ground-disturbing activities in areas where hazardous material use or management may have occurred, the implementing agencies shall complete a Phase I Environmental	Prior to Construction	Prior to Construction	Los Angeles County Flood Control District or Implementing Agency	Less than significant	

RB-AR 9776

Mitigation Monitoring and Reporting Program

Mitigation Measure	Implementation Phase	Monitoring Phase	Enforcement Agency	Level of Significance After Mitigation	Verification of Compliance	
Site Assessment (ESA) in accordance with American Society for Testing and Materials (ASTM) Standard E1527-13 for each construction site. Any recommended follow up sampling (Phase II activities) set forth in the Phase I ESA shall be implemented prior to construction. The results of Phase II studies, if necessary, shall be submitted to the local overseeing agency and any required remediation or further delineation of identified contamination shall be completed prior to commencement of construction.						
HAZ-3: Implementing Agencies shall require that those BMPs that are within an airport land use plan area are compatible with criteria specified in FAA Advisory Circular No: 150/5200-33B (FAA, 2007). If the proposed BMP is within the minimum separation criteria, the Implementing Agency shall consult with the airport and collaboratively evaluate whether the potential increase in wildlife hazards can be mitigated.	Final Plans and Specifications	Final Plans and Specifications	Los Angeles County Flood Control District or Implementing Agency	Less than significant		
Hydrology and Water Quality						
HYDRO-1: Prior to approving an infiltration BMP, the Permittee shall conduct an evaluation of the suitability of the BMP location. Appropriate infiltration BMP sites should avoid areas with low permeability where recharge could adversely affect neighboring subsurface infrastructure.	Final Plans and Specifications	Final Plans and Specifications	Los Angeles County Flood Control District or Implementing Agency	Less than significant		
HYDRO-2: Prior to approving an infiltration BMP, the Permitee shall identify pre-treatment technologies, type, and depth of filtration media; depth to groundwater; and other design considerations necessary to prevent contaminants from impacting groundwater quality. The design shall consider stormwater quality data within the BMP's collection area to assess the need and type of treatment and filtration controls. Local design manuals and ordinances requiring minimum separation distance to groundwater shall also be met as part of the design.	Final Plans and Specifications	Final Plans and Specifications	Los Angeles County Flood Control District or Implementing Agency	Less than significant		
HYDRO-3: Prior to the installation of an infiltration BMP, the Permittee shall conduct a regulatory database review for contaminated groundwater sites within a quarter mile of the proposed infiltration facility. The review shall include locations of on-site wastewater treatment systems that could be affected by the BMP. The Permittee shall identify whether any contaminated groundwater plumes or leach fields are present within close proximity to the BMP location that could be affected by infiltrated water and whether coordination with the local and state environmental protection overseeing agency and responsible party is warranted prior to final design of infiltration facility.	Final Plans and Specifications	Final Plans and Specifications	Los Angeles County Flood Control District or Implementing Agency	Less than significant		
HYDRO-4: Prior to approving a structural BMP, the implementing agencies shall conduct an evaluation of the potential hydromodification impacts of the project. The evaluation shall recommend design measures necessary to prevent or minimize any identified impacts, including flooding, erosion and/or scour. Design measures could include velocity dissipaters and bank re-enforcement components. Implementing agencies shall include these measures in project designs.	Final Plans and Specifications	Final Plans and Specifications	Los Angeles County Flood Control District or Implementing Agency	Less than significant		

Mitigation Monitoring and Reporting Program

Mitigation Measure	Implementation Phase	Monitoring Phase	Enforcement Agency	Level of Significance After Mitigation	Verification of Compliance	
Noise						
NOISE-1: The implementing agencies shall implement the following measures during construction as needed:: • Include design measures necessary to reduce the construction noise levels where feasible. These measures may include noise barriers, curtains, or shields. • Place noise-generating construction activities (e.g., operation of compressors and generators, cement mixing, general truck idling) as far as possible from the nearest noise-sensitive land uses. • Locate stationary construction noise sources as far from adjacent noise-sensitive receptors as possible. • If construction is to occur near a school, the construction contractor shall coordinate the with school administration in order to limit disturbance to the campus. Efforts to limit construction activities to non-school days shall be encouraged. • For the centralized and regional BMP projects located adjacent to noise-sensitive land uses, identify a liaison for these off-site sensitive receptors, such as residents and property owners, to contact with concerns regarding construction noise and vibration. The liaison's telephone number(s) shall be prominently displayed at construction locations. For the centralized and regional BMP projects located adjacent to noise-sensitive land uses, notify in writing all landowners and occupants of properties adjacent to the construction area of the anticipated construction schedule at least 2 weeks prior to groundbreaking.	During Construction	During Construction	Los Angeles County Flood Control District or Implementing Agency	Significant and unavoidable for construction, less than significant for operations (threshold 3.10-1); less than significant (threshold 3.10-3); significant and unavoidable (threshold 3.10-4);		
NOISE-2: All structural BMPs that employ mechanized stationary equipment that generate noise levels shall comply with the applicable noise standards established by the implementing agency with jurisdiction over the structural BMP site. The equipment shall be designed with noise-attenuating features (e.g., enclosures) and/or located at areas (e.g., belowground) where nearby noise-sensitive land uses would not be exposed to a perceptible noise increase in their noise environment.	Final Plans and Specifications, Operation	Final Plans and Specifications; Operation	Los Angeles County Flood Control District or Implementing Agency	Significant and unavoidable for construction, less than significant for operations (threshold 3.10-1); less than significant (threshold 3.10-3)		
Public Services and Recreation						
PS-1: The Permittee implementing the EWMP project shall provide reasonable advance notification to the service providers such as fire, police, local businesses, home owners and residents of adjacent to and within areas potentially affected by the proposed EWMP project about the nature, extent and duration of construction activities. Interim updates should be provided to inform them of the status of the construction activities.	Pre-Construction; During Construction	Pre-Construction; During Construction	Los Angeles County Flood Control District or Implementing Agency	Less than significant		

Mitigation Monitoring and Reporting Program

Mitigation Measure	Implementation Phase	Monitoring Phase	Enforcement Agency	Level of Significance After Mitigation	Verification of Compliance	
Transportation and Circulation						
TRAF-1: For projects that may affect traffic, implementing agencies shall require that contractors prepare a construction traffic control plan. Elements of the plan should include, but are not necessarily limited to, the following: • Develop circulation and detour plans to minimize impacts to local street circulation. Use haul routes minimizing truck traffic on local roadways to the extent possible. • To the extent feasible, and as needed to avoid adverse impacts on traffic flow, schedule truck trips outside of peak morning and evening commute hours. • Install traffic control devices as specified in Caltrans' Manual of Traffic Controls for Construction and Maintenance Work Zones where needed to maintain safe driving conditions. Use flaggers and/or signage to safely direct traffic through construction work zones. • Coordinate with facility owners or administrators of sensitive land uses such as police and fire stations, hospitals, and schools. Provide advance notification to the facility owner or operator of the timing, location, and duration of construction activities.	Final Plans and Specifications; During Construction	Final Plans and Specifications; During Construction	Los Angeles County Flood Control District or Implementing Agency	Less than significant		
Utilities and Service Systems						
UTIL-1: Prior to implementation of BMPs, the implementing agency shall conduct a search for local utilities above and below ground that could be affected by the project. The implementing agencies shall contact each utility potentially affected to address relocation of the utility if necessary to ensure access and services are maintained.	Final Plans and Specifications	Final Plans and Specifications; During Construction	Los Angeles County Flood Control District or Implementing Agency	Less than significant		
UTIL-2: Prior to approval of BMPs, implementing agencies shall evaluate the potential for impacts to downstream beneficial uses including surface water rights. Implementing agencies shall not approve BMPs that result in preventing access to previously appropriated surface water downstream.	Final Plans and Specifications	Final Plans and Specifications	Los Angeles County Flood Control District or Implementing Agency	Less than significant		
UTIL-3: Implementing agencies shall encourage construction contractors to recycle construction materials and divert inert solids (asphalt, brick, concrete, dirt, fines, rock, sand, soil, and stone) from disposal in a landfill where feasible. Implementing agencies shall incentivize construction contractors with waste minimization goals in bid specifications where feasible.	Final Plans and Specifications; During Construction	During Construction	Los Angeles County Flood Control District or Implementing Agency	Less than significant		

Print Form

ORIGINAL FILED

MAY 2 7 2015

LOS ANGELES, COUNTY CLERK

Notice of Determination

Appendix D

To:

☒ Office of Planning and Research

U.S. Mail: P.O. Box 3044, Sacramento, CA 95812-3044

Street Address: 1400 Tenth St., Rm 113, Sacramento, CA 95814

☒ County Clerk
County of: Los Angeles
Address: P.O. Box 1208
Norwalk, CA 90650-1208

From:

Public Agency: LA County Flood Control District
Address: 900 South Fremont Avenue, 5th Floor
Alhambra, CA 91803
Contact: Gregg BeGell
Phone: (626) 300-3298

Lead Agency (if different from above):

Address:

Contact:
Phone:

SUBJECT: Filing of Notice of Determination in compliance with Section 21108 or 21152 of the Public Resources Code.

State Clearinghouse Number (if submitted to State Clearinghouse): 2014081106

Project Title: Enhanced Watershed Management Programs (EWMP)

Project Applicant: Los Angeles County Flood Control District (LACFCD)

Project Location (include county): Throughout Los Angeles County

Project Description:
EWMPs are customized water quality improvement programs developed through computer modeling to determine projects and practices that can be implemented in a watershed to meet water quality standards while achieving other benefits such as flood control, water conservation, and recreational improvements. Certain MS4 Permittees have developed EWMPs for watersheds throughout the county to comply with the 2012 MS4 Permit. The EWMPs will be submitted to the LA Regional Water Quality Control Board for review and approval. Permittees implementing individual projects proposed in EWMPs will perform further environmental review as necessary.

This is to advise that the LA County Flood Control District has approved the above
(☒ Lead Agency or ☐ Responsible Agency)

described project on May 26, 2015 (date) and has made the following determinations regarding the above described project.

1. The project [☒ will ☐ will not] have a significant effect on the environment.
2. ☒ An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA.
   ☐ A Negative Declaration was prepared for this project pursuant to the provisions of CEQA.
3. Mitigation measures [☒ were ☐ were not] made a condition of the approval of the project.
4. A mitigation reporting or monitoring plan [☒ was ☐ was not] adopted for this project.
5. A statement of Overriding Considerations [☒ was ☐ was not] adopted for this project.
6. Findings [☒ were ☐ were not] made pursuant to the provisions of CEQA.

This is to certify that the final EIR with comments and responses and record of project approval, or the negative Declaration, is available to the General Public at:
www.LACoH2Osheds.com or LADPW, 900 S Fremont Ave, 5th Floor, Alhambra, CA

Signature (Public Agency): ______ Title: Principal Engineer

Date: 5/18/15 Date Received for filing at OPR: ______

Authority cited: Sections 21083, Public Resources Code.
Reference Section 21000-21174, Public Resources Code.

Revised 2011

RB-AR 9780

State of California—Natural Resources Agency
CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

2015 ENVIRONMENTAL FILING FEE CASH RECEIPT

RECEIPT #
201505271220028
STATE CLEARING HOUSE # *(If applicable)*
2014081106

SEE INSTRUCTIONS ON REVERSE. TYPE OR PRINT CLEARLY

LEAD AGENCY	DATE
LA COUNTY FLOOD CONTROL DISTRICT	05/27/2015
COUNTY/STATE AGENCY OF FILING	DOCUMENT NUMBER
LACC	2015141443

PROJECT TITLE
ENHANCED WATERSHED MANAGEMENT PROGRAMS (EWMP)

PROJECT APPLICANT NAME	PHONE NUMBER
GREGG BEGELL	(626)300-3298

PROJECT APPLICANT ADDRESS	CITY	STATE	ZIP CODE
900 SOUTH FREMONT AVE 5TH FLOOR	ALHAMBRA	CA	91803

PROJECT APPLICANT *(Check appropriate box)*:
☑ Local Public Agency ☐ School District ☐ Other Special District ☐ State Agency ☐ Private Entity

CHECK APPLICABLE FEES:

☑	Environmental Impact Report (EIR)	$3,069.75	$ 3,069.75
☐	Negative Declaration (ND)(MND)	$2,210.00	$ 0.00
☐	Application Fee Water Diversion (State Water Resources Control Board Only)	$850.00	$ 0.00
☐	Projects Subject to Certified Regulatory Programs (CRP)	$1,043.75	$ 0.00
☑	County Administrative Fee	~~$50.00~~	$ 75.00
☐	Project that is exempt from fees		
	☐ Notice of Exemption		
	☐ CDFW No Effect Determination (Form Attached)		
☐	Other ________		$ 0.00

PAYMENT METHOD:
☐ Cash ☐ Credit ☑ Check ☐ Other ________ $ 3,144.75

SIGNATURE	TITLE
X	

ORIGINAL - PROJECT APPLICANT COPY - CDFW/ASB COPY - LEAD AGENCY COPY - COUNTY CLERK FG 753.5a (Rev. 01/15)

Los Angeles County Registrar / Recorder
12400 Imperial Highway, Norwalk, CA
(800)201-8999

Business Filings

NORWALK

Cashier: M. DAVIS

201505271220028

Wednesday, May 27, 2015 2:10 PM

Item(s)

Fee	Qty	Total
NoD - County Posting Fee 2015141443	1	$75.00
NoD - Environmental Impac 2015141443	1	$3,069.75

Total **$3,144.75**

Total Documents: 1

Customer payment(s):

Check $3,144.75

Check List:
#155250 $3,144.75

NSMBCW EWMP GIS Files